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**SuccessMaker 4**  
Math Reference Guide

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# SuccessMaker Math at a Glance

**Grade Levels:** K-8

**Overview:** SuccessMaker Math is a standards-based interactive multimedia course designed to develop and maintain fundamental concepts taught in mathematics.

**Contents:** Instructional strands:

- Data Analysis
- Geometry
- Measurement
- Number Sense and Operations
- Patterns, Algebra, and Functions
- Probability and Discrete Mathematics
- Fluency (Speed Games)

**Features:** Course features:

- Engaging interface with a choice of seven themes
- Aligned with State Standards
- Initial Placement
- Motion guided by student's responses and interaction
- Mastery Assessment
- Tutorials that use scaffolded or step-by-step models of instruction
- Online tools such as ruler, protractor, and scratchpad

# 1

## Introducing SuccessMaker Math

SuccessMaker Math is an interactive multimedia course designed to develop and maintain fundamental concepts taught in mathematics in Kindergarten through Grade 8. The course is appropriate for a wide range of students—from those who need to review basic concepts to those who want to accelerate beyond their grade level.

SuccessMaker Math gives students individualized, comprehensive coverage of fundamental mathematics, including concepts such as number recognition, counting, numeration, place value, regrouping, rounding, percentages, positive and negative integers, and the use of variables. Students gain skill practice along with concept development through the presentation of exercises and tutorials.

### Goals

SuccessMaker Math is designed to meet the following objectives:

- To develop and maintain mathematics skills
- To develop problem-solving skills
- To provide content and reporting aligned to the National Council of Teachers of Mathematics (NCTM) standards and state standards

These goals are achieved by presenting highly visual exercises that engage the student, provide feedback and tutorial intervention when necessary, and represent mathematical concepts.

### General Pedagogy

The content and structure of SuccessMaker Math is based on the principles and standards recommended by NCTM as well as Pearson advisory boards of well-respected experts in the field of teaching mathematics.

NCTM and numerous other experts in the fields of mathematics education recommend that students acquire mathematical content and processes through interaction with a rich and wide variety of engaging problem situations. SuccessMaker Math includes virtual manipulatives in real-world contexts for problem solving.

While NCTM advises the importance of “learning with understanding”, NCTM also strongly advocates the need for “computational fluency”. Mathematical experts contend that without the ability to compute accurately and effectively, students’ ability to solve complex problems is severely impaired. SuccessMaker Math provides students with opportunities to engage in contextualized problems that help them make the connection between computations and their applications.

## Course Features

The main features of the course are:

- Initial Placement (IP) - the option to choose the student's starting level based on diagnostic sessions.
- Mixed Presentation - the random selection of strands within a particular level which generate numbers and graphics for exercises within the strands randomly. The resulting pool of exercises provides such variety during a session that students rarely see the same combinations of strands, numbers, and graphics repeated with the exercises.
- Standard Motion - the capability to adapt to the student's performance and sequence the course accordingly.
- Mastery Assessment - the application of a weighted performance formula.

### *Initial Placement*

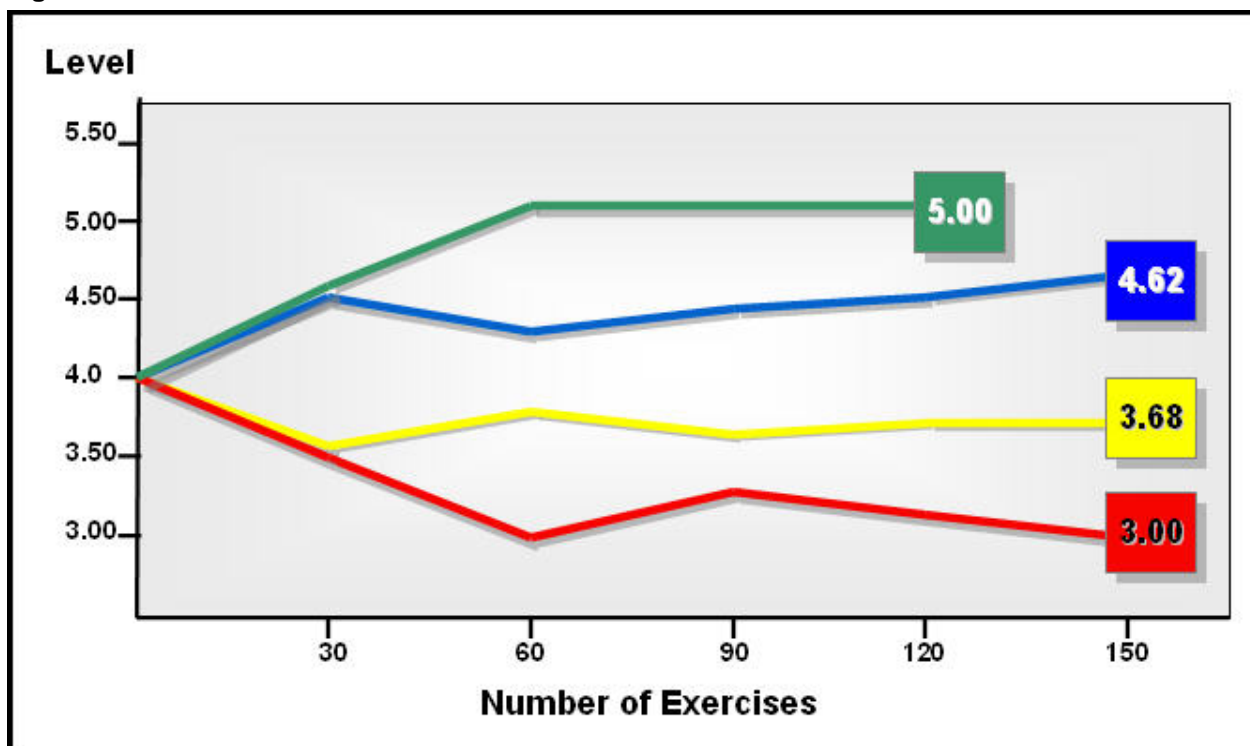
Initial Placement is designed to select a starting level for each student. With IP, the software monitors a student’s progress for the first 150 exercises during the initial implementation of the course. The software then uses that information to place the student at a level that is neither too easy nor too difficult.

Every 30 questions during IP, SuccessMaker Math judges the student’s performance at the current level. One of three decisions can occur as a result of these judgment points:

- If the student performs well, the student’s current level moves up half of a grade level in order to challenge the student. This movement continues until the student changes direction or completes IP.
- If the student does not perform well, the student’s current level moves down half of a grade level in an effort to better identify the functional level of the student. This movement continues until the student changes direction or completes IP.
- If the student seems to be functioning with an average performance at the current level, the level may be maintained for another set of 30 exercises after which another judgment is made. At any time a student completes two consecutive sets of 30 exercises with no movement, IP is complete.

**NOTE:** As long as the student’s level is adjusted in the same direction, adjustment is in broad increments. As soon as the adjustment level changes direction, the increments decrease by half to become more refined until IP is complete.

Figure 1-1 Initial Placement Illustration



### Interpreting Figure 1-1 Initial Placement Illustration

It is clear that all four students are fourth graders as evidenced by their starting level in IP.

- Let's first look at the student whose progress is designated by the green line (the top line). This student performed very well during the first 60 exercises where two decisions were made to move the student up by .50 grade level. At level 5.0, the student performed at an average rate for the next 60 exercises during which two judgments were made to keep the student working at the same level. With no movement forward or backward for two consecutive sets of thirty exercises, IP has compiled enough data to surmise that the student should be working at the current level. Thus, the student whose progress is designated by the green line has completed IP at level 5.00 and will begin coursework at this level.
- The second student's performance is marked in blue. This student accelerated during the first set of exercises, thus, the judgment was made to move the student's level up by .50 grade levels. However, the student's progress declined during the next 30 exercises, so the decision was made to move the student's level down. Since the student's level had changed directions, the movement increment was decreased by half. Thus, the student moved down by .25 level. At the 60-exercise judgment, the student's progress changed direction yet again, cutting the motion increment in half. Therefore, the decision was to move the student's level up by .125 level. The student moved up again at the 90-exercise judgment leaving the motion direction unchanged. Being unchanged, the motion increment was .125 yet again. At the completion of IP, the student moved up .125 level once more making the student's completion level 4.62. The student will begin coursework at this level.



- The third student's progress is designated by yellow. This student did not progress well during the first 30 exercises and the first decision was made to move the student's level down by .50 grade level. The student's progress was much better in the next 30 exercises and warranted upward movement. Since the direction had changed, the decision was made to move the student's level up by .25 level. The student's work in the course declined during the next 30 exercises. Thus, the decision was made to move the student's level down. Since this was another change in direction, the student's level declined by .125, which is half of the motion increment of the previous 30 exercises. In the set of exercises prior to the fourth judgment, the student's performance improved. Since this was another change in direction, the motion increment was cut in half and movement was in an upward direction at .0625. During the last 30 exercises, the student's performance remained average. As a result, the student's movement in level remained unchanged and at the final judgment during the completion of IP, the student was working at level 3.68. The student will begin coursework at this level.
- The fourth student's performance is shown in red. Like the student whose progress is indicated by yellow, this student did not progress well during the first 30 exercises and the student's level moved down by .50 grade level during the first decision. The student's progress did not change and the second decision was to move the student down by another .50 level since the student's movement had not changed direction. The student's performance became better, consequently, the level moved up by .25 during the next decision. The student's progress declined yet again. As a consequence of the downward progress and changing direction, the judgment moved the student's level down .125. The student's progress declined once more, resulting in another downward movement of .125 level in the same direction. The student completed IP at level 3.00 and will begin coursework at this level.

### **When IP is Turned Off**

If IP is turned off, the student is directly launched into the course at the enrollment level selected by the teacher. Custom assignments do not contain an option for IP.

### **When IP is Complete**

Upon completion of IP, the student is immediately entered into instruction at the IP level. The student has no notification that IP is complete and, if completed in the middle of a session, the session continues until the student logs out or the session time ends. Teachers, however, can access reports showing progress in IP.

### ***Mixed Presentation***

Mixed Presentation is one method by which SuccessMaker Math individualizes instruction for students. This individualization is accomplished by the random selection of strands within a particular level as well as carefully defined parameters which generate numbers and graphics for exercises within the strands randomly. The resulting pool of exercises provides such variety during a session that students rarely see the same combinations of strands, numbers, and graphics repeated with the exercises.

## **Standard Motion**

SuccessMaker Math's Standard Motion directs each student's path through the content. As a student moves through the course, the choice of strands and subsequent skill objectives is not random. Skill objectives within and across strands have been organized into a mixed presentation sequence of skill objectives. Movement is constrained by the course sequence but personalized by the student's responses to and interaction with the course skill objectives. The decision to move forward, extend the time on a skill objective, or move backward to a prerequisite depends on the student's mastery performance.

When a new skill is introduced within the mixed presentation, the student's response determines what happens next. If the student answers 4-8 exercises for this skill and shows a positive response pattern, the skill is considered to be mastered and marked for retention. Then the next skill is introduced to the student. If the series of 4-8 exercises is answered incorrectly, the system employs various instructional strategies to help the struggling student, including sequential practice within the area of difficulty, presentation of a brief tutorial, and/or review of prerequisite material.

Standard Motion is able to eliminate the random aspects of ordered navigating decisions because it takes into account the course content, the student, and the student's struggles. Tutorials, prerequisite reinforcement, delayed presentation, and mastery maintenance are all part of Standard Motion.

## **Intervention Cycle**

During Sequential Practice, mixed presentation stops and the student receives more exercises of the same type before motion determines the next move.

Tutorials offer step-by-step instructions on how to complete an exercise or they may give the student opportunities to experience the skill in another context. The student then receives exercises from a prerequisite skill in an effort to facilitate understanding of the current skill.

After intervention, the skill is put back into the mix of exercises being presented through mixed presentation. The student has another opportunity in a set of 6-8 exercises to show understanding of the skill. If understanding is then proven, the skill is marked complete/mastered and the student moves on.

Eventually, the skill maybe placed into Delayed Presentation. If the student still does not show understanding of the skill, the skill goes into the Intervention Cycle once again. The Intervention Cycle can be entered a total of three times.

Once the student has mastered a skill objective, this objective is presented later as a part of maintenance. This step occurs more frequently if the objective is a prerequisite for additional learning. If the student has not maintained mastery of the objective, the student receives review presentations as determined by the sequencing logic. The necessity and intensity of the review presentations are mediated by each individual student's performance on individual skill objectives and bundles of related skill objectives.

## ***Mastery Assessment***

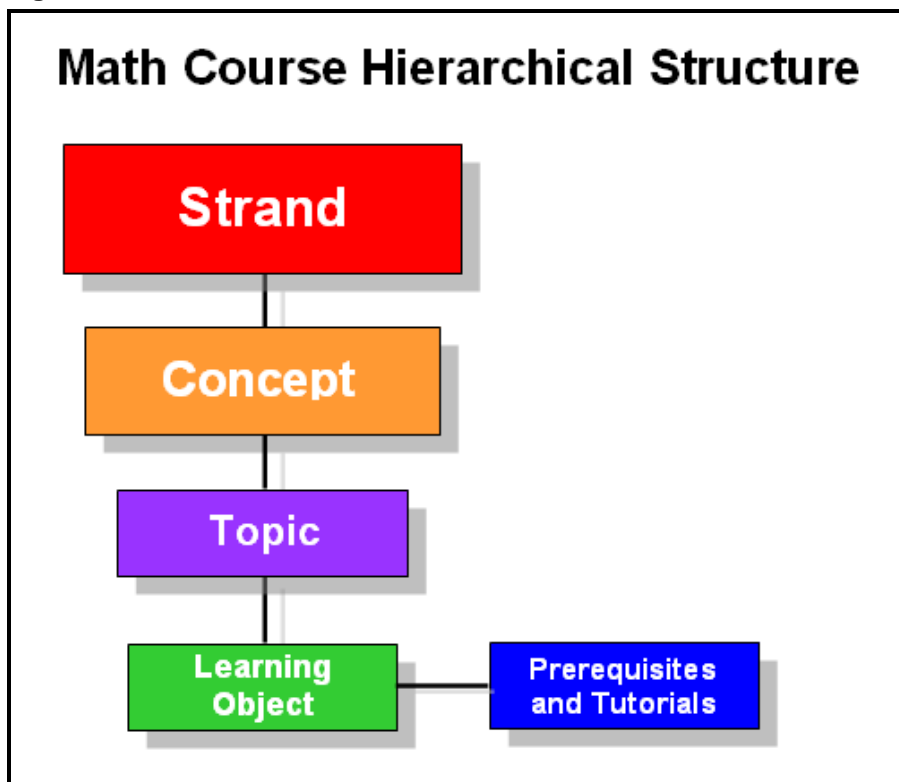
SuccessMaker motion follows the basic philosophy of a probability-based assessment (the likelihood that the student will get the next question correct). If this likelihood is higher than a certain threshold value, then the student is judged to have mastered the objective. The mastery determination formula explicitly weighs the following factors when assessing mastery:

- Pattern of correct and incorrect answers, gives the greatest weight to the most recent responses
- Likelihood of a lucky guess
- Difficulty of the exercise
- Significance of the exercise (defined as the degree of relatedness to a terminal objective)

## **Course Content and Organization**

SuccessMaker Math is organized by strands, concepts, topics, and skill objectives (learning objects) for each grade level. Intervention pieces are attached to skill objectives.

**Figure 1-2 Math Course Hierarchical Structure**



## Strands

The scope and sequence of SuccessMaker Math reflects a version of the seven strands of math instruction outlined by the National Council of Teachers of Mathematics. These strands are:

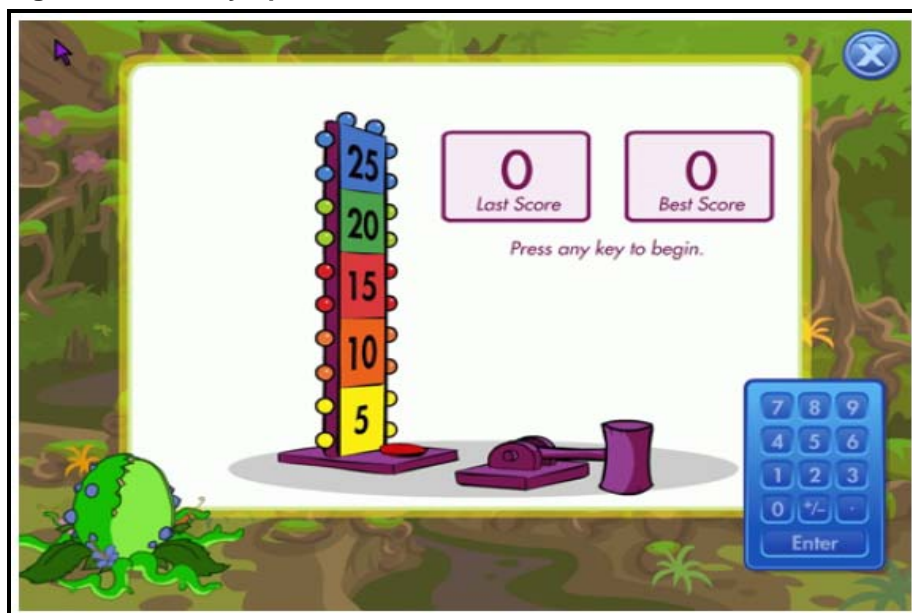
- Data Analysis
- Geometry
- Measurement
- Number Sense and Operations
- Patterns, Algebra, and Functions
- Probability and Discrete Mathematics
- Fluency (Speed Games)

## Speed Games

The Fluency strand employs “Speed Games”, which enable students to practice their basic math skills in addition, subtraction, multiplication, and division. These exercises build automaticity, allowing students to access math facts readily. The Fluency (Speed Games) strand covers grades 2-8, containing a total of 70 exercise sets of 20 facts each.

A scoreboard on the screen reports the cumulative score after each correct response. The points received for each correct answer depend on the speed of the student’s response.

Figure 1-3 Fluency Speed Games



## Tutorials

SuccessMaker Math contains two types of tutorials: step-by-step tutorials and scaffolded tutorials. Both types of tutorials are built into standard motion and are introduced as an intervention when a student begins to struggle with a concept.

### Step-by-Step Tutorials

The first type of tutorial is step-by-step direction for an exercise similar to the skill objective in which the student is having difficulty. In a step-by-step tutorial, the student is lead through three instances of exercises that meet the objective. This guided practice helps to solidify unsure concepts and problem-solving procedures. SuccessMaker Math includes 100 step-by-step tutorials.

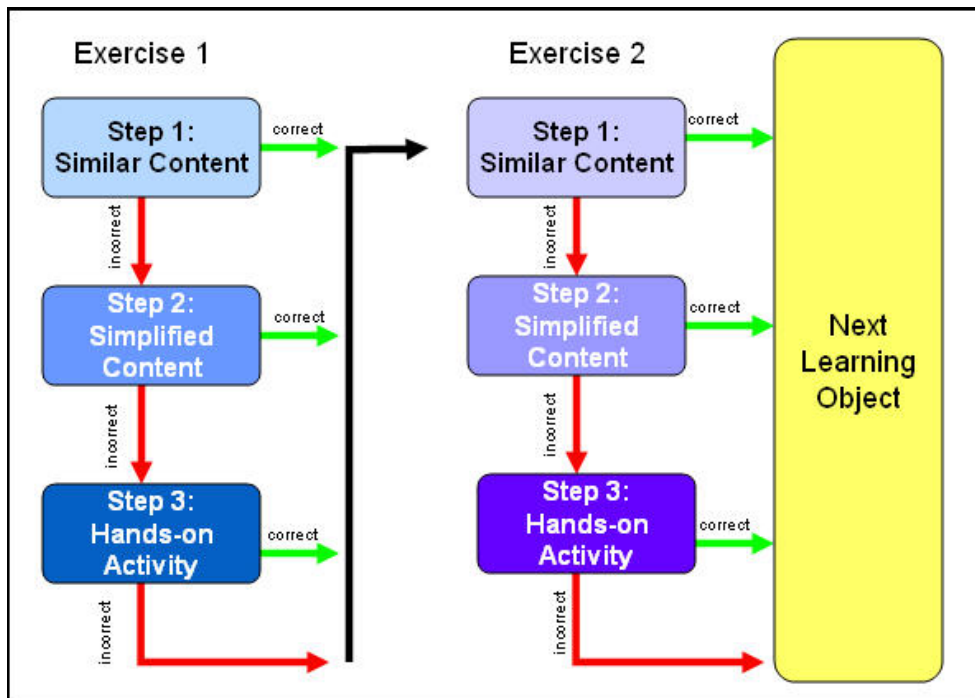
### Scaffolded Tutorials

The second type of tutorial is a scaffolded tutorial. This tutorial was designed to help the student learn a concept by moving the student from concrete activities to more abstract problem solving. It also has an adaptive motion that determines if the student needs to be moved back to a more concrete presentation.

In scaffolded tutorials, the students are presented two problems that contain three steps which help to teach a concept. In Step 1, the student is presented a problem similar to the concept of the skill objective in which they are struggling. If the student answers incorrectly, the program assumes that the student needs to have problem simplified or restated.

If the problem is simplified or restated and the student answers incorrectly once again, the program moves the student into a third step that presents the instruction with concept-building hands-on activities. This final step relies heavily on virtual manipulatives and visual models.

Figure 1-4 Scaffolded Tutorials



# 2

## Hands-on Tour: SuccessMaker Math

The best way to get acquainted with the SuccessMaker Math course is to take a session. This chapter shows you what you may see when you sample some exercises in the SuccessMaker Math course.

### Before You Begin

Before you can start a session, you must create a student user-type and assign the course. For the steps to create a user and assign the course, see the *Pearson Learning Management System Online Assistance*. If necessary, request assistance from your administrator or system manager.

- To experience Initial Placement, leave this feature on when you edit the course settings.
- To launch specific skill objectives, view standards, or view concepts of a specified level, customize the course settings according to your preferences. See “Managing Courses” in the *Pearson Learning Management System Online Assistance*.
- Once you have created your student user and added an assignment, log in to the Pearson Learning Management System (LMS) as this user. See “Logging In” in the *Pearson Learning Management System Online Assistance*.
- Select the Math course that you assigned and click to launch the course.

### Taking a Session

Every session consists of a background theme and an animated character that guides you through the course. The default background theme and the animated character change according to the grade level and session.

A neutral theme, which has no animated character, is available in grades 6-8. When a character is available, students in these grades can select from a male or female character.

Students are allowed to choose their theme at the start of the course and this theme will remain with them for the duration of the course. If a student does not select a theme, the default theme for that grade will be assigned. The student’s current theme will determine the look of the icons.

**NOTE:** The sample screens shown here help you understand the various features in the course and may not resemble the screens you see when you take your session.

## ***Animated Character***

When you choose an animated character theme and start an exercise, the animated character guides you through a session. It responds when you answer a question. The response of the character indicates if your answer is correct or incorrect, or if you did not answer the question in the prescribed time.

## ***Numeric Keypad***

When you run a computation-based exercise, you see a numeric keypad on your screen. You can use the numeric keypad or the keyboard to enter your answer, and then click **Enter**.

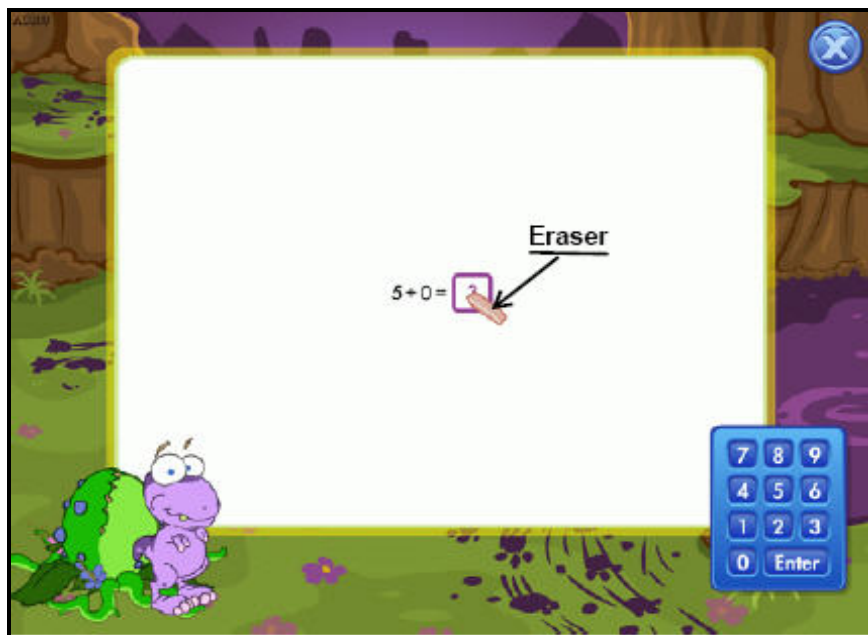
## ***Changing Your Answer***

You can change the answer before you submit it by using the Eraser tool.

**To change your answer:**

1. Move your mouse pointer over the answer and the icon changes to an eraser.
2. Click to erase your answer.
3. Click or type the new answer, and then click Enter.

**Figure 2-1 Animated Character, Numeric Keypad, and Eraser Tool**



## ***Repeating the Audio***

**To repeat the audio of the Exercise Question (Roll-over Audio):**

1. Move your mouse pointer over the question.
2. When the pointer becomes a speaker, click it to hear the question again.






# Default Themes





SuccessMaker Math has a default theme for each grade level. A theme consists of introductory animations, characters, and a background. As students progress through the course, they see different animations, characters, and backgrounds.

Default themes are assigned to specific grades as shown in Table 2-1; however, students can choose between three themes as shown in [Table 2-2 Theme Selections](#). Grades 6-8 can select a male or female character that will display throughout the assignment.

**Table 2-1 Default Themes**

| Grade | Theme     | Characters  | Image  |
|-------|-----------|---|--|
| K-1   | Barnyard  | The seal runs away from the traveling circus and makes friends with barnyard animals. |    |
| 2-3   | Dinosaurs | Baby dinosaurs travel to various exotic destinations.                                 |  |
| 4     | Pup-dog   | Pup-dog meets friends and visitors throughout the year.                               |  |



| Grade | Theme               | Characters   | Image  |
|-------|---------------------|--|--|
| 5     | Space               | An Intergalactic Express deliveryman whose route takes him all over the universe.  |    |
| 6     | Monster Dates       | Cool monsters enjoying social activities such as bowling, miniature golf, parties, and malt shops. Students can select a male or female monster character. |    |
| 7     | Cats on a Road Trip | Cat Teenagers on a cross-country vacation. Students can select a male or female cat character.   |  |
| 8     | Neutral Background  | Neutral screen without characters for students who want a more mature environment.   |  |

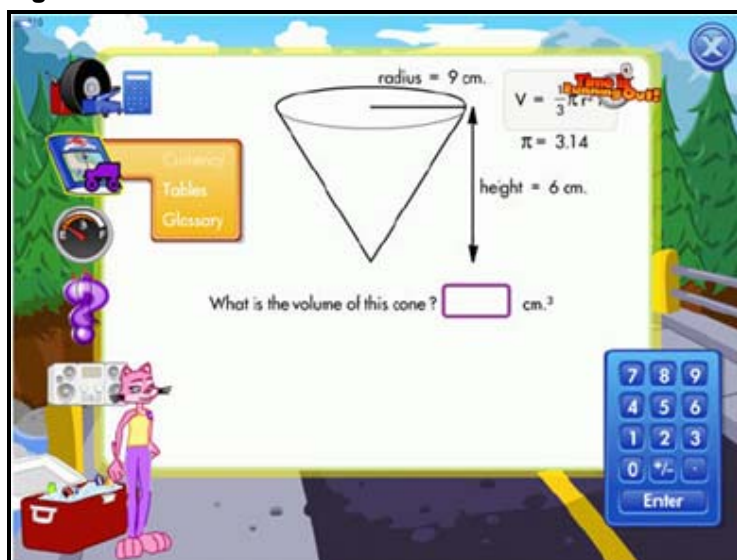
**Table 2-2 Theme Selections**

| Grades | Theme Selections   |
|--------|--|
| K–2    | <ul style="list-style-type: none"> <li>• Barnyard</li> <li>• Dinosaurs</li> <li>• Pup-dog</li> </ul>                       |
| 3–5    | <ul style="list-style-type: none"> <li>• Dinosaurs</li> <li>• Pup-dog</li> <li>• Space</li> </ul>                          |
| 6–8    | <ul style="list-style-type: none"> <li>• Monster Dating</li> <li>• Cats Road Trip</li> <li>• Neutral Background</li> </ul> |

## Using the Student Resources

Student resources are tools within the course that can help the student learn. The use of a student resource briefly interrupts an exercise. The student resource icons appear when you click the object next to the animated character on the interface.

**Figure 2-2 Student Resources**



Most resources are available when you use the default enrollment values for the enrollment options. If a resource is deactivated, its icon appears dimmed.

The student resource icons appear differently in the various themes within SuccessMaker Math. To know what a particular icon represents, move your mouse pointer over the icon to see and hear the name of the resource.

## Audio

You can use the audio resource to repeat the instructions and to increase or decrease the volume of the audio. Audio is available for all exercises in levels K–8.

## Show Answer

Click the **Show Answer** icon to see SuccessMaker solve the current problem. This feature may be used up to three times for any given skill objective within a session and does not count towards the student's attempts. The use of the Show Answer function is shown in the Student Performance Report, but is not counted as an attempt anywhere in the system.

## Check Progress

The Check Progress resource enables students to access a progress report that shows their score in the current session. You can activate, deactivate, or limit this resource before or after the start of the assignment using the enrollment options in the LMS. If the resource is deactivated or the student has reached the set limit, the Daily Progress Report icon appears grayed out.

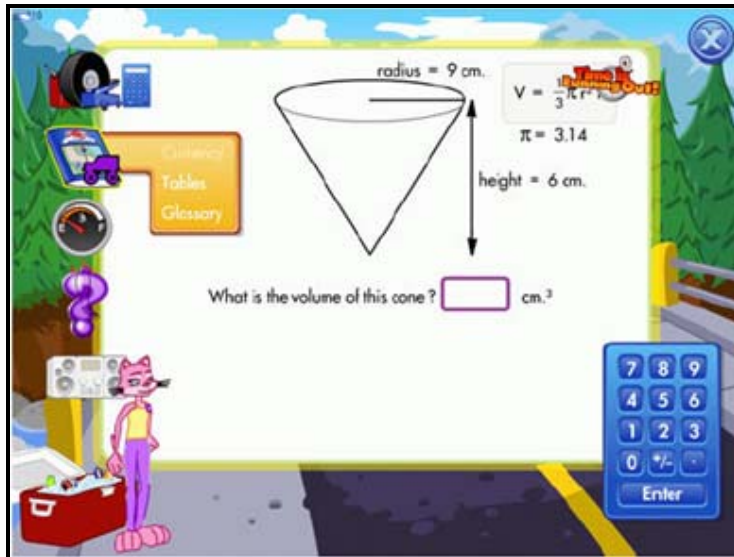
Figure 2-3 Checking Progress



## Reference

The Reference resource provides a glossary, tables, and currency cards. The Reference resource is always available unless you deactivate it in the enrollment options in the LMS.

Figure 2-4 Reference Resource



## Glossary

The Glossary provides definitions, illustrations, and animations for terms and concepts included in the SuccessMaker Math course.

1. To open the glossary, click the **Reference** icon, and then click **Glossary**.
2. To find a word in the glossary, type the word in the search box, and then click **Search** or click on the first letter of the word in the letter column and use the up and down arrows in the next column to locate the word.

Figure 2-5 Glossary



## Tables

The Tables tool provides sets of cards with useful mathematical information. To select the Tables tool, click the **Reference** icon, click **Tables**, and then click the table you want to view.

Figure 2-6 Tables



## Currency

The Currency tool provides cards containing facts about different coins and bills.

1. To select the Currency tool, click the **Reference** icon, and then click **Currency**. A menu of coins and bills available with the Currency tool appears.
2. Click the coin or bill you want to view, and then click on the arrows that appear on the card to see the other side of the coin or bill.

Figure 2-7 Currency

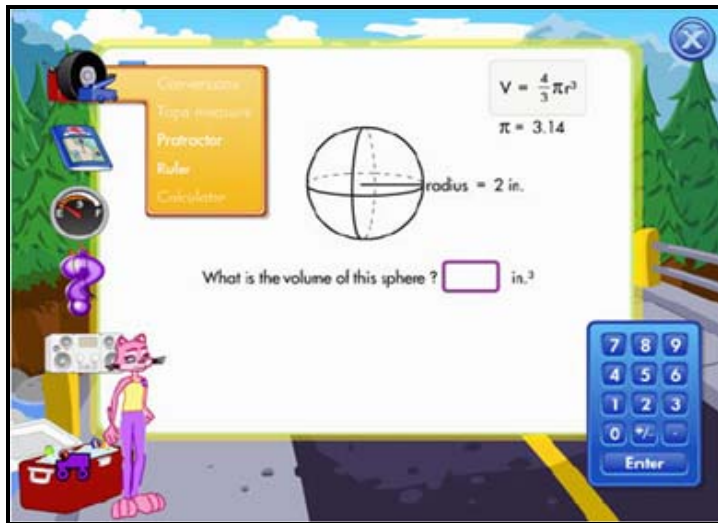




## Tools

The Tools resource contains a ruler, protractor, tape measure, and calculator you can use to measure the figure on the screen. Click the **Tools** icon, and then click the tool you want. A dimmed (grayed out) menu item indicates that the tool is not available.

Figure 2-8 Tools



## Calculator

The calculator automatically displays for complicated calculations. It can be minimized to view the results of your calculation, which is useful when an answer with more than four digits.

### To use the calculator:

1. Click the calculator keys or press the keys on your computer keyboard or keypad.
2. Click **Off** to close the calculator tool.

Figure 2-9 Calculator



## Tutorials

The Tutorial icon is displayed when one is available for a particular exercise. Some tutorials present a step-by-step exercise solution similar to the exercise the student is working. Tutorials do not alter the student's score in the session. See [Tutorials](#) for more information.

To start a Tutorial, click the **Tutorial** icon and follow the instructions. Once the tutorial is complete, you are returned to the exercise.

Figure 2-10 Tutorial Icons

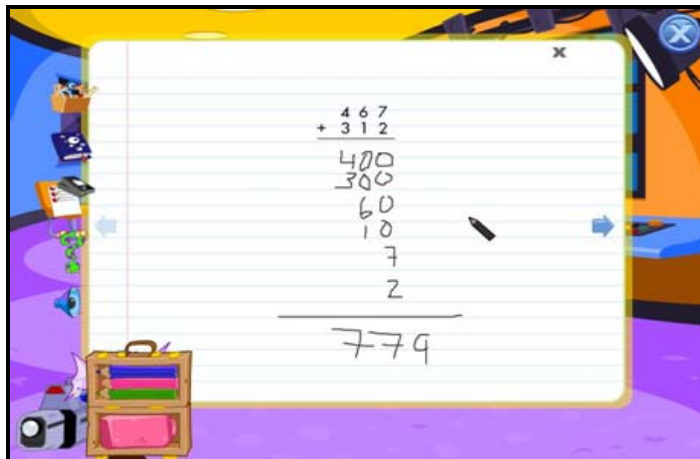


## Scratchpad Activities

Scratchpad activities allow students to “write” out math computations in the learning environment using the computer mouse. Activities are available in skill objectives for addition, subtraction, and multiplication without decimals.

The teacher can turn the Scratchpad setting on or off at any time as often as necessary for a custom course, group assignment, or student assignment. When the Scratchpad setting is off, the icon is not visible to the student. If the Scratchpad setting is changed while an assignment is in progress, the change will be visible to the student the next time the course is launched.

Figure 2-11 Scratchpad Activity



## Marking Answers in Your Session

To get the most out of your sample session, use a variety of answering techniques to see how the course reacts to your responses. For example, answer questions in both a correct and incorrect manner. In addition, mark the right answer on a second attempt.

## Idle Time

During your sample session, exhaust the idle time for a question. The system monitors the amount of time during which there has been no activity (mouse movement, keyboard entry, etc.).

An animated graphic appears one minute before the set Idle Time. For example, if the Idle Time is set at five minutes, the pop-up appears at four minutes and remains for another minute unless action is taken.

## Ending Your Session

When the time expires, the system shows you the progress for this session, logs you out of the course, and returns you to the Log In page.

If a session is inactive for more than 30 minutes, the session is closed and you are returned to the Log In page. You can exit the course prior to the end of the session time by clicking on the **X** in the top right of the screen. If you choose to exit the course, the system returns to the list of assignments.



# 3

## Preparing for Use with Students

Effective implementation of SuccessMaker Math in a lab setting or your classroom involves careful scheduling of computer time and proper attention to the procedures provided by the LMS.

This chapter outlines what is required to start students in the system and gives you some ideas about scheduling in your classroom. To get your students started using the course, you may want to request assistance from your SuccessMaker system administrator or system manager.

### Getting Students Started in SuccessMaker Math

Getting your students started with SuccessMaker Math involves several steps including:

- Assigning the course to students
- Selecting the enrollment options
- Scheduling the student sessions
- Introducing the course to students

#### ***Assigning the Course***

Step-by-step procedures for assigning courses to students can be found in the *Pearson Learning Management System Online Assistance*. You will need to be familiar with the following tasks:

- Creating groups
- Entering new students
- Assigning a course with IP active
- Assigning a course by Concept
- Assigning a course by Standard

Consult your school's system administrator or system manager about adding your students to the system and assigning the courses you have selected.

## ***Selecting the Enrollment Options***

You can edit the enrollment settings for SuccessMaker Math using the LMS. See “Editing Settings for the Math Courseware” in the *Pearson Learning Management System Online Assistance*

SuccessMaker Math gives teachers flexibility to change the enrollment settings. Students can be enrolled at the default levels of the course with IP active, enrolled in assignments in which the teacher has selected the standards, or enrolled in assignments in which the teacher selects specified skill objectives.

## ***Scheduling the Session Length***

You can edit the session length or you can use the SuccessMaker Math default session length of 15 minutes. The default session length is based on the optimum average learning time for students. If you use the course in its default state without customizing by concept or standard, or editing the session, scheduling should be based on 15 minutes. If you customize the course, the session length can be set from 5 to 180 minutes.

## ***Introducing the Course***

Before your students begin their first SuccessMaker Math session, introduce them to some features of the computer and the course. It is a good idea to take your students to a computer and review hardware and software features with them in a hands-on activity.

Be sure to introduce the equipment that the students will use at the computer, such as the headphones, mouse, and keyboard. Also, introduce the software features of the course, such as the Tools and Progress Report, to the students.

# 4

## Using the Course in the Classroom

In addition to providing students with quality learning time, SuccessMaker Math helps teachers improve the instructional experience by providing on-demand performance data.

### Assessing Student Progress

The LMS gives you a variety of tools to view student progress in SuccessMaker Math.

Reports are the primary means of monitoring student progress in the course. They provide the data you need to measure student progress and intervene when necessary. They also enable you to assist your students in several ways, including:

- Monitoring individual student performance over short- and long-term periods
- Identifying each student's strengths and weaknesses and planning appropriate instruction or intervention
- Reporting and comparing long-term student progress within student groups or between classes

As each student progresses through the course, the LMS maintains continuous records on the student's performance which it then uses to make decisions about the student's path in the course. The performance data is stored for each student and displayed on the reports.

See "Working with Reports" in the *Pearson Learning Management System Online Assistance* for details.

# 5

## Scope and Sequence

### Overview

Although SuccessMaker Math is designed as a self-contained curriculum, you can also customize the content of assignments to provide intervention or complement your existing curriculum.

The Scope and Sequence chart is a comprehensive list of the concepts, topics, and skill objectives taught in each SuccessMaker Math strand. It is designed to help teachers quickly customize a SuccessMaker Math assignment.

The Scope and Sequence chart can be a vital classroom companion by:

- Providing an overview of the SuccessMaker Math curriculum and showing what SuccessMaker aims to teach students in each strand.
- Assisting with lesson planning by quickly finding SuccessMaker Math topics that supplement existing lesson plans.

Teachers can preview these skill objectives by logging into the LMS. See “Managing Courses” in the *Pearson Learning Management System Online Assistance* for details.

# Kindergarten

| Grade | Strand        | MCS* Level | LO ID         | Concept                                | Topic                                    | Description   |
|-------|---------------|------------|---------------|--|--|---|
| K     | Data Analysis | PR090      | SMMA_LO_01124 | Graph, Chart, and Table Interpretation | Read and Interpret Pictographs           | Read a pictograph (3 categories, 1 to 9 items per category).                |
| K     | Geometry      | GE054      | SMMA_LO_00529 | Attributes of Two-Dimensional Figures  | Identify Two-Dimensional Figures by Name | Identify circles or squares by name.  |
| K     | Geometry      | GE057      | SMMA_LO_00530 | Attributes of Two-Dimensional Figures  | Identify Two-Dimensional Figures by Name | Identify triangles or rectangles by name.                                   |
| K     | Geometry      | GE060      | SMMA_LO_00531 | Attributes of Two-Dimensional Figures  | Identify Two-Dimensional Figures by Name | Identify a geometric figure (circle, triangle, rectangle, or square).       |
| K     | Geometry      | GE097      | SMMA_LO_00541 | Attributes of Two-Dimensional Figures  | Identify the Figure That Is Different    | Identify the figure that is a different color from a given figure.          |
| K     | Geometry      | GE003      | SMMA_LO_00514 | Attributes of Two-Dimensional Figures  | Match Figures Based on Their Attributes  | Match simple geometric figures that have the same size, shape, and color.   |
| K     | Geometry      | GE006      | SMMA_LO_00515 | Attributes of Two-Dimensional Figures  | Match Figures Based on Their Attributes  | Match pictures that are identical.  |
| K     | Geometry      | GE009      | SMMA_LO_00516 | Attributes of Two-Dimensional Figures  | Match Figures Based on Their Attributes  | Match geometric figures that have the same size and shape (simple figures). |
| K     | Geometry      | GE015      | SMMA_LO_00517 | Attributes of Two-Dimensional Figures  | Match Figures Based on Their Attributes  | Match pictures with shapes that are alike.                                  |

| Grade | Strand      | MCS* Level | LO ID         | Concept                               | Topic   | Description  |
|-------|-------------|------------|---------------|---------------------------------------|---|--|
| K     | Geometry    | GE075      | SMMA_LO_00534 | Attributes of Two-Dimensional Figures | Match Figures Based on Their Attributes                         | Move puzzle pieces to complete a puzzle (2 pieces).              |
| K     | Geometry    | GE018      | SMMA_LO_00518 | Geometric Comparisons                 | Relate the Face of a Plane Figure to a Three-Dimensional Figure | Match the face of a geometric solid to a plane figure.           |
| K     | Geometry    | GE039      | SMMA_LO_00524 | Position and Location                 | Describe the Relative Positions of Objects                      | Identify the object on the top, in the middle, or on the bottom. |
| K     | Geometry    | GE042      | SMMA_LO_00525 | Position and Location                 | Describe the Relative Positions of Objects                      | Identify the object on the left or the right.                    |
| K     | Geometry    | GE045      | SMMA_LO_00526 | Position and Location                 | Describe the Relative Positions of Objects                      | Identify the picture on the left or right.                       |
| K     | Geometry    | GE063      | SMMA_LO_00532 | Position and Location                 | Describe the Relative Positions of Objects                      | Identify the object inside or outside a convex figure.           |
| K     | Geometry    | GE093      | SMMA_LO_00540 | Position and Location                 | Describe the Relative Positions of Objects                      | Identify the object that is the top, middle or bottom one.       |
| K     | Measurement | ME090      | SMMA_LO_00698 | Money                                 | Identify Coin Values  | Identify nickels or dimes.                                       |
| K     | Measurement | ME050      | SMMA_LO_00690 | Money                                 | Identify Monetary Amounts (Pennies)                             | Match sets of pennies to the amounts (1 to 5 cents).             |
| K     | Measurement | ME095      | SMMA_LO_00699 | Money                                 | Identify Monetary Amounts (Pennies)                             | Enter the amount of money shown (1 to 5 cents in pennies).       |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic   | Description   |
|-------|-------------|------------|---------------|------------------|---|---|
| K     | Measurement | ME010      | SMMA_LO_00686 | Time             | Compare Activities by Elapsed Time              | Compare events according to duration, such as more time than or less time than. |
| K     | Measurement | ME098      | SMMA_LO_00700 | Time             | Recognize and Order Days, Weeks, and Months     | Enter the missing date on a calendar.   |
| K     | Measurement | ME085      | SMMA_LO_00697 | Time             | Tell Time Using an Analog Clock                 | Identify the hour or minute hand of a clock.                                    |
| K     | Measurement | ME040      | SMMA_LO_00689 | Units of Measure | Compare and Order Objects by Capacity or Volume | Match amounts of liquid in containers (3 amounts).                              |
| K     | Measurement | ME080      | SMMA_LO_00696 | Units of Measure | Compare and Order Objects by Capacity or Volume | Identify the container with the greatest or least capacity.                     |
| K     | Measurement | ME020      | SMMA_LO_00687 | Units of Measure | Compare the Lengths of Familiar Objects         | Match objects of the same height (3 heights).                                   |
| K     | Measurement | ME030      | SMMA_LO_00688 | Units of Measure | Compare the Lengths of Familiar Objects         | Match objects of the same length (3 lengths).                                   |
| K     | Measurement | ME065      | SMMA_LO_00693 | Units of Measure | Compare the Lengths of Familiar Objects         | Identify the shortest or longest object.  |
| K     | Measurement | ME070      | SMMA_LO_00694 | Units of Measure | Compare the Lengths of Familiar Objects         | Identify the tallest object.  |
| K     | Measurement | ME060      | SMMA_LO_00692 | Units of Measure | Compare the Size of Familiar Objects            | Identify a pair of objects that are not the same size.                          |
| K     | Measurement | ME075      | SMMA_LO_00695 | Units of Measure | Compare the Size of Familiar Objects            | Identify the biggest or smallest object.  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic                               | Description   |
|-------|-----------------------------|------------|---------------|--------------|-------------------------------------|---|
| K     | Number Sense and Operations | NC085      | SMMA_LO_00946 | Number Sense | Compare Numbers to 10               | Identify a number that is greater than or less than a spoken number (1 to 9).   |
| K     | Number Sense and Operations | NC087      | SMMA_LO_00947 | Number Sense | Compare Numbers to 10               | Identify the number with the greatest value (1 to 9).                           |
| K     | Number Sense and Operations | NC072      | SMMA_LO_00941 | Number Sense | Identify Ordinal Numbers to 5th     | Identify the nth object in a sequence (first to fifth).                         |
| K     | Number Sense and Operations | NC095      | SMMA_LO_00950 | Number Sense | Order Numbers to 10                 | Order four numbers from least to greatest (1 to 9).                             |
| K     | Number Sense and Operations | NC067      | SMMA_LO_00939 | Number Sense | Sequence Numbers                    | Find the next number in a sequence, counting by 1's (1 to 5).                   |
| K     | Number Sense and Operations | NC070      | SMMA_LO_00940 | Number Sense | Sequence Numbers                    | Find the next number in a sequence, counting by 1's (1 to 5).                   |
| K     | Number Sense and Operations | NC090      | SMMA_LO_00948 | Number Sense | Sequence Numbers                    | Find the next number in a sequence, counting by 1's (1 to 9).                   |
| K     | Number Sense and Operations | NC092      | SMMA_LO_00949 | Number Sense | Sequence Numbers                    | Find the number that comes before a given number, counting by 1's (1 to 9).     |
| K     | Number Sense and Operations | NC097      | SMMA_LO_00951 | Number Sense | Sequence Numbers                    | Find a missing number in a sequence, counting by 1's (1 to 20).                 |
| K     | Number Sense and Operations | NC040      | SMMA_LO_00929 | Number Sense | Use Groups to Compare Numbers to 10 | Make a group with the same number of objects as a given group (6 to 9 objects). |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                               | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|-------------------------------------|---|
| K     | Number Sense and Operations | NC045      | SMMA_LO_00930 | Number Sense            | Use Groups to Compare Numbers to 10 | Make a group with one more object than a given group (six to nine objects).     |
| K     | Number Sense and Operations | NC047      | SMMA_LO_00931 | Number Sense            | Use Groups to Compare Numbers to 10 | Make a group with one fewer object than a given group (6 to 9 objects).         |
| K     | Number Sense and Operations | NC005      | SMMA_LO_00922 | Number Sense            | Use Groups to Compare Numbers to 5  | Identify a set with the same number of objects as a given set (1 to 5 objects). |
| K     | Number Sense and Operations | NC010      | SMMA_LO_00923 | Number Sense            | Use Groups to Compare Numbers to 5  | Identify a group with more objects than a given group (1 to 5 objects).         |
| K     | Number Sense and Operations | NC015      | SMMA_LO_00924 | Number Sense            | Use Groups to Compare Numbers to 5  | Identify a group with fewer objects than a given group (1 to 5 objects).        |
| K     | Number Sense and Operations | NC025      | SMMA_LO_00926 | Number Sense            | Use Groups to Compare Numbers to 5  | Make a set with the same number of objects as a given set (1 to 5 objects).     |
| K     | Number Sense and Operations | NC030      | SMMA_LO_00927 | Number Sense            | Use Groups to Compare Numbers to 5  | Make a group with one more object than a given group (one to five objects).     |
| K     | Number Sense and Operations | NC035      | SMMA_LO_00928 | Number Sense            | Use Groups to Compare Numbers to 5  | Make a group with one fewer object than a given group (1 to 5 objects).         |
| K     | Number Sense and Operations | AD030      | SMMA_LO_00003 | Operations with Numbers | Add Whole Numbers Using Sets        | Count two sets of objects to find the total (sums 2 to 4).                      |
| K     | Number Sense and Operations | AD040      | SMMA_LO_00004 | Operations with Numbers | Add Whole Numbers Using Sets        | Count two sets of objects to find the total (sums 4 to 6).                      |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| K     | Number Sense and Operations | AD050      | SMMA_LO_00005 | Operations with Numbers | Add Whole Numbers Using Sets                          | Count two set of objects to find the total (sums 2 to 5).                            |
| K     | Number Sense and Operations | AD060      | SMMA_LO_00006 | Operations with Numbers | Add Whole Numbers Using Sets                          | Count two sets of objects to find the total (sums 6 to 10).                          |
| K     | Number Sense and Operations | AD070      | SMMA_LO_00007 | Operations with Numbers | Add Whole Numbers Using Sets                          | Count the objects in two sets (sums 1 to 5).   |
| K     | Number Sense and Operations | AD080      | SMMA_LO_00008 | Operations with Numbers | Add Whole Numbers Using Sets                          | Count the objects in two sets (sums 6 to 10).  |
| K     | Number Sense and Operations | PS050      | SMMA_LO_01228 | Operations with Numbers | Connect Pictorial Model with Addition Number Sentence | Identify a picture that represents an addition problem (sums 2 to 6).                |
| K     | Number Sense and Operations | WP080      | SMMA_LO_01537 | Operations with Numbers | Solve Addition Problems in Context                    | Act out the solution to an addition problem in context (three addends, sums 1 to 9). |
| K     | Number Sense and Operations | WP050      | SMMA_LO_01535 | Operations with Numbers | Solve Addition/Subtraction Problems in Context        | Solve a problem in context by adding or subtracting 1.                               |
| K     | Number Sense and Operations | SU060      | SMMA_LO_01411 | Operations with Numbers | Solve Subtraction Problems in Context                 | Solve a subtraction problem in context (minuends 2 to 5, pictorial models).          |
| K     | Number Sense and Operations | SU070      | SMMA_LO_01412 | Operations with Numbers | Solve Subtraction Problems in Context                 | Solve a subtraction problem in context (minuends 2 to 5, pictorial models).          |
| K     | Number Sense and Operations | WP065      | SMMA_LO_01536 | Operations with Numbers | Solve Subtraction Problems in Context                 | Act out the solution to a subtraction problem in context (minuends 1 to 6).          |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| K     | Number Sense and Operations | WP095      | SMMA_LO_01538 | Operations with Numbers | Solve Subtraction Problems in Context                | Act out the solution to multi-step problem in context (addends, minuends 1 to 4). |
| K     | Number Sense and Operations | SU080      | SMMA_LO_01413 | Operations with Numbers | Subtract Using Basic Math Facts                      | Subtract using basic math facts (minuends 2 to 10).                               |
| K     | Number Sense and Operations | PS070      | SMMA_LO_01229 | Operations with Numbers | Write Addition Number Sentences                      | Write a number sentence for an addition problem (sums 2 to 5).                    |
| K     | Number Sense and Operations | NC075      | SMMA_LO_00942 | Place Value             | Recognize Number Values to 10                        | Enter the number shown (1 to 9).  |
| K     | Number Sense and Operations | AD020      | SMMA_LO_00002 | Place Value             | Recognize Number Values to 10 Using Concrete Objects | Enter the number shown (5 to 9).  |
| K     | Number Sense and Operations | NC060      | SMMA_LO_00936 | Place Value             | Recognize Number Values to 10 Using Concrete Objects | Count specific objects within a larger set (1 to 6 objects).                      |
| K     | Number Sense and Operations | NC077      | SMMA_LO_00943 | Place Value             | Recognize Number Values to 10 Using Concrete Objects | Count objects not arranged in a row (6 to 9 objects).                             |
| K     | Number Sense and Operations | NC082      | SMMA_LO_00945 | Place Value             | Recognize Number Values to 10 Using Concrete Objects | Make a group with 6 to 9 objects.   |
| K     | Number Sense and Operations | NC099      | SMMA_LO_00952 | Place Value             | Recognize Number Values to 10 Using Concrete Objects | Match each set of tally marks to a total (1 to 9).                                |
| K     | Number Sense and Operations | NC050      | SMMA_LO_00932 | Place Value             | Recognize Number Values to 5                         | Enter the number shown (1 to 5).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept     | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------|--|---|
| K     | Number Sense and Operations | AD010      | SMMA_LO_00001 | Place Value | Recognize Number Values to 5 Using Concrete Objects          | Enter the number shown (0 to 4).                                    |
| K     | Number Sense and Operations | NC052      | SMMA_LO_00933 | Place Value | Recognize Number Values to 5 Using Concrete Objects          | Count objects arranged in a row (1-5 objects).                      |
| K     | Number Sense and Operations | NC057      | SMMA_LO_00935 | Place Value | Recognize Number Values to 5 Using Concrete Objects          | Count objects not arranged in a row (1 to 5 objects).               |
| K     | Number Sense and Operations | NC065      | SMMA_LO_00938 | Place Value | Recognize Number Values to 5 Using Concrete Objects          | Make a group with one to five objects.                              |
| K     | Number Sense and Operations | NC001      | SMMA_LO_00921 | Place Value | Recognize Number Values to 5 Using One-to-One Correspondence | Match objects to show a one-to-one correspondence (2 to 5 objects). |
| K     | Number Sense and Operations | NC020      | SMMA_LO_00925 | Place Value | Recognize Number Values to 5 Using One-to-One Correspondence | Move objects to show a one-to-one correspondence (1 to 5 objects).  |
| K     | Number Sense and Operations | NC080      | SMMA_LO_00944 | Place Value | Relate Words, Models, or Numbers to 10                       | Identify a number from a spoken number (6 to 9).                    |
| K     | Number Sense and Operations | NC055      | SMMA_LO_00934 | Place Value | Relate Words, Models, or Numbers to 5                        | Match a digit to a set with that number of objects (0 to 5).        |
| K     | Number Sense and Operations | NC062      | SMMA_LO_00937 | Place Value | Relate Words, Models, or Numbers to 5                        | Identify a number from a spoken number (1 to 5).                    |

| Grade | Strand                           | MCS* Level | LO ID         | Concept           | Topic                                 | Description   |
|-------|----------------------------------|------------|---------------|-------------------|---------------------------------------|---|
| K     | Patterns, Algebra, and Functions | PS020      | SMMA_LO_01227 | Logical Reasoning | Identify the Unrelated Figure         | Use logical reasoning to identify the item that does not belong in a group. |
| K     | Patterns, Algebra, and Functions | GE024      | SMMA_LO_00520 | Patterns          | Extend a Pattern of Geometric Figures | Extend a 1-2-1-2 pattern of geometric figures.                              |
| K     | Patterns, Algebra, and Functions | GE033      | SMMA_LO_00522 | Patterns          | Extend a Pattern of Geometric Figures | Extend a 1-1-2-2 pattern of geometric figures.                              |
| K     | Patterns, Algebra, and Functions | GE021      | SMMA_LO_00519 | Patterns          | Extend a Pattern of Pictures          | Extend a 1-2-1-2 pattern of pictures.                                       |
| K     | Patterns, Algebra, and Functions | GE030      | SMMA_LO_00521 | Patterns          | Extend a Pattern of Pictures          | Extend a 1-1-2-2 pattern of pictures.                                       |
| K     | Patterns, Algebra, and Functions | GE090      | SMMA_LO_00539 | Patterns          | Match a Pattern of Geometric Figures  | Match patterns of geometric figures.  |
| K     | Patterns, Algebra, and Functions | GE069      | SMMA_LO_00533 | Patterns          | Match a Pattern of Pictures           | Identify patterns of pictures that are the same.                            |

\* Math Concepts and Skills

## Grade 1

| Grade | Strand        | MCS* Level | LO ID         | Concept                                | Topic                       | Description                               |
|-------|---------------|------------|---------------|--|-----------------------------|---|
| 1     | Data Analysis | PR170      | SMMA_LO_01132 | Graph, Chart, and Table Interpretation | Construct Charts and Tables | Create a table from a vertical bar graph. |

| Grade | Strand        | MCS* Level | LO ID         | Concept                                | Topic   | Description   |
|-------|---------------|------------|---------------|--|---|---|
| 1     | Data Analysis | PR120      | SMMA_LO_01127 | Graph, Chart, and Table Interpretation | Construct a Bar Graph   | Draw the height of a bar that represents one column from a vertical bar graph.  |
| 1     | Data Analysis | PR150      | SMMA_LO_01130 | Graph, Chart, and Table Interpretation | Construct a Vertical Bar Graph Using Data from a Chart or Table   | Create a vertical bar graph from a table and interpret data in the graph.   |
| 1     | Data Analysis | PR190      | SMMA_LO_01134 | Graph, Chart, and Table Interpretation | Identify the Bar Graph That Represents Data from a Chart or Table | Identify a vertical bar graph that represents data in a table.  |
| 1     | Data Analysis | PR100      | SMMA_LO_01125 | Graph, Chart, and Table Interpretation | Read and Interpret a Vertical Bar Graph                           | Enter the height of a bar that represents a column from a vertical bar graph.   |
| 1     | Data Analysis | PR110      | SMMA_LO_01126 | Graph, Chart, and Table Interpretation | Read and Interpret a Vertical Bar Graph                           | Label the height of three vertical bars that represent columns from a vertical bar graph.   |
| 1     | Data Analysis | PR160      | SMMA_LO_01131 | Graph, Chart, and Table Interpretation | Read and Interpret a Vertical Bar Graph                           | Interpret the shorter or taller bar of a vertical bar graph as having fewer or more items.  |
| 1     | Data Analysis | PR180      | SMMA_LO_01133 | Graph, Chart, and Table Interpretation | Read and Interpret a Vertical Bar Graph                           | Identify the two-column vertical bar graph that shows one category has fewer than, the same number as, or more than the other category. |
| 1     | Data Analysis | NC125      | SMMA_LO_00963 | Measures of Center and Spread          | Identify Numbers within a Range                                   | Identify two numbers within a range (1 to 9).   |

| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic                                      | Description   |
|-------|----------|------------|---------------|---|--|---|
| 1     | Geometry | GE132      | SMMA_LO_00550 | Attributes of Three-Dimensional Figures | Identify Figures Based on Their Attributes | Identify 3-, 4-, and 5-sided figures.   |
| 1     | Geometry | GE190      | SMMA_LO_00565 | Attributes of Three-Dimensional Figures | Identify Figures Based on Their Attributes | Identify a shape by two positive tests, e.g. red, circle.                       |
| 1     | Geometry | NC115      | SMMA_LO_00959 | Attributes of Three-Dimensional Figures | Identify Figures Based on Their Attributes | Identify the group with the greatest number of shapes of a given type (1 to 6). |
| 1     | Geometry | GE108      | SMMA_LO_00544 | Attributes of Three-Dimensional Figures | Identify Two-Dimensional Figures by Name   | Identify circles or squares by name.  |
| 1     | Geometry | GE116      | SMMA_LO_00546 | Attributes of Three-Dimensional Figures | Identify Two-Dimensional Figures by Name   | Identify triangles or rectangles by name.                                       |
| 1     | Geometry | GE120      | SMMA_LO_00547 | Attributes of Three-Dimensional Figures | Identify the Figure That Is Different      | Identify the figure with a different shape.                                     |
| 1     | Geometry | GE151      | SMMA_LO_00553 | Attributes of Three-Dimensional Figures | Identify the Figure That Is Different      | Identify the figure that has a different number of sides from a given figure.   |
| 1     | Geometry | GE124      | SMMA_LO_00548 | Attributes of Three-Dimensional Figures | Match Figures Based on Their Attributes    | Match a shape to a picture containing that shape.                               |
| 1     | Geometry | GE128      | SMMA_LO_00549 | Attributes of Three-Dimensional Figures | Match Figures Based on Their Attributes    | Identify shapes that are alike.   |
| 1     | Geometry | GE154      | SMMA_LO_00554 | Attributes of Three-Dimensional Figures | Match Figures Based on Their Attributes    | Match a plane figure to a geometric design that uses the figure.                |

| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic                                      | Description  |
|-------|----------|------------|---------------|---|--|--|
| 1     | Geometry | GE163      | SMMA_LO_00557 | Attributes of Three-Dimensional Figures | Match Figures Based on Their Attributes    | Identify matching congruent figures under rotation and/or reflection.                              |
| 1     | Geometry | GE187      | SMMA_LO_00564 | Attributes of Three-Dimensional Figures | Match Figures Based on Their Attributes    | Identify puzzle pieces needed to make a given shape, and then complete the puzzle (4 to 6 pieces). |
| 1     | Geometry | GE196      | SMMA_LO_00567 | Attributes of Three-Dimensional Figures | Match Figures Based on Their Attributes    | Identify matching congruent geometric solids.  |
| 1     | Geometry | GE104      | SMMA_LO_00543 | Position and Location                   | Describe the Relative Positions of Objects | Identify the object that is the top, middle, or bottom one.  |
| 1     | Geometry | GE136      | SMMA_LO_00551 | Position and Location                   | Describe the Relative Positions of Objects | Match the pictures that show objects in the same relative position (left or right).                |
| 1     | Geometry | GE144      | SMMA_LO_00552 | Position and Location                   | Describe the Relative Positions of Objects | Determine whether points are outside, inside, or on a geometric figure.                            |
| 1     | Geometry | GE112      | SMMA_LO_00545 | Position and Location                   | Match Congruent Two-Dimensional Figures    | Match congruent irregular polygons.  |
| 1     | Geometry | GE181      | SMMA_LO_00562 | Position and Location                   | Match Congruent Two-Dimensional Figures    | Match a shape to a set of points to identify congruent figures.                                    |
| 1     | Geometry | GE157      | SMMA_LO_00555 | Position and Location                   | Match Similar Figures                      | Match similar irregular polygons.  |
| 1     | Geometry | GE193      | SMMA_LO_00566 | Position and Location                   | Match Similar Figures                      | Match similar figures in different orientations.   |



| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic   | Description  |
|-------|-------------|------------|---------------|--|---|--|
| 1     | Geometry    | GE178      | SMMA_LO_00561 | Symmetry                               | Figures That Show Symmetry                      | Match halves of figures (left and right).  |
| 1     | Geometry    | GE184      | SMMA_LO_00563 | Symmetry                               | Figures That Show Symmetry                      | Match halves of figures (top and bottom).  |
| 1     | Measurement | ME120      | SMMA_LO_00706 | Measurement of Two-Dimensional Figures | Calculate Area Using Nonstandard Units          | Count squares to find the area (2 to 8 units).                                     |
| 1     | Measurement | ME192      | SMMA_LO_00727 | Money                                  | Identify Coin Equivalencies                     | Identify the coin equivalent to 5, 10, or 25 pennies.                              |
| 1     | Measurement | ME104      | SMMA_LO_00702 | Money                                  | Identify Coin Values                            | Identify the coin worth 1, 5, 10, or 25 cents.                                     |
| 1     | Measurement | ME165      | SMMA_LO_00718 | Money                                  | Identify Coin Values                            | Identify the set of coins worth 10 cents (pennies, nickels, and dimes).            |
| 1     | Measurement | WP116      | SMMA_LO_01541 | Money                                  | Identify Coin Values                            | Identify items that can be purchased for a nickel.                                 |
| 1     | Measurement | ME153      | SMMA_LO_00715 | Money                                  | Identify Monetary Amounts (Pennies and Dimes)   | Enter the amount of money shown (11 to 50 cents in pennies and dimes).             |
| 1     | Measurement | ME140      | SMMA_LO_00711 | Money                                  | Identify Monetary Amounts (Pennies and Nickels) | Enter the amount of money shown (6 to 25 cents in pennies and nickels).            |
| 1     | Measurement | ME168      | SMMA_LO_00719 | Money                                  | Identify Monetary Amounts (Pennies and Nickels) | Identify the given amount of money in coins (5 to 9 cents in pennies and nickels). |
| 1     | Measurement | ME112      | SMMA_LO_00704 | Money                                  | Identify Monetary Amounts (Pennies)             | Enter the amount of money shown (6 to 9 cents in pennies).                         |
| 1     | Measurement | ME124      | SMMA_LO_00707 | Money                                  | Identify Monetary Amounts (Pennies)             | Match sets of pennies to the amounts (6 to 9 cents).                               |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic  | Description  |
|-------|-------------|------------|---------------|------------------|--|--|
| 1     | Measurement | ME177      | SMMA_LO_00722 | Money            | Identify Monetary Amounts (Pennies, Nickels, Dimes, and Quarters)      | Enter the amount of money shown (10 to 19 cents in pennies, nickels, and dimes).                   |
| 1     | Measurement | WP164      | SMMA_LO_01547 | Time             | Determine Elapsed Time on an Analog Clock                              | Solve a problem by identifying the time 1 to 2 hours after a given time (not crossing 12 o'clock). |
| 1     | Measurement | ME180      | SMMA_LO_00723 | Time             | Recognize and Order Days, Weeks, and Months                            | Identify the day of the week of a certain day of the month.  |
| 1     | Measurement | ME150      | SMMA_LO_00714 | Time             | Tell Time Using an Analog Clock  | Tell time to the hour using an analog clock.   |
| 1     | Measurement | ME183      | SMMA_LO_00724 | Time             | Tell Time Using an Analog Clock  | Tell time to the half-hour using an analog clock.  |
| 1     | Measurement | ME156      | SMMA_LO_00716 | Time             | Use Analog and Digital Clocks to Tell Time                             | Tell time to the hour using digital and analog clocks.   |
| 1     | Measurement | ME197      | SMMA_LO_00729 | Units of Measure | Choose the Appropriate Customary Units of Length, Capacity, and Weight | Select the appropriate standard unit of measurement for length, capacity, and weight (customary).  |
| 1     | Measurement | ME132      | SMMA_LO_00709 | Units of Measure | Compare the Size of Familiar Objects                                   | Identify the object that is a different length.  |
| 1     | Geometry    | GE178      | SMMA_LO_00561 | Symmetry         | Figures That Show Symmetry   | Match halves of figures (left and right).  |
| 1     | Measurement | ME144      | SMMA_LO_00712 | Units of Measure | Compare the Size of Familiar Objects                                   | Identify the object that is a different height.  |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic   | Description  |
|-------|-------------|------------|---------------|------------------|---|--|
| 1     | Measurement | WP100      | SMMA_LO_01539 | Units of Measure | Estimate Capacity in Nonstandard Units              | Estimate capacity (nonstandard units).                                       |
| 1     | Measurement | ME116      | SMMA_LO_00705 | Units of Measure | Measure Height and Length in Nonstandard Units      | Count to find how long or tall (2 to 9 nonstandard units).                   |
| 1     | Measurement | ME148      | SMMA_LO_00713 | Units of Measure | Measure Height and Width in Nonstandard Units       | Count to find the height and width (2 to 5 nonstandard units).               |
| 1     | Measurement | ME174      | SMMA_LO_00721 | Units of Measure | Measure Height and Width in Nonstandard Units       | Estimate the height and width (2 to 5 nonstandard units).                    |
| 1     | Measurement | ME186      | SMMA_LO_00725 | Units of Measure | Measure Height and Width in Nonstandard Units       | Identify an object given the height and width in nonstandard units.          |
| 1     | Measurement | ME136      | SMMA_LO_00710 | Units of Measure | Measure Height in Nonstandard Units                 | Find the height (2 to 9 nonstandard units).                                  |
| 1     | Measurement | ME195      | SMMA_LO_00728 | Units of Measure | Measure Height, Length, or Width in Customary Units | Identify an object given the estimated height and width in customary units.  |
| 1     | Measurement | ME108      | SMMA_LO_00703 | Units of Measure | Measure Length in Customary Units                   | Measure the length of an object to the nearest inch (2 to 6 inches).         |
| 1     | Measurement | ME100      | SMMA_LO_00701 | Units of Measure | Measure Length in Nonstandard Units                 | Identify the group of objects that is 1 to 5 nonstandard units long or tall. |
| 1     | Measurement | ME171      | SMMA_LO_00720 | Units of Measure | Measure Length in Nonstandard Units                 | Find the total length of two objects (nonstandard units, sums 2 to 5).       |
| 1     | Measurement | ME128      | SMMA_LO_00708 | Units of Measure | Measure Perimeter in Nonstandard Units              | Count to find the perimeter (3 to 9 nonstandard units).                      |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description   |
|-------|-----------------------------|------------|---------------|--------------|--|---|
| 1     | Number Sense and Operations | WP168      | SMMA_LO_01548 | Estimation   | Estimate Sums to Nearest Ten                     | Estimate the number of objects to the nearest ten (21 to 49 objects).                       |
| 1     | Number Sense and Operations | FR110      | SMMA_LO_00400 | Number Sense | Determine Equal Parts Using Fraction Models      | Identify the model that is divided into equal parts (2 to 8 parts).                         |
| 1     | Number Sense and Operations | FR120      | SMMA_LO_00401 | Number Sense | Determine Equal Parts Using Fraction Models      | Identify the model that is divided into equal parts (2 to 8 parts).                         |
| 1     | Number Sense and Operations | FR130      | SMMA_LO_00402 | Number Sense | Determine Equal Parts Using Fraction Models      | Count the number of equal parts in a fractional model (2 to 8 parts).                       |
| 1     | Number Sense and Operations | FR140      | SMMA_LO_00403 | Number Sense | Determine Fractional Amounts Using Regions/Areas | Count the fractional parts and total number of parts in a region (halves, thirds, fourths). |
| 1     | Number Sense and Operations | NC135      | SMMA_LO_00967 | Number Sense | Identify Ordinal Numbers to 10th                 | Identify the nth object in a sequence (first to seventh).                                   |
| 1     | Number Sense and Operations | NC182      | SMMA_LO_00986 | Number Sense | Identify Ordinal Numbers to 10th                 | Identify the nth object in a sequence (sixth to tenth).                                     |
| 1     | Number Sense and Operations | NC187      | SMMA_LO_00988 | Number Sense | Identify Ordinal Numbers to 10th                 | Move objects so a specific object is in the nth place (sixth to tenth).                     |
| 1     | Number Sense and Operations | NC140      | SMMA_LO_00969 | Number Sense | Identify Ordinal Numbers to 5th                  | Move objects so a specific object is in the nth place (first to fifth).                     |
| 1     | Number Sense and Operations | NC180      | SMMA_LO_00985 | Number Sense | Order Numbers to 100                             | Identify four numbers ordered from least to greatest (two-digit).                           |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic                            | Description  |
|-------|-----------------------------|------------|---------------|--------------|----------------------------------|--|
| 1     | Number Sense and Operations | FR150      | SMMA_LO_00404 | Number Sense | Relate Fraction to Model         | Identify a model that represents a fraction (halves, thirds, fourths).           |
| 1     | Number Sense and Operations | FR160      | SMMA_LO_00405 | Number Sense | Relate Fraction to Model         | Identify a fraction that represents a model (halves, thirds, fourths).           |
| 1     | Number Sense and Operations | FR170      | SMMA_LO_00406 | Number Sense | Relate Fraction to Model         | Identify the set of shapes that represents a fraction (halves, thirds, fourths). |
| 1     | Number Sense and Operations | NC137      | SMMA_LO_00968 | Number Sense | Relate Ordinal Words and Numbers | Identify the ordinal word for the nth object in a sequence (first to fifth).     |
| 1     | Number Sense and Operations | NC185      | SMMA_LO_00987 | Number Sense | Relate Ordinal Words and Numbers | Identify the ordinal word for the nth object in a sequence (sixth to tenth).     |
| 1     | Number Sense and Operations | NC117      | SMMA_LO_00960 | Number Sense | Sequence Numbers                 | Find a missing number in a sequence, counting by 1's (1 to 9).                   |
| 1     | Number Sense and Operations | NC122      | SMMA_LO_00962 | Number Sense | Sequence Numbers                 | Find a number that is one fewer or one greater than a given number (1 to 9).     |
| 1     | Number Sense and Operations | NC142      | SMMA_LO_00970 | Number Sense | Sequence Numbers                 | Find a missing number in a sequence, counting by 1's (10 to 20).                 |
| 1     | Number Sense and Operations | NC172      | SMMA_LO_00982 | Number Sense | Sequence Numbers                 | Find a missing number in a sequence, counting by 1's (11 to 50).                 |
| 1     | Number Sense and Operations | NC175      | SMMA_LO_00983 | Number Sense | Sequence Numbers                 | Find a missing number in a sequence, counting by 1's (51 to 99).                 |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--------------------------------------|---|
| 1     | Number Sense and Operations | NC177      | SMMA_LO_00984 | Number Sense            | Sequence Numbers                     | Find a number that is one less or one more than a given number (two-digit).                       |
| 1     | Number Sense and Operations | NC120      | SMMA_LO_00961 | Number Sense            | Sequence Numbers Using a Number Line | Find a missing number on a number line (0 to 9).  |
| 1     | Number Sense and Operations | NC100      | SMMA_LO_00953 | Number Sense            | Use Groups to Compare Numbers to 10  | Create a set with the same, more, or fewer number of objects than a given group (1 to 9 objects). |
| 1     | Number Sense and Operations | NC102      | SMMA_LO_00954 | Number Sense            | Use Groups to Compare Numbers to 10  | Create a set with one more object than a given set (1 to 9 objects).                              |
| 1     | Number Sense and Operations | NC105      | SMMA_LO_00955 | Number Sense            | Use Groups to Compare Numbers to 10  | Create a set with one fewer object than a given set (1 to 9 objects).                             |
| 1     | Number Sense and Operations | EQ190      | SMMA_LO_00322 | Number Theory           | Add/Subtract Using Fact Families     | Complete fact families with four facts (sums 3 to 10).  |
| 1     | Number Sense and Operations | AD100      | SMMA_LO_00010 | Operations with Numbers | Add Basic Math Facts                 | Add using basic math facts (sums 1 to 5).   |
| 1     | Number Sense and Operations | AD110      | SMMA_LO_00012 | Operations with Numbers | Add Basic Math Facts                 | Add two addends (sums 6 to 10).   |
| 1     | Number Sense and Operations | AD120      | SMMA_LO_00014 | Operations with Numbers | Add Basic Math Facts                 | Add using basic math facts (addends 0 to 5, sums 1 to 5).   |
| 1     | Number Sense and Operations | AD125      | SMMA_LO_00015 | Operations with Numbers | Add Basic Math Facts                 | Add 1 to a number (sums 1 to 10).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|----------------------|---|
| 1     | Number Sense and Operations | AD130      | SMMA_LO_00016 | Operations with Numbers | Add Basic Math Facts | Add two addends (one-digit addends, sums 6 to 10).                |
| 1     | Number Sense and Operations | AD157      | SMMA_LO_00022 | Operations with Numbers | Add Basic Math Facts | Add using basic math facts (sums 11 to 18).                       |
| 1     | Number Sense and Operations | AD163      | SMMA_LO_00024 | Operations with Numbers | Add Basic Math Facts | Add using basic math facts (sums 1 to 18).                        |
| 1     | Number Sense and Operations | AD170      | SMMA_LO_00026 | Operations with Numbers | Add Basic Math Facts | Add three addends (sums 2 to 5).                                  |
| 1     | Number Sense and Operations | AD173      | SMMA_LO_00027 | Operations with Numbers | Add Basic Math Facts | Add three addends (audio presentation, sums 3 to 5).              |
| 1     | Number Sense and Operations | AD177      | SMMA_LO_00028 | Operations with Numbers | Add Basic Math Facts | Add three addends (sums 6 to 10).                                 |
| 1     | Number Sense and Operations | AD183      | SMMA_LO_00030 | Operations with Numbers | Add Basic Math Facts | Add four addends (one-digit addends, sums 3 to 10).               |
| 1     | Number Sense and Operations | AD187      | SMMA_LO_00031 | Operations with Numbers | Add Basic Math Facts | Add three addends (one-digit addends, sums 11 to 19).             |
| 1     | Number Sense and Operations | AD190      | SMMA_LO_00032 | Operations with Numbers | Add Basic Math Facts | Add three addends (one-digit addends, sums 10 to 19).             |
| 1     | Number Sense and Operations | WP108      | SMMA_LO_01540 | Operations with Numbers | Add Basic Math Facts | Solve an addition problem in context (same objects, sums 2 to 5). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                             | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|-----------------------------------|---|
| 1     | Number Sense and Operations | AD105      | SMMA_LO_00011 | Operations with Numbers | Add Basic Math Facts Horizontally | Add using basic math facts displayed horizontally (sums 2 to 5).                      |
| 1     | Number Sense and Operations | AD115      | SMMA_LO_00013 | Operations with Numbers | Add Basic Math Facts Horizontally | Add using basic math facts displayed horizontally (sums 6 to 10).                     |
| 1     | Number Sense and Operations | AD160      | SMMA_LO_00023 | Operations with Numbers | Add Basic Math Facts Horizontally | Add using basic math facts displayed horizontally (sums 10 to 18).                    |
| 1     | Number Sense and Operations | AD180      | SMMA_LO_00029 | Operations with Numbers | Add Basic Math Facts Horizontally | Add three addends displayed horizontally (sums 6 to 10).                              |
| 1     | Number Sense and Operations | WP156      | SMMA_LO_01546 | Operations with Numbers | Add Basic Math Facts in Context   | Solve a problem in context by finding a missing addend (sums 2 to 5).                 |
| 1     | Number Sense and Operations | WP172      | SMMA_LO_01549 | Operations with Numbers | Add Basic Math Facts in Context   | Solve an addition problem with three addends in context (sums 3 to 10).               |
| 1     | Number Sense and Operations | AD150      | SMMA_LO_00020 | Operations with Numbers | Add Consecutive Addends           | Add two consecutive addends (one-digit addends, sums 1 to 17).                        |
| 1     | Number Sense and Operations | AD153      | SMMA_LO_00021 | Operations with Numbers | Add Consecutive Addends           | Add two consecutive addends displayed horizontally (one-digit addends, sums 1 to 17). |
| 1     | Number Sense and Operations | AD135      | SMMA_LO_00017 | Operations with Numbers | Add Doubles                       | Add doubles (sums 2 to 18).   |
| 1     | Number Sense and Operations | AD145      | SMMA_LO_00019 | Operations with Numbers | Add Doubles                       | Add doubles (sums 4 to 18).   |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 1     | Number Sense and Operations | AD167      | SMMA_LO_00025 | Operations with Numbers | Add Multiples of 10   | Add two multiples of 10 (student choice, sums 20 to 90).  |
| 1     | Number Sense and Operations | AD193      | SMMA_LO_00033 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers without Regrouping            | Add two addends (one- and two-digit addends, sums 11 to 99, no regrouping).   |
| 1     | Number Sense and Operations | AD197      | SMMA_LO_00034 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers without Regrouping            | Add two addends (student choice, two-digit addends, sums 21 to 99, no regrouping).                                  |
| 1     | Number Sense and Operations | WP132      | SMMA_LO_01543 | Operations with Numbers | Add/Subtract Money  | Solve an addition problem involving money (sums 3 to 9 cents).  |
| 1     | Number Sense and Operations | ME189      | SMMA_LO_00726 | Operations with Numbers | Combine Sums to 10  | Identify sets of objects that combined have a given sum (sums 6 to 9).  |
| 1     | Number Sense and Operations | EQ180      | SMMA_LO_00321 | Operations with Numbers | Relate Addition/Subtraction Problems to Pictorial Models (Base Ten) | Identify the operation from pictures and contexts (sums 6 to 9, minuends 6 to 9).                                   |
| 1     | Number Sense and Operations | NC190      | SMMA_LO_00989 | Operations with Numbers | Relate Addition/Subtraction Problems to Pictorial Models (Base Ten) | Find the sum or difference when a two-digit number is added to or subtracted from a number (base-ten block models). |
| 1     | Number Sense and Operations | SU100      | SMMA_LO_01414 | Operations with Numbers | Relate Subtraction Problems to Pictorial Models                     | Identify the expression that represents a picture (minuends 2 to 9).  |
| 1     | Number Sense and Operations | SU165      | SMMA_LO_01422 | Operations with Numbers | Relate Subtraction Problems to Pictorial Models                     | Identify the pictorial solution to a subtraction problem (minuends 2 to 9).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 1     | Number Sense and Operations | SU170      | SMMA_LO_01423 | Operations with Numbers | Relate Subtraction Problems to Pictoral Models | Identify the pictorial solution to a problem in context (minuends 4 to 9).                |
| 1     | Number Sense and Operations | WP124      | SMMA_LO_01542 | Operations with Numbers | Relate Subtraction Problems to Pictoral Models | Identify the picture that represents a subtraction problem in context (minuends 2 to 10). |
| 1     | Number Sense and Operations | WP188      | SMMA_LO_01551 | Operations with Numbers | Relate Subtraction Problems to Pictoral Models | Make a picture to solve a two-step problem in context (addition and subtraction).         |
| 1     | Number Sense and Operations | WP196      | SMMA_LO_01552 | Operations with Numbers | Relate Subtraction Problems to Pictoral Models | Make a picture to solve a two-step problem in context (addition and subtraction).         |
| 1     | Number Sense and Operations | NC132      | SMMA_LO_00966 | Operations with Numbers | Skip Counting                                  | Find a missing number in a sequence, counting by 2's (0 to 10).                           |
| 1     | Number Sense and Operations | NC145      | SMMA_LO_00971 | Operations with Numbers | Skip Counting by 5s or 10s                     | Find a missing number in a sequence, counting by 10's (10 to 100, visual support).        |
| 1     | Number Sense and Operations | NC170      | SMMA_LO_00981 | Operations with Numbers | Skip Counting by 5s or 10s                     | Find a missing number in a sequence, counting by 10's (10 to 100).                        |
| 1     | Number Sense and Operations | PS120      | SMMA_LO_01231 | Operations with Numbers | Skip Counting by 5s or 10s                     | Find the missing number in a sequence, counting by 5's or 10's.                           |
| 1     | Number Sense and Operations | WP140      | SMMA_LO_01544 | Operations with Numbers | Solve Addition Problems in Context             | Solve an addition problem in context (different objects, sums 2 to 5).                    |
| 1     | Number Sense and Operations | AD102      | SMMA_LO_01863 | Operations with Numbers | Solve Addition Problems in Context             | Model and apply joining stories to solve problems (sums 1 to 9).                          |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                 | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---------------------------------------|---|
| 1     | Number Sense and Operations | WP148      | SMMA_LO_01545 | Operations with Numbers | Solve Subtraction Problems in Context | Solve a subtraction problem in context (minuends 2 to 5).                               |
| 1     | Number Sense and Operations | WP180      | SMMA_LO_01550 | Operations with Numbers | Solve Subtraction Problems in Context | Solve a subtraction problem in context by finding how many more (minuends 2 to 5).      |
| 1     | Number Sense and Operations | SU185      | SMMA_LO_01426 | Operations with Numbers | Subtract Multiples of 10              | Subtract two multiples of 10 (student choice, minuends 20 to 90, subtrahends 10 to 80). |
| 1     | Number Sense and Operations | SU120      | SMMA_LO_01416 | Operations with Numbers | Subtract Using Basic Math Facts       | Subtract using basic math facts (minuends 0 to 5).                                      |
| 1     | Number Sense and Operations | SU140      | SMMA_LO_01418 | Operations with Numbers | Subtract Using Basic Math Facts       | Subtract using basic math facts (minuends 6 to 9).                                      |
| 1     | Number Sense and Operations | SU150      | SMMA_LO_01419 | Operations with Numbers | Subtract Using Basic Math Facts       | Subtract using basic math facts (minuends 1 to 9).                                      |
| 1     | Number Sense and Operations | SU155      | SMMA_LO_01420 | Operations with Numbers | Subtract Using Basic Math Facts       | Subtract using basic math facts (differences are 0).                                    |
| 1     | Number Sense and Operations | SU160      | SMMA_LO_01421 | Operations with Numbers | Subtract Using Basic Math Facts       | Subtract 1 from a number (minuends 1 to 9).   |
| 1     | Number Sense and Operations | SU175      | SMMA_LO_01424 | Operations with Numbers | Subtract Using Basic Math Facts       | Subtract a number from 10 (subtrahends 1 to 9).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 1     | Number Sense and Operations | SU180      | SMMA_LO_01425 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract a number from its double (differences 1 to 9).                               |
| 1     | Number Sense and Operations | SU190      | SMMA_LO_01427 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract 1 from a number (two-digit minuends, no regrouping).                         |
| 1     | Number Sense and Operations | SU110      | SMMA_LO_01415 | Operations with Numbers | Subtract Using Basic Math Facts Horizontally | Subtract using basic math facts displayed horizontally (minuends 0 to 5).             |
| 1     | Number Sense and Operations | SU130      | SMMA_LO_01417 | Operations with Numbers | Subtract Using Basic Math Facts Horizontally | Subtract using basic math facts displayed horizontally (minuends 6 to 9).             |
| 1     | Number Sense and Operations | SU195      | SMMA_LO_01428 | Operations with Numbers | Subtract Whole Numbers without Regrouping    | Subtract (student choice, minuends 21 to 95, subtrahends 1 to 9, no regrouping).      |
| 1     | Number Sense and Operations | PS100      | SMMA_LO_01230 | Operations with Numbers | Write Addition Number Sentences              | Write a number sentence for an addition problem (sums 2 to 10).                       |
| 1     | Number Sense and Operations | NC152      | SMMA_LO_00974 | Place Value             | Determine Equivalent Number Values to 100    | Enter the number equal to 1 to 9 tens.  |
| 1     | Number Sense and Operations | NC165      | SMMA_LO_00979 | Place Value             | Determine Equivalent Number Values to 100    | Enter the number equal to a given number of ones and tens (0 to 9 tens, 1 to 9 ones). |
| 1     | Number Sense and Operations | NC167      | SMMA_LO_00980 | Place Value             | Determine Equivalent Number Values to 100    | Enter how many tens and ones for a number (two-digit).                                |

| Grade | Strand                      | MCS* Level | LO ID         | Concept     | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------|---|---|
| 1     | Number Sense and Operations | NC197      | SMMA_LO_00991 | Place Value | Determine Equivalent Number Values to 100             | Identify a two-digit number, model, or expression that has a different value. |
| 1     | Number Sense and Operations | NC147      | SMMA_LO_00972 | Place Value | Determine Equivalent Number Values to 20              | Find a number equal to 2 to 9 ones.   |
| 1     | Number Sense and Operations | NC150      | SMMA_LO_00973 | Place Value | Determine Equivalent Number Values to 20              | Enter the number equal to 1 to 9 ones.  |
| 1     | Number Sense and Operations | NC195      | SMMA_LO_00990 | Place Value | Identify Place Value to 1,000,000                     | Find two numbers when given place value clues (two-digit).                    |
| 1     | Number Sense and Operations | NC155      | SMMA_LO_00975 | Place Value | Identify Place Value to 100                           | Enter the number of tens for a given multiple of ten (10 to 90).              |
| 1     | Number Sense and Operations | NC110      | SMMA_LO_00957 | Place Value | Recognize Number Values to 10 Using Concrete Objects  | Count objects arranged in a row (one to nine objects).                        |
| 1     | Number Sense and Operations | NC112      | SMMA_LO_00958 | Place Value | Recognize Number Values to 10 Using Concrete Objects  | Count specific objects within a larger set (6 to 9 objects).                  |
| 1     | Number Sense and Operations | NC157      | SMMA_LO_00976 | Place Value | Recognize Number Values to 100 Using Concrete Objects | Find the number of a set of objects (grouped tens and ones; two-digit).       |
| 1     | Number Sense and Operations | NC107      | SMMA_LO_00956 | Place Value | Recognize Number Values to 5 Using Concrete Objects   | Identify the group of objects that represent a number (1 to 5 objects).       |
| 1     | Number Sense and Operations | NC127      | SMMA_LO_00964 | Place Value | Relate Words, Models, or Numbers to 10                | Identify the number of objects for a word name. (1 to 9 objects).             |

| Grade | Strand                           | MCS* Level | LO ID         | Concept        | Topic   | Description   |
|-------|----------------------------------|------------|---------------|----------------|---|---|
| 1     | Number Sense and Operations      | NC130      | SMMA_LO_00965 | Place Value    | Relate Words, Models, or Numbers to 10        | Identify a number, model, or word with the same value (1 to 9). |
| 1     | Number Sense and Operations      | NC160      | SMMA_LO_00977 | Place Value    | Relate Words, Models, or Numbers to 100       | Identify a written number from a spoken number (two-digit).     |
| 1     | Number Sense and Operations      | NC162      | SMMA_LO_00978 | Place Value    | Represent Number to 100 Using Base-Ten Blocks | Show a number using base-ten blocks (two-digit).                |
| 1     | Patterns, Algebra, and Functions | PS150      | SMMA_LO_01232 | Open Sentences | Find the Missing Addend in a Number Sentence  | Use a picture to solve a missing addend problem (sums 2 to 6).  |
| 1     | Patterns, Algebra, and Functions | GE169      | SMMA_LO_00558 | Patterns       | Extend a Pattern of Congruent Shapes          | Extend a 1-1-2 or 1-2-2 pattern of congruent shapes.            |
| 1     | Patterns, Algebra, and Functions | GE160      | SMMA_LO_00556 | Patterns       | Extend a Pattern of Pictures                  | Extend a 1-2-2 pattern of pictures.                             |
| 1     | Patterns, Algebra, and Functions | GE172      | SMMA_LO_00559 | Patterns       | Extend a Pattern of Pictures                  | Extend a 1-2-3 pattern of pictures.                             |
| 1     | Patterns, Algebra, and Functions | GE175      | SMMA_LO_00560 | Patterns       | Extend a Pattern of Similar Figures           | Extend a 1-2-3 pattern of similar figures.                      |

\* Math Concepts and Skills

## Grade 2

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic   | Description  |
|-------|---------------|------------|---------------|--------------------------------------|---|--|
| 2     | Data Analysis | PR230      | SMMA_LO_01140 | Graph, Chart, and Table Construction | Collect, Organize, and Analyze Data                                   | Collect, tally, and analyze the data by uncovering picture cards.                                    |
| 2     | Data Analysis | PR250      | SMMA_LO_01144 | Graph, Chart, and Table Construction | Collect, Organize, and Analyze Data                                   | Collect, tally, and graph the results generated by a spinner.  |
| 2     | Data Analysis | PR280      | SMMA_LO_01150 | Graph, Chart, and Table Construction | Construct a Horizontal Bar Graph Using Data from a Vertical Bar Graph | Construct a horizontal bar graph based on data from a vertical bar graph.                            |
| 2     | Data Analysis | AP260      | SMMA_LO_01643 | Graph, Chart, and Table Construction | Construct a Line Graph  | Choose a title for a line plot and label the units.  |
| 2     | Data Analysis | PR260      | SMMA_LO_01146 | Graph, Chart, and Table Construction | Construct a Vertical Bar Graph Using Data from a Horizontal Bar Graph | Construct a vertical bar graph based on data from a horizontal bar graph.                            |
| 2     | Data Analysis | AP250      | SMMA_LO_00136 | Graph, Chart, and Table Construction | Determine the Greatest and Least Answers in a Bar Graph               | Read and interpret a horizontal or vertical bar graph for the least or the most (four to six items). |
| 2     | Data Analysis | AP240      | SMMA_LO_00135 | Graph, Chart, and Table Construction | Determine the Greatest and Least Answers in a Pictograph              | Determine the most or the least from a horizontal or vertical pictograph (four to six items).        |

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic   | Description   |
|-------|---------------|------------|---------------|--------------------------------------|---|---|
| 2     | Data Analysis | AP220      | SMMA_LO_00133 | Graph, Chart, and Table Construction | Identify the Bar Graph That Represents Data from a Chart or Table         | Identify the bar graph that represents the data in a tally chart.                               |
| 2     | Data Analysis | PR210      | SMMA_LO_01136 | Graph, Chart, and Table Construction | Identify the Chart or Table That Represents Data in a Bar Graph           | Identify the table that represents the data in a vertical bar graph.                            |
| 2     | Data Analysis | PR220      | SMMA_LO_01138 | Graph, Chart, and Table Construction | Label Categories in a Vertical Bar Graph Using Data from a Chart or Table | Label the categories of a vertical bar graph based on data from a table.                        |
| 2     | Data Analysis | PR290      | SMMA_LO_01152 | Graph, Chart, and Table Construction | Label a Horizontal Bar Graph Using Data from a Vertical Bar Graph         | Label categories in a horizontal bar graph based on the data displayed in a vertical bar graph. |
| 2     | Data Analysis | AP210      | SMMA_LO_00132 | Graph, Chart, and Table Construction | Read and Interpret Horizontal or Vertical Bar Graphs                      | Read a horizontal or vertical bar graph (four to six items).                                    |
| 2     | Data Analysis | AP200      | SMMA_LO_00131 | Graph, Chart, and Table Construction | Read and Interpret Horizontal or Vertical Pictographs                     | Read and interpret a horizontal or vertical pictograph (four to six items).                     |
| 2     | Data Analysis | AP270      | SMMA_LO_00138 | Graph, Chart, and Table Construction | Read and Interpret Horizontal or Vertical Pictographs                     | Read and interpret a horizontal or vertical pictograph (four to six items).                     |
| 2     | Data Analysis | AP290      | SMMA_LO_00141 | Graph, Chart, and Table Construction | Read and Interpret Horizontal or Vertical Pictographs                     | Read a pictograph to identify the expression that solves a problem (addition or subtraction).   |



| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic   | Description   |
|-------|---------------|------------|---------------|--------------------------------------|---|---|
| 2     | Data Analysis | WP210      | SMMA_LO_01554 | Graph, Chart, and Table Construction | Read and Interpret Tables and Charts                      | Identify the value that is greater than one number and less than another in context.                                    |
| 2     | Data Analysis | AP285      | SMMA_LO_00140 | Graph, Chart, and Table Construction | Read and Interpret a Horizontal Pictograph                | Read and interpret a horizontal pictograph with a scale of 2 (five items).  |
| 2     | Data Analysis | PR200      | SMMA_LO_01135 | Graph, Chart, and Table Construction | Read and Interpret a Vertical Bar Graph                   | Identify the vertical bar graph that shows a strictly increasing or decreasing trend.                                   |
| 2     | Data Analysis | PR270      | SMMA_LO_01148 | Graph, Chart, and Table Construction | Read and Interpret a Vertical Bar Graph                   | Identify the number of categories in a vertical bar graph that are less than, equal to, and greater than a given value. |
| 2     | Data Analysis | PR240      | SMMA_LO_01142 | Graph, Chart, and Table Construction | Read and Interpret a Vertical Bar Graph to Create a Table | Label the categories of a table based on data from a vertical bar graph.  |
| 2     | Data Analysis | NC235      | SMMA_LO_00998 | Measures of Center and Spread        | Identify Numbers within a Range                           | Find two numbers within a range (two-digit).  |
| 2     | Fluency       | SG200      | SMMA_SG_00200 | Operations with Numbers              | Add Using Basic Math Facts                                | Practice addition using basic facts; sums less than or equal to 10.   |
| 2     | Fluency       | SG210      | SMMA_SG_00210 | Operations with Numbers              | Add Using Basic Math Facts                                | Practice addition using basic facts; sums less than or equal to 10.   |
| 2     | Fluency       | SG220      | SMMA_SG_00220 | Operations with Numbers              | Add Using Basic Math Facts                                | Practice addition using basic facts; sums less than or equal to 10.   |

| Grade | Strand   | MCS* Level | LO ID         | Concept                               | Topic                                      | Description   |
|-------|----------|------------|---------------|---------------------------------------|--|---|
| 2     | Fluency  | SG250      | SMMA_SG_00250 | Operations with Numbers               | Add Using Basic Math Facts                 | Practice addition using basic facts; sums less than or equal to 10.                     |
| 2     | Fluency  | SG260      | SMMA_SG_00260 | Operations with Numbers               | Add Using Basic Math Facts                 | Practice addition using basic facts; sums less than or equal to 15.                     |
| 2     | Fluency  | SG270      | SMMA_SG_00270 | Operations with Numbers               | Add Using Basic Math Facts                 | Practice addition using basic facts; sums less than or equal to 15.                     |
| 2     | Fluency  | SG230      | SMMA_SG_00230 | Operations with Numbers               | Subtract Using Basic Math Facts            | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 10. |
| 2     | Fluency  | SG240      | SMMA_SG_00240 | Operations with Numbers               | Subtract Using Basic Math Facts            | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 10. |
| 2     | Fluency  | SG280      | SMMA_SG_00280 | Operations with Numbers               | Subtract Using Basic Math Facts            | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 10. |
| 2     | Fluency  | SG290      | SMMA_SG_00290 | Operations with Numbers               | Subtract Using Basic Math Facts            | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 10. |
| 2     | Geometry | GE218      | SMMA_LO_00576 | Attributes of Two-Dimensional Figures | Classify Figures Based on Their Attributes | Classify geometric figures by a shape attribute.  |
| 2     | Geometry | GE208      | SMMA_LO_00572 | Attributes of Two-Dimensional Figures | Count the Geometric Figures                | Count the geometric figures in a picture.   |

| Grade | Strand   | MCS* Level | LO ID         | Concept                               | Topic                                      | Description  |
|-------|----------|------------|---------------|---------------------------------------|--|--|
| 2     | Geometry | GE238      | SMMA_LO_00586 | Attributes of Two-Dimensional Figures | Count the Sides of a Polygon               | Count the number of sides in a polygon.  |
| 2     | Geometry | GE232      | SMMA_LO_00583 | Attributes of Two-Dimensional Figures | Identify Concave and Convex Polygons       | Identify concave and convex polygons.  |
| 2     | Geometry | GE204      | SMMA_LO_00570 | Attributes of Two-Dimensional Figures | Identify Figures Based on Their Attributes | Identify the object modeled by a geometric figure.                             |
| 2     | Geometry | GE222      | SMMA_LO_00578 | Attributes of Two-Dimensional Figures | Identify Figures Based on Their Attributes | Identify a shape with positive and negative tests.                             |
| 2     | Geometry | GE240      | SMMA_LO_00587 | Attributes of Two-Dimensional Figures | Identify Figures Based on Their Attributes | Identify figures with more or fewer than a given number of sides.              |
| 2     | Geometry | GE288      | SMMA_LO_00602 | Attributes of Two-Dimensional Figures | Identify Figures Based on Their Attributes | Identify the shapes with attribute A or attribute B.                           |
| 2     | Geometry | GE226      | SMMA_LO_00580 | Attributes of Two-Dimensional Figures | Identify Open and Closed Figures           | Identify open and closed figures.  |
| 2     | Geometry | GE200      | SMMA_LO_00568 | Attributes of Two-Dimensional Figures | Identify Two-Dimensional Figures by Name   | Match a geometric figure to its name (circle, triangle, square, or rectangle). |
| 2     | Geometry | GE206      | SMMA_LO_00571 | Attributes of Two-Dimensional Figures | Identify the Figure That Is Different      | Identify the figure that is not of a given type (rectangle or triangle).       |
| 2     | Geometry | ME248      | SMMA_LO_00747 | Attributes of Two-Dimensional Figures | Identify the Smaller or Larger Figure      | Identify the smaller or bigger rectangle.                                      |
| 2     | Geometry | GE244      | SMMA_LO_00589 | Attributes of Two-Dimensional Figures | Identify the Vertices of a Polygon         | Identify corners (vertices) of polygons.                                       |

| Grade | Strand   | MCS* Level | LO ID         | Concept                               | Topic                                      | Description   |
|-------|----------|------------|---------------|---------------------------------------|--|---|
| 2     | Geometry | GE270      | SMMA_LO_00596 | Attributes of Two-Dimensional Figures | Identify the Vertices of a Polygon         | Count the corners (vertices) of a polygon (3 to 7 corners).   |
| 2     | Geometry | GE276      | SMMA_LO_00598 | Lines, Line Segments, and Rays        | Identify Intersecting Lines                | Predict whether or not lines will intersect.  |
| 2     | Geometry | GE224      | SMMA_LO_00579 | Lines, Line Segments, and Rays        | Identify Line Segments                     | Identify line segments in three- and four-sided figures.  |
| 2     | Geometry | GE246      | SMMA_LO_00590 | Position and Location                 | Change the Location of an Object           | Move an object to a specified location. (upper left, upper right, lower left, or lower right corner). |
| 2     | Geometry | GE212      | SMMA_LO_00574 | Position and Location                 | Describe the Relative Positions of Objects | Identify the object that is near or far from another object.  |
| 2     | Geometry | GE216      | SMMA_LO_00575 | Position and Location                 | Describe the Relative Positions of Objects | Identify objects inside or outside a convex figure.   |
| 2     | Geometry | GE234      | SMMA_LO_00584 | Position and Location                 | Describe the Relative Positions of Objects | Identify the object behind or in front of another object in a three-dimensional perspective.          |
| 2     | Geometry | GE242      | SMMA_LO_00588 | Position and Location                 | Describe the Relative Positions of Objects | Identify points on and not on a line.   |
| 2     | Geometry | GE291      | SMMA_LO_00603 | Position and Location                 | Describe the Relative Positions of Objects | Identify objects inside or outside a concave figure.  |
| 2     | Geometry | GE279      | SMMA_LO_00600 | Similarity and Congruence             | Identify Congruent Two-Dimensional Figures | Identify the figure that is the same size and shape as a given figure.                                |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic                                      | Description   |
|-------|-------------|------------|---------------|--|--|---|
| 2     | Geometry    | ME215      | SMMA_LO_00736 | Similarity and Congruence              | Identify Congruent Two-Dimensional Figures | Identify the rectangle with the same size and shape as a given rectangle.   |
| 2     | Geometry    | GE253      | SMMA_LO_00592 | Similarity and Congruence              | Identify Similar Three-Dimensional Figures | Identify similar three-dimensional figures.                                 |
| 2     | Geometry    | GE228      | SMMA_LO_00581 | Similarity and Congruence              | Match Congruent Two-Dimensional Figures    | Match complex congruent figures in different orientations.                  |
| 2     | Geometry    | GE258      | SMMA_LO_00594 | Similarity and Congruence              | Match Similar Figures                      | Match compound figures that have the same shape (different sizes).          |
| 2     | Geometry    | GE267      | SMMA_LO_00595 | Symmetry                               | Identify Lines of Symmetry                 | Identify the vertical line of symmetry.                                     |
| 2     | Geometry    | GE273      | SMMA_LO_00597 | Symmetry                               | Identify Lines of Symmetry                 | Identify the horizontal line of symmetry.                                   |
| 2     | Geometry    | GE277      | SMMA_LO_00599 | Transformations                        | Classify the Transformation                | Identify a figure as a slide, reflection (flip), or turn of another figure. |
| 2     | Geometry    | GE278      | SMMA_LO_01679 | Transformations                        | Identify Reflections (Flips)               | Identify the figures that show a reflection (flip).                         |
| 2     | Geometry    | GE282      | SMMA_LO_01680 | Transformations                        | Identify Rotations (Turns)                 | Identify the figures that show a turn.                                      |
| 2     | Geometry    | GE280      | SMMA_LO_01678 | Transformations                        | Identify Translations (Slides)             | Identify the figures that show a slide.                                     |
| 2     | Measurement | ME258      | SMMA_LO_00752 | Measurement of Two-Dimensional Figures | Calculate Area Using Nonstandard Units     | Find the sum of the areas of two figures (sums 3 to 8, nonstandard units).  |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic   | Description   |
|-------|-------------|------------|---------------|--|---|---|
| 2     | Measurement | ME268      | SMMA_LO_00757 | Measurement of Two-Dimensional Figures | Calculate the Perimeter of a Simple, Closed Figure      | Find the perimeter of a figure (3 to 10 nonstandard units).                                       |
| 2     | Measurement | ME221      | SMMA_LO_00738 | Money                                  | Identify Coin Equivalencies                             | Find equivalence of nickels and dimes (1 to 5 dimes).   |
| 2     | Measurement | ME206      | SMMA_LO_00733 | Money                                  | Identify Coin Values                                    | Find the number of cents (10 to 90 cents in dimes).   |
| 2     | Measurement | ME218      | SMMA_LO_00737 | Money                                  | Identify Monetary Amounts (Dimes)                       | Identify the given amount of money in coins (10 to 90 cents in dimes).                            |
| 2     | Measurement | ME227      | SMMA_LO_00740 | Money                                  | Identify Monetary Amounts (Nickels and Dimes)           | Identify the given amount of money in coins (5 to 50 cents in nickels and dimes).                 |
| 2     | Measurement | ME212      | SMMA_LO_00735 | Money                                  | Identify Monetary Amounts (Nickels)                     | Enter the amount of money shown (5 to 50 cents in nickels).                                       |
| 2     | Measurement | ME274      | SMMA_LO_00760 | Money                                  | Identify Monetary Amounts (Pennies, Nickels, and Dimes) | Enter the amount of money shown (10 to 99 cents).   |
| 2     | Measurement | ME242      | SMMA_LO_00745 | Money                                  | Represent Money in Multiple Ways                        | Show another way to represent an amount of money (10 to 24 cents in pennies, nickels, and dimes). |
| 2     | Measurement | ME290      | SMMA_LO_00768 | Temperature                            | Read a Thermometer in Degrees Fahrenheit                | Read a thermometer to the nearest 10 degrees (Fahrenheit).  |
| 2     | Measurement | ME294      | SMMA_LO_00769 | Temperature                            | Read a Thermometer in Degrees Fahrenheit                | Identify the thermometer showing the best estimate of temperature for a scene.                    |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic  | Description   |
|-------|-------------|------------|---------------|------------------|--|---|
| 2     | Measurement | ME200      | SMMA_LO_00731 | Time             | Determine Elapsed Time on an Analog Clock    | Determine elapsed time (1 to 6 hours, start and end times on the hour, can cross 12 o'clock).                           |
| 2     | Measurement | ME297      | SMMA_LO_00770 | Time             | Determine Elapsed Time on an Analog Clock    | Find the elapsed time (1 1/2 to 6 1/2 hours, start times and end times on the hour or half-hour, can cross 12 o'clock). |
| 2     | Measurement | ME256      | SMMA_LO_00751 | Time             | Recognize and Order Days, Weeks, and Months  | Identify the day of the week that comes before or after a given day of the week.  |
| 2     | Measurement | ME272      | SMMA_LO_00759 | Time             | Recognize and Order Days, Weeks, and Months  | Find the day of the week two to five days before or after a given day (same week).                                      |
| 2     | Measurement | ME280      | SMMA_LO_00763 | Time             | Recognize and Order Days, Weeks, and Months  | Find the day of the week one to five days before or after a given day (across weekend).                                 |
| 2     | Measurement | ME286      | SMMA_LO_00766 | Time             | Recognize and Order Days, Weeks, and Months  | Identify the date of the first to fifth Sunday to Saturday of the month.  |
| 2     | Measurement | ME239      | SMMA_LO_00744 | Time             | Use Analog and Digital Clocks to Tell Time   | Show time to 5-minute intervals using digital and analog clocks.  |
| 2     | Measurement | ME276      | SMMA_LO_00761 | Units of Measure | Choose the Appropriate Measuring Instruments | Identify the tool for a particular use (thermometer, scale, clock).   |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic   | Description  |
|-------|-------------|------------|---------------|------------------|---|--|
| 2     | Measurement | ME288      | SMMA_LO_00767 | Units of Measure | Choose the Appropriate Metric Unit for Length, Capacity, and Weight | Select the appropriate standard unit of measurement for length, capacity, and weight (metric). |
| 2     | Measurement | ME224      | SMMA_LO_00739 | Units of Measure | Compare and Order Objects by Capacity or Volume                     | Add nonstandard units of capacity (sums 2 to 8).   |
| 2     | Measurement | ME233      | SMMA_LO_00742 | Units of Measure | Compare and Order Objects by Capacity or Volume                     | Subtract nonstandard units of capacity (differences 0 to 3).                                   |
| 2     | Measurement | ME262      | SMMA_LO_00754 | Units of Measure | Compare and Order Objects by Capacity or Volume                     | Find the capacity of a container (3 to 10 nonstandard units).                                  |
| 2     | Measurement | ME282      | SMMA_LO_00764 | Units of Measure | Compare and Order Objects by Capacity or Volume                     | Add units of capacity (pints, sums 2 to 6).  |
| 2     | Measurement | ME236      | SMMA_LO_00743 | Units of Measure | Compare and Order the Heights of Objects                            | Identify the objects that are taller or shorter than a nonstandard unit.                       |
| 2     | Measurement | ME209      | SMMA_LO_00734 | Units of Measure | Customary Units of Linear Measure                                   | Identify the shape with the greater perimeter (3 to 11 nonstandard units).                     |
| 2     | Measurement | ME203      | SMMA_LO_00732 | Units of Measure | Measure Distance in Nonstandard Units                               | Find the distance between two objects (2 to 8 nonstandard units).                              |
| 2     | Measurement | ME270      | SMMA_LO_00758 | Units of Measure | Measure Height, Length, or Width in Metric Units                    | Identify a vertical distance (2 to 9 centimeters).   |



| Grade | Strand                      | MCS* Level | LO ID         | Concept          | Topic                             | Description   |
|-------|-----------------------------|------------|---------------|------------------|-----------------------------------|---|
| 2     | Measurement                 | ME250      | SMMA_LO_00748 | Units of Measure | Measure Length in Customary Units | Find the total length of two to four objects laid end to end (2 to 6 inches).   |
| 2     | Measurement                 | ME264      | SMMA_LO_00755 | Units of Measure | Measure Length in Customary Units | Measure the length of an object to the nearest inch (1 to 6 inches).  |
| 2     | Measurement                 | ME254      | SMMA_LO_00750 | Units of Measure | Measure Length in Metric Units    | Measure the length of an object to the nearest centimeter (3 to 12 cm).   |
| 2     | Measurement                 | ME260      | SMMA_LO_00753 | Units of Measure | Metric Units of Linear Measure    | Measure two lengths and find the sum (metric, sums 2 to 9).   |
| 2     | Measurement                 | ME266      | SMMA_LO_00756 | Units of Measure | Metric Units of Linear Measure    | Measure two metric lengths, write an addition problem, and find the sum (sums 2 to 12 centimeters).                         |
| 2     | Measurement                 | ME278      | SMMA_LO_00762 | Units of Measure | Metric Units of Linear Measure    | Measure the length of an object to the nearest centimeter (4 to 12 centimeters).  |
| 2     | Number Sense and Operations | WP271      | SMMA_LO_01566 | Estimation       | Estimate Sums/Differences         | Identify the expression that gives the best estimate for an addition or subtraction problem in context (two-digit numbers). |
| 2     | Number Sense and Operations | NC260      | SMMA_LO_01005 | Number Sense     | Compare Numbers                   | Identify the multiple of 5 that is closest to a given number.   |
| 2     | Number Sense and Operations | NC262      | SMMA_LO_01006 | Number Sense     | Compare Numbers                   | Identify the multiple of 5 that is closer to a number (25 to 94).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description   |
|-------|-----------------------------|------------|---------------|--------------|--|---|
| 2     | Number Sense and Operations | EQ220      | SMMA_LO_00325 | Number Sense | Compare Numbers Using Symbols                    | Compare numbers using < or > symbols (1 to 19).                                 |
| 2     | Number Sense and Operations | EQ240      | SMMA_LO_00328 | Number Sense | Compare Numbers Using Symbols                    | Compare numbers using < or > symbols (20 to 99).                                |
| 2     | Number Sense and Operations | NC292      | SMMA_LO_01019 | Number Sense | Compare Numbers to 1,001                         | Identify the greatest or least number (three-digit).                            |
| 2     | Number Sense and Operations | NC215      | SMMA_LO_00994 | Number Sense | Compare Numbers to 10                            | Identify two numbers that make an inequality true (0 to 9).                     |
| 2     | Number Sense and Operations | NC230      | SMMA_LO_00997 | Number Sense | Compare Numbers to 100                           | Identify two numbers that make an inequality true (two-digit).                  |
| 2     | Number Sense and Operations | NC240      | SMMA_LO_00999 | Number Sense | Compare Numbers to 100                           | Identify the greatest or least number (two-digit).                              |
| 2     | Number Sense and Operations | EQ225      | SMMA_LO_00326 | Number Sense | Compare Sums                                     | Compare sums (sums 1 to 9).   |
| 2     | Number Sense and Operations | FR280      | SMMA_LO_00417 | Number Sense | Determine Equal Parts Using Fraction Models      | Identify the figure divided into equal parts (halves to eighths).               |
| 2     | Number Sense and Operations | FR200      | SMMA_LO_00409 | Number Sense | Determine Fractional Amounts Using Regions/Areas | Identify the figure showing a fractional part shaded (halves, thirds, fourths). |
| 2     | Number Sense and Operations | FR210      | SMMA_LO_00410 | Number Sense | Determine Fractional Amounts Using Regions/Areas | Identify the fraction representing a shaded region (halves, thirds, fourths).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic                                   | Description  |
|-------|-----------------------------|------------|---------------|--------------|---|--|
| 2     | Number Sense and Operations | FR230      | SMMA_LO_00412 | Number Sense | Determine Fractional Amounts Using Sets | Count the fractional parts and total number of parts in a set (halves, thirds, fourths).       |
| 2     | Number Sense and Operations | FR240      | SMMA_LO_00413 | Number Sense | Determine Fractional Amounts Using Sets | Identify the figure showing the fraction of a set shaded (halves, thirds, fourths).            |
| 2     | Number Sense and Operations | FR250      | SMMA_LO_00414 | Number Sense | Determine Fractional Amounts Using Sets | Identify the fraction representing shaded items in a set (halves, thirds, fourths).            |
| 2     | Number Sense and Operations | FR260      | SMMA_LO_00415 | Number Sense | Determine Fractional Amounts Using Sets | Identify a fractional portion of a set (halves, thirds, fourths).                              |
| 2     | Number Sense and Operations | FR290      | SMMA_LO_00418 | Number Sense | Determine Fractional Amounts Using Sets | Identify the picture that shows one number is one-half of another number.                      |
| 2     | Number Sense and Operations | PS280      | SMMA_LO_01248 | Number Sense | Identify Numbers Using Clues            | Find a number using guess and check when given an addition clue.                               |
| 2     | Number Sense and Operations | FR220      | SMMA_LO_00411 | Number Sense | Relate Word Name to Fraction            | Match the word name of a fraction to a fraction (halves, thirds, fourths).                     |
| 2     | Number Sense and Operations | FR270      | SMMA_LO_00416 | Number Sense | Relate Word Name to Fraction            | Match the word name of the fraction to the fraction (halves to eighths).                       |
| 2     | Number Sense and Operations | NC285      | SMMA_LO_01016 | Number Sense | Sequence Numbers                        | Find a number that is one fewer, one greater, just before, or just after a three-digit number. |
| 2     | Number Sense and Operations | NC295      | SMMA_LO_01020 | Number Sense | Sequence Numbers                        | Find a number between two given numbers (1 to 999).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--------------------------------------|---|
| 2     | Number Sense and Operations | NC297      | SMMA_LO_01021 | Number Sense            | Sequence Numbers                     | Identify four numbers that are in consecutive order (three-digit).      |
| 2     | Number Sense and Operations | NC210      | SMMA_LO_00993 | Number Sense            | Sequence Numbers Using a Number Line | Identify a number on a number line between two given numbers (1 to 9).  |
| 2     | Number Sense and Operations | NC225      | SMMA_LO_00996 | Number Sense            | Sequence Numbers Using a Number Line | Find a missing number for a point on a number line (two-digit).         |
| 2     | Number Sense and Operations | AD200      | SMMA_LO_00035 | Number Theory           | Add Zero                             | Add zero to a number (sums 1 to 9).                                     |
| 2     | Number Sense and Operations | AD225      | SMMA_LO_00039 | Operations with Numbers | Add Basic Math Facts                 | Add a one-digit addend and a two-digit addend (sums 11 to 19).          |
| 2     | Number Sense and Operations | AD235      | SMMA_LO_00041 | Operations with Numbers | Add Basic Math Facts                 | Add two addends (sums 10 to 18).  |
| 2     | Number Sense and Operations | AD250      | SMMA_LO_00045 | Operations with Numbers | Add Basic Math Facts                 | Add 9 to a number (audio presentation, sums 10 to 18).                  |
| 2     | Number Sense and Operations | PS245      | SMMA_LO_01241 | Operations with Numbers | Add Basic Math Facts                 | Act out the problem to find the sum (basic facts).                      |
| 2     | Number Sense and Operations | PS285      | SMMA_LO_01249 | Operations with Numbers | Add Basic Math Facts                 | Act out a problem to find the sum of three numbers (one-digit addends). |
| 2     | Number Sense and Operations | AD240      | SMMA_LO_00042 | Operations with Numbers | Add Basic Math Facts Horizontally    | Add using basic math facts displayed horizontally (sums 10 to 18).      |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 2     | Number Sense and Operations | WP230      | SMMA_LO_01557 | Operations with Numbers | Add Basic Math Facts in Context        | Solve an addition problem with three addends in context (sums 3 to 10).  |
| 2     | Number Sense and Operations | AD215      | SMMA_LO_00038 | Operations with Numbers | Add Multiples of 10                    | Add 10 to a number (sums 11 to 19).  |
| 2     | Number Sense and Operations | AD230      | SMMA_LO_00040 | Operations with Numbers | Add Multiples of 10                    | Add a multiple of 10 and a one-digit number displayed horizontally (sums 11 to 99).                                      |
| 2     | Number Sense and Operations | AD245      | SMMA_LO_00043 | Operations with Numbers | Add Multiples of 10                    | Add three multiples of 10 (student choice, sums 30 to 90).   |
| 2     | Number Sense and Operations | AD247      | SMMA_LO_00044 | Operations with Numbers | Add Multiples of 10 Horizontally       | Add two multiples of 10 displayed horizontally (sums 20 to 90).  |
| 2     | Number Sense and Operations | AD260      | SMMA_LO_00047 | Operations with Numbers | Add Multiples of 10 Vertically         | Add two multiples of 10 (sums 100-180, vertical presentation).   |
| 2     | Number Sense and Operations | AD280      | SMMA_LO_00053 | Operations with Numbers | Add Multiples of 10 Vertically         | Add two addends (student choice, two-digit addends, sums 100 to 189, regrouping 10's to 100's).                          |
| 2     | Number Sense and Operations | AD275      | SMMA_LO_00051 | Operations with Numbers | Add Multiples of 10 with Regrouping    | Add three multiples of 10 (sums 100 to 190, regrouping).   |
| 2     | Number Sense and Operations | AD290      | SMMA_LO_00058 | Operations with Numbers | Add Multiples of 10 without Regrouping | Add two numbers (student choice, a three-digit multiple of 10 and a three-digit addend, sums 200 to 999, no regrouping). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 2     | Number Sense and Operations | AD252      | SMMA_LO_00046 | Operations with Numbers | Add Multiples of 100 without Regrouping                      | Add two multiples of 100 (student choice, sums 200 to 900).   |
| 2     | Number Sense and Operations | AD288      | SMMA_LO_00057 | Operations with Numbers | Add Multiples of 100 without Regrouping                      | Add two addends (100 and a three-digit number, sums 200 to 900).  |
| 2     | Number Sense and Operations | AD282      | SMMA_LO_00054 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers with Regrouping        | Add two addends (student choice, a one-digit and a two-digit addend, sums 20 to 98, regrouping).                    |
| 2     | Number Sense and Operations | AD267      | SMMA_LO_00049 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers without Regrouping     | Add two addends displayed horizontally (one- and two-digit addends, sums 11 to 99).                                 |
| 2     | Number Sense and Operations | AD285      | SMMA_LO_00055 | Operations with Numbers | Add One/Two-Digit Whole Numbers Horizontally with Regrouping | Find the sum of two numbers displayed horizontally (a one-digit and a two-digit addend, sums 20 to 98, regrouping). |
| 2     | Number Sense and Operations | AD297      | SMMA_LO_00061 | Operations with Numbers | Add Three-Digit Whole Numbers Vertically with Regrouping     | Add two addends (student choice, three-digit addends, sums 200 to 998, regrouping).                                 |
| 2     | Number Sense and Operations | AD295      | SMMA_LO_00060 | Operations with Numbers | Add Two-Digit Whole Numbers with Regrouping                  | Add three addends (student choice, two-digit addends, sums 100 to 199, regrouping from tens to hundreds place).     |
| 2     | Number Sense and Operations | AD287      | SMMA_LO_00056 | Operations with Numbers | Add Two-Digit Whole Numbers without Regrouping               | Add three addends (two-digit addends, sums 33 to 99, no regrouping).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 2     | Number Sense and Operations | WP225      | SMMA_LO_01556 | Operations with Numbers | Add Two-Digit Whole Numbers without Regrouping in Context | Solve an addition problem in context (two-digit addends, sums less than 100, no regrouping).                |
| 2     | Number Sense and Operations | WP274      | SMMA_LO_01567 | Operations with Numbers | Add Two-Digit Whole Numbers without Regrouping in Context | Solve an addition problem in context (extra information, sums to 50, no regrouping).                        |
| 2     | Number Sense and Operations | AD292      | SMMA_LO_00059 | Operations with Numbers | Add Two-Digit/Three-Digit Whole Numbers with Regrouping   | Add two addends (student choice, a two-digit and a three-digit addend, sums 120 to 998, regrouping).        |
| 2     | Number Sense and Operations | ME245      | SMMA_LO_00746 | Operations with Numbers | Add/Subtract Money  | Add cents to find a total amount of money (sums 2 to 9 cents).  |
| 2     | Number Sense and Operations | ME284      | SMMA_LO_00765 | Operations with Numbers | Add/Subtract Money  | Identify the set of coins that has greater value (16 to 75 cents in pennies, nickels, dimes, and quarters). |
| 2     | Number Sense and Operations | AD205      | SMMA_LO_00036 | Operations with Numbers | Connect Pictorial Model with Addition Number Sentence     | Write an addition number sentence to represent a picture (sums 1 to 9).                                     |
| 2     | Number Sense and Operations | WP280      | SMMA_LO_01569 | Operations with Numbers | Identify Division Number Sentences in Context             | Identify the number sentence that represents a division problem in context (model shown, dividends to 20).  |
| 2     | Number Sense and Operations | WP205      | SMMA_LO_01553 | Operations with Numbers | Identify and Solve Addition Number Sentences              | Identify and solve a number sentence for an addition problem in context (sums 2 to 9).                      |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 2     | Number Sense and Operations | WP220      | SMMA_LO_01555 | Operations with Numbers | Identify and Solve Addition Number Sentences        | Identify and solve a number sentence for an addition problem in context (sums 2 to 9).               |
| 2     | Number Sense and Operations | PS215      | SMMA_LO_01235 | Operations with Numbers | Relate Subtraction Problems to Pictorial Models     | Identify a picture that represents a subtraction problem (minuends 5 to 10).                         |
| 2     | Number Sense and Operations | PS260      | SMMA_LO_01244 | Operations with Numbers | Relate Subtraction Problems to Pictorial Models     | Identify a picture that represents a subtraction problem (one or two-digit).                         |
| 2     | Number Sense and Operations | NC200      | SMMA_LO_00992 | Operations with Numbers | Skip Counting by 5s or 10s                          | Find a missing number in a sequence, counting by 10's (two-digit, non multiples of 10).              |
| 2     | Number Sense and Operations | NC255      | SMMA_LO_01003 | Operations with Numbers | Skip Counting by 5s or 10s                          | Find a missing number in a sequence, counting by 5's (5 to 50).                                      |
| 2     | Number Sense and Operations | NC257      | SMMA_LO_01004 | Operations with Numbers | Skip Counting by 5s or 10s                          | Find a missing number in a sequence, counting up or down by 5's (two-digit).                         |
| 2     | Number Sense and Operations | WP235      | SMMA_LO_01558 | Operations with Numbers | Solve Addition Problems in Context                  | Solve a problem with extra information (addition).   |
| 2     | Number Sense and Operations | WP292      | SMMA_LO_01573 | Operations with Numbers | Solve Division Problems in Context                  | Solve a division problem in context by rounding the quotient to the next whole number (model shown). |
| 2     | Number Sense and Operations | MU260      | SMMA_LO_00852 | Operations with Numbers | Solve Multiplication Problems Using Addition Models | Use repeated addition to multiply (products 2 x 2 to 5 x 5).   |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 2     | Number Sense and Operations | MU270      | SMMA_LO_00853 | Operations with Numbers | Solve Multiplication Problems Using Addition Models | Solve addition and multiplication problems (products $2 \times 1$ to $2 \times 5$ ).                                |
| 2     | Number Sense and Operations | MU290      | SMMA_LO_00854 | Operations with Numbers | Solve Multiplication Problems Using Addition Models | Solve addition and multiplication problems (products $2 \times 6$ to $2 \times 9$ ).                                |
| 2     | Number Sense and Operations | WP283      | SMMA_LO_01570 | Operations with Numbers | Solve Multiplication Problems in Context            | Identify and solve an expression that represents a multiplication problem in context (model shown, products to 32). |
| 2     | Number Sense and Operations | WP289      | SMMA_LO_01572 | Operations with Numbers | Solve Multiplication Problems in Context            | Solve a multiplication problem in context (counting feedback, products $2 \times 2$ to $5 \times 5$ ).              |
| 2     | Number Sense and Operations | WP298      | SMMA_LO_01575 | Operations with Numbers | Solve Multiplication/Division Problems in Context   | Given the rate and time, find the distance.   |
| 2     | Number Sense and Operations | WP286      | SMMA_LO_01571 | Operations with Numbers | Solve Problems Involving Money                      | Find twice the amount of the money shown (products to 20).  |
| 2     | Number Sense and Operations | SU240      | SMMA_LO_01439 | Operations with Numbers | Solve Subtraction Problems in Context               | Identify the number sentence that solves a subtraction problem in context (minuends 11 to 18, subtrahends 1 to 9).  |
| 2     | Number Sense and Operations | WP240      | SMMA_LO_01559 | Operations with Numbers | Solve Subtraction Problems in Context               | Identify the expression that represents a subtraction problem in context (minuends 2 to 5).                         |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                 | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---------------------------------------|---|
| 2     | Number Sense and Operations | WP245      | SMMA_LO_01560 | Operations with Numbers | Solve Subtraction Problems in Context | Solve a subtraction problem in context (two-digit minuends, one-digit subtrahends, no regrouping).        |
| 2     | Number Sense and Operations | WP253      | SMMA_LO_01561 | Operations with Numbers | Solve Subtraction Problems in Context | Solve a subtraction problem in context to find how much is left (two-digit numbers, no regrouping).       |
| 2     | Number Sense and Operations | WP259      | SMMA_LO_01563 | Operations with Numbers | Solve Subtraction Problems in Context | Solve a subtraction problem to find a person's age (minuends 1 to 99, subtrahends 1 to 9, no regrouping). |
| 2     | Number Sense and Operations | WP277      | SMMA_LO_01568 | Operations with Numbers | Solve Subtraction Problems in Context | Identify and solve a number sentence for a subtraction problem in context (minuends 2 to 5).              |
| 2     | Number Sense and Operations | SU235      | SMMA_LO_01437 | Operations with Numbers | Subtract Multiples of 10              | Subtract multiples of 10 (student choice, minuends 20 to 90, subtrahends 10 to 80).                       |
| 2     | Number Sense and Operations | SU237      | SMMA_LO_01438 | Operations with Numbers | Subtract Multiples of 10              | Subtract multiples of 10 (minuends 20 to 90, subtrahends 10 to 80, horizontal presentation).              |
| 2     | Number Sense and Operations | SU245      | SMMA_LO_01441 | Operations with Numbers | Subtract Multiples of 10              | Subtract 10 from a two-digit number (student choice, minuends 11 to 19).                                  |
| 2     | Number Sense and Operations | SU247      | SMMA_LO_01442 | Operations with Numbers | Subtract Multiples of 10              | Subtract 10 from a number (minuends 11 to 19, horizontal presentation).                                   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 2     | Number Sense and Operations | SU260      | SMMA_LO_01447 | Operations with Numbers | Subtract Multiples of 10                            | Subtract two multiples of 10 (student choice, minuends 200 to 900, and subtrahends 100 to 800).           |
| 2     | Number Sense and Operations | SU262      | SMMA_LO_01448 | Operations with Numbers | Subtract Multiples of 10                            | Subtract two multiples of 10 (minuends 100 to 180, subtrahends 10 to 90).                                 |
| 2     | Number Sense and Operations | SU272      | SMMA_LO_01452 | Operations with Numbers | Subtract Multiples of 10                            | Subtract a multiple of 10 from a 2-digit number (minuends 11-99, vertical presentation).                  |
| 2     | Number Sense and Operations | SU287      | SMMA_LO_01458 | Operations with Numbers | Subtract Multiples of 10                            | Subtract a three-digit multiple of 10 from a number (student choice, minuends 222 to 999, no regrouping). |
| 2     | Number Sense and Operations | SU288      | SMMA_LO_01459 | Operations with Numbers | Subtract Three-Digit Whole Numbers with Regrouping  | Subtract 100 from a three-digit number presented in a sentence.   |
| 2     | Number Sense and Operations | NC245      | SMMA_LO_01000 | Operations with Numbers | Subtract Two-Digit Whole Numbers                    | Find the difference between two numbers (two-digit, presented as a sentence)                              |
| 2     | Number Sense and Operations | SU297      | SMMA_LO_01463 | Operations with Numbers | Subtract Two-Digit Whole Numbers with Regrouping    | Subtract two-digit numbers with regrouping (vertical presentation).                                       |
| 2     | Number Sense and Operations | SU277      | SMMA_LO_01454 | Operations with Numbers | Subtract Two-Digit Whole Numbers without Regrouping | Subtract (student choice, minuends 21 to 99, no regrouping).  |
| 2     | Number Sense and Operations | SU205      | SMMA_LO_01430 | Operations with Numbers | Subtract Using Basic Math Facts                     | Subtract (student choice, minuends 10 to 15, subtrahends 0 to 5, no regrouping).                          |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 2     | Number Sense and Operations | SU220      | SMMA_LO_01433 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract using basic math facts (student choice, minuends 16 to 19, subtrahends 1 to 9).                            |
| 2     | Number Sense and Operations | SU225      | SMMA_LO_01434 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract using basic math facts (minuends 15 to 18, subtrahends 6 to 9).  |
| 2     | Number Sense and Operations | SU230      | SMMA_LO_01435 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract using basic math facts (minuends 11 to 19, subtrahends 1 to 8).  |
| 2     | Number Sense and Operations | SU232      | SMMA_LO_01436 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract using basic math facts (minuends 11 to 18, subtrahends 1 to 9).  |
| 2     | Number Sense and Operations | SU250      | SMMA_LO_01443 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract a one-digit number from a two-digit number displayed horizontally (minuends 11 to 19, subtrahends 1 to 9). |
| 2     | Number Sense and Operations | SU252      | SMMA_LO_01444 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract using basic math facts (minuends 15 to 18, subtrahends 6 to 9).  |
| 2     | Number Sense and Operations | SU255      | SMMA_LO_01445 | Operations with Numbers | Subtract Using Basic Math Facts              | Subtract (minuends 11 to 19, subtrahends 1 to 9, no regrouping).  |
| 2     | Number Sense and Operations | SU200      | SMMA_LO_01429 | Operations with Numbers | Subtract Using Basic Math Facts Horizontally | Subtract using basic math facts displayed horizontally (minuends 10 to 14, subtrahends 1 to 9).                     |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 2     | Number Sense and Operations | SU295      | SMMA_LO_01462 | Operations with Numbers | Subtract Whole Numbers Using Counting Up Strategy | Subtract two numbers displayed horizontally (counting up strategy, minuends 21 to 98, subtrahends 2 to 9, regrouping). |
| 2     | Number Sense and Operations | SU292      | SMMA_LO_01461 | Operations with Numbers | Subtract Whole Numbers with Regrouping            | Subtract (two-digit minuends, one-digit subtrahends, differences 20 to 98, regrouping).                                |
| 2     | Number Sense and Operations | SU267      | SMMA_LO_01450 | Operations with Numbers | Subtract Whole Numbers without Regrouping         | Subtract (minuends 21 to 99, subtrahends 1 to 9, no regrouping).   |
| 2     | Number Sense and Operations | SU282      | SMMA_LO_01456 | Operations with Numbers | Subtract Whole Numbers without Regrouping         | Subtract (student choice, minuends 110 to 199, two-digit subtrahends, no regrouping).                                  |
| 2     | Number Sense and Operations | SU285      | SMMA_LO_01457 | Operations with Numbers | Subtract Whole Numbers without Regrouping         | Subtract (student choice, minuends 122 to 199, subtrahends 11 to 88, no regrouping).                                   |
| 2     | Number Sense and Operations | SU290      | SMMA_LO_01460 | Operations with Numbers | Subtract Whole Numbers without Regrouping         | Subtract (student choice, minuends and subtrahends 110 to 999).  |
| 2     | Number Sense and Operations | PS220      | SMMA_LO_01236 | Operations with Numbers | Use Pictorial Models to Solve Division Problems   | Make a picture to solve a division problem (math facts).   |
| 2     | Number Sense and Operations | PS230      | SMMA_LO_01238 | Operations with Numbers | Use Pictorial Models to Solve Division Problems   | Make a picture to solve a division problem (math facts).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 2     | Number Sense and Operations | PS265      | SMMA_LO_01245 | Operations with Numbers | Use Pictorial Models to Solve Division Problems                  | Identify a picture that represents a division problem (math facts).             |
| 2     | Number Sense and Operations | WP265      | SMMA_LO_01564 | Operations with Numbers | Use Pictorial Models to Solve Division Problems                  | Make a picture to solve a partitive division problem (dividends to 20).         |
| 2     | Number Sense and Operations | WP268      | SMMA_LO_01565 | Operations with Numbers | Use Pictorial Models to Solve Division Problems                  | Make a picture to solve a quotitive division problem (dividends to 20).         |
| 2     | Number Sense and Operations | PS225      | SMMA_LO_01237 | Operations with Numbers | Use Pictorial Models to Solve Multiplication Problems            | Make a picture to solve a multiplication problem (basic facts).                 |
| 2     | Number Sense and Operations | PS270      | SMMA_LO_01246 | Operations with Numbers | Use Pictorial Models to Solve Multiplication Problems            | Identify a picture that represents a multiplication problem (basic facts).      |
| 2     | Number Sense and Operations | PS240      | SMMA_LO_01240 | Operations with Numbers | Use Problem Solving Strategies for Addition/Subtraction Problems | Use guess and check to solve an addition and subtraction problem (basic facts). |
| 2     | Number Sense and Operations | NC265      | SMMA_LO_01007 | Place Value             | Determine Equivalent Number Values to 1,001                      | Find a number equal to 1 to 9 hundreds.   |
| 2     | Number Sense and Operations | NC267      | SMMA_LO_01008 | Place Value             | Determine Equivalent Number Values to 1,001                      | Find the number of hundreds equivalent to a multiple of 100 (100 to 900).       |
| 2     | Number Sense and Operations | NC282      | SMMA_LO_01015 | Place Value             | Determine Equivalent Number Values to 1,001                      | Find a number equal to 1 to 9 hundreds, 0 to 9 tens, and 0 to 9 ones.           |

| Grade | Strand                      | MCS* Level | LO ID         | Concept     | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------|---|---|
| 2     | Number Sense and Operations | NC220      | SMMA_LO_00995 | Place Value | Determine Place Value of Digits                         | Identify a number with a given digit in the ones or tens place.   |
| 2     | Number Sense and Operations | NC280      | SMMA_LO_01014 | Place Value | Determine Place Value of Digits                         | Identify a number with a given digit in the ones, tens, or hundreds place.  |
| 2     | Number Sense and Operations | NC287      | SMMA_LO_01017 | Place Value | Identify Place Value to 1,000,001                       | Find the sum or difference when ones, tens, or hundreds are added to or subtracted from a three-digit number (base-ten block models). |
| 2     | Number Sense and Operations | NC270      | SMMA_LO_01010 | Place Value | Recognize Number Values to 1,000 Using Concrete Objects | Identify the number represented by a set of objects (pictorial models of hundreds, tens, and ones; three-digit).                      |
| 2     | Number Sense and Operations | NC269      | SMMA_LO_01009 | Place Value | Relate Words, Models or Numbers to 1,001                | Identify the word name for a three-digit number.  |
| 2     | Number Sense and Operations | NC290      | SMMA_LO_01018 | Place Value | Relate Words, Models or Numbers to 1,001                | Identify the number, model, word name, or expanded notation that has a different value (three-digit).                                 |
| 2     | Number Sense and Operations | NC250      | SMMA_LO_01001 | Place Value | Relate Words, Models or Numbers to 101                  | Enter the number for a word name (two-digit).   |
| 2     | Number Sense and Operations | NC275      | SMMA_LO_01012 | Place Value | Represent Numbers to 1,000 Using Base-Ten Blocks        | Use base-ten blocks to show a number (three-digit).   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic  | Description   |
|-------|----------------------------------|------------|---------------|--------------------|--|---|
| 2     | Number Sense and Operations      | NC277      | SMMA_LO_01013 | Place Value        | Represent Numbers to 1,000 Using Base-Ten Blocks | Enter a three-digit number in a place-value chart (base-ten block models, three-digit). |
| 2     | Patterns, Algebra, and Functions | EQ210      | SMMA_LO_00324 | One-Step Equations | Find the Difference to Identify the Variable     | Solve for $c$ in $a - b = c$ (differences 1 to 9).                                      |
| 2     | Patterns, Algebra, and Functions | EQ250      | SMMA_LO_00329 | One-Step Equations | Find the Difference to Identify the Variable     | Solve for $c$ in $a - b = c$ (differences 1 to 9).                                      |
| 2     | Patterns, Algebra, and Functions | EQ260      | SMMA_LO_00330 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for $a$ or $b$ in $a + b = c$ (sums 0 to 9).                                      |
| 2     | Patterns, Algebra, and Functions | EQ270      | SMMA_LO_00331 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for $a$ or $b$ in $a - b = c$ (differences 0 to 9).                               |
| 2     | Patterns, Algebra, and Functions | EQ280      | SMMA_LO_00332 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for $a$ or $b$ in $a + b = c$ (sums 10 to 18).                                    |
| 2     | Patterns, Algebra, and Functions | EQ290      | SMMA_LO_00333 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for $a$ or $b$ in $a - b = c$ (differences 0 to 18).                              |
| 2     | Patterns, Algebra, and Functions | WP295      | SMMA_LO_01574 | Open Sentences     | Find the Missing Addend                          | Solve a problem in context by finding a missing addend (three addends, sums to 20).     |
| 2     | Patterns, Algebra, and Functions | AD210      | SMMA_LO_00037 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (sums 2 to 10).                            |
| 2     | Patterns, Algebra, and Functions | AD262      | SMMA_LO_00048 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (sums 10 to 18).                           |



| Grade | Strand                           | MCS* Level | LO ID         | Concept        | Topic  | Description   |
|-------|----------------------------------|------------|---------------|----------------|--|---|
| 2     | Patterns, Algebra, and Functions | AD272      | SMMA_LO_00050 | Open Sentences | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (a multiple of 10 and a one-digit addend, sums 11 to 99, no regrouping). |
| 2     | Patterns, Algebra, and Functions | AD277      | SMMA_LO_00052 | Open Sentences | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (three addends, sums 1 to 9).  |
| 2     | Patterns, Algebra, and Functions | SU242      | SMMA_LO_01440 | Open Sentences | Find the Missing Minuend in a Number Sentence    | Find the missing minuend in a subtraction number sentence (minuends 0 to 9).  |
| 2     | Patterns, Algebra, and Functions | SU270      | SMMA_LO_01451 | Open Sentences | Find the Missing Minuend in a Number Sentence    | Find the missing minuend in a subtraction number sentence (minuends 10 to 14).  |
| 2     | Patterns, Algebra, and Functions | SU280      | SMMA_LO_01455 | Open Sentences | Find the Missing Minuend in a Number Sentence    | Find the missing minuend in a subtraction number sentence (minuends 15 to 18).  |
| 2     | Patterns, Algebra, and Functions | SU215      | SMMA_LO_01432 | Open Sentences | Find the Missing Subtrahend in a Number Sentence | Find the missing subtrahend in a subtraction number sentence (minuends 0 to 9).                                       |
| 2     | Patterns, Algebra, and Functions | SU257      | SMMA_LO_01446 | Open Sentences | Find the Missing Subtrahend in a Number Sentence | Find the missing subtrahend in a subtraction number sentence (minuends 10 to 14).                                     |
| 2     | Patterns, Algebra, and Functions | SU265      | SMMA_LO_01449 | Open Sentences | Find the Missing Subtrahend in a Number Sentence | Find the missing subtrahend in a subtraction number sentence (minuends 15 to 18).                                     |

| Grade | Strand                           | MCS* Level | LO ID         | Concept           | Topic  | Description   |
|-------|----------------------------------|------------|---------------|-------------------|--|---|
| 2     | Patterns, Algebra, and Functions | EQ200      | SMMA_LO_00323 | Open Sentences    | Find the Sum to Identify the Variable                                    | Solve for $c$ in $a + b = c$ (sums 0 to 9).   |
| 2     | Patterns, Algebra, and Functions | EQ230      | SMMA_LO_00327 | Open Sentences    | Find the Sum to Identify the Variable                                    | Solve for $c$ in $a + b = c$ (sums 10 to 18).   |
| 2     | Patterns, Algebra, and Functions | PS250      | SMMA_LO_01242 | Open Sentences    | Identify the Number Sentence That Is a Translation of the Written Phrase | Identify a number sentence that can be used to solve a problem with extra information (addition or subtraction, basic facts). |
| 2     | Patterns, Algebra, and Functions | WP256      | SMMA_LO_01562 | Open Sentences    | Identify the Number Sentence That Is a Translation of the Written Phrase | Identify and solve the number sentence for a subtraction problem in context (minuends 2 to 5).                                |
| 2     | Patterns, Algebra, and Functions | GE236      | SMMA_LO_00585 | Patterns          | Extend a Pattern of Geometric Figures                                    | Extend a 1-2-3 pattern of geometric figures.  |
| 2     | Patterns, Algebra, and Functions | NC252      | SMMA_LO_01002 | Patterns          | Find a Missing Number in a Sequence                                      | Find the missing two-digit number in a sequence of odd or even numbers.   |
| 2     | Patterns, Algebra, and Functions | GE250      | SMMA_LO_00591 | Patterns          | Identify the Missing Geometric Figure in a Pattern                       | Identify the missing geometric figure in a 1-2-1-2 pattern.   |
| 2     | Patterns, Algebra, and Functions | PS290      | SMMA_LO_01250 | Written Equations | Identify the Equation That Is a Translation of the Written Phrase        | Identify a number sentence that can be used to solve a problem with extra information (addition or subtraction, basic facts). |

| Grade | Strand                               | MCS* Level | LO ID         | Concept             | Topic  | Description   |
|-------|--------------------------------------|------------|---------------|---------------------|--|---|
| 2     | Patterns, Algebra, and Functions     | PS235      | SMMA_LO_01239 | Written Expressions | Identify the Expression That Is a Translation of the Written Phrase    | Choose the expression that can represent a problem with extra information; then solve (addition or subtraction).  |
| 2     | Patterns, Algebra, and Functions     | PS275      | SMMA_LO_01247 | Written Expressions | Identify the Expression That Is a Translation of the Written Phrase    | Choose an operation to solve a problem with extra information; then solve (addition or subtraction, basic facts).   |
| 2     | Probability and Discrete Mathematics | PR215      | SMMA_LO_01137 | Probability         | Describe the Probability of Events as Certain or Impossible            | Determine whether a chronological event is certain or impossible.   |
| 2     | Probability and Discrete Mathematics | PR235      | SMMA_LO_01141 | Probability         | Describe the Probability of Events as Certain or Impossible            | Within the context of repeated selections without replacement from a bag containing two balls of the same color, label events as certain or impossible.           |
| 2     | Probability and Discrete Mathematics | PR275      | SMMA_LO_01149 | Probability         | Describe the Probability of Events as Certain or Possible              | Within the context of repeated selections without replacement from a bag containing two balls of different colors, classify a given outcome as certain, possible. |
| 2     | Probability and Discrete Mathematics | PR225      | SMMA_LO_01139 | Probability         | Describe the Probability of Events as Certain, Possible, or Impossible | Given information about a current situation, classify a future event as being certain, possible, or impossible.   |

| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic  | Description  |
|-------|--------------------------------------|------------|---------------|-------------|--|--|
| 2     | Probability and Discrete Mathematics | PR245      | SMMA_LO_01143 | Probability | Describe the Probability of Events as Certain, Possible, or Impossible | Given a sentence describing an observed event, label a future occurrence as certain, possible, or impossible.  |
| 2     | Probability and Discrete Mathematics | PR255      | SMMA_LO_01145 | Probability | Describe the Probability of Events as Certain, Possible, or Impossible | Within the context of selecting without replacement from an array of three cards, each having a unique picture on one side, label a particular outcome as certain, possible, or impossible.        |
| 2     | Probability and Discrete Mathematics | PR265      | SMMA_LO_01147 | Probability | Describe the Probability of Events as Certain, Possible, or Impossible | Within the context of selecting without replacement from a cup containing three balls, each of a different color, label a given event prior to each selection as certain, possible, or impossible. |
| 2     | Probability and Discrete Mathematics | PR285      | SMMA_LO_01151 | Probability | Describe the Probability of Events as Certain, Possible, or Impossible | Within the context of repeated selections without replacement from an array of three cards, each having a unique picture on one side, label each outcome as certain, possible, or impossible.      |
| 2     | Probability and Discrete Mathematics | PR295      | SMMA_LO_01153 | Probability | Describe the Probability of Events as Certain, Possible, or Impossible | Create a set of colored balls whose contents are specified by whether it is certain, possible, or impossible to select a particular color.   |

\* Math Concepts and Skills

## Grade 3

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic   | Description  |
|-------|---------------|------------|---------------|--------------------------------------|---|--|
| 3     | Data Analysis | AP315      | SMMA_LO_01641 | Data Collection                      | Formulate Questions around Categorical Data   | Formulate questions around categorical data.   |
| 3     | Data Analysis | AP317      | SMMA_LO_01642 | Data Collection                      | Formulate Questions around Numerical Data     | Formulate questions around numerical data.   |
| 3     | Data Analysis | AP370      | SMMA_LO_00146 | Graph, Chart, and Table Construction | Construct a Pictograph from a Data Set        | Make a pictograph from a set of data.  |
| 3     | Data Analysis | PS300      | SMMA_LO_01645 | Graph, Chart, and Table Construction | Construct a Table Using Data from a Bar Graph | Create a table based on data from a bar graph.   |
| 3     | Data Analysis | PS305      | SMMA_LO_01644 | Graph, Chart, and Table Construction | Construct a Tally Graph                       | Create a tally chart based on survey results.  |
| 3     | Data Analysis | PR300      | SMMA_LO_01154 | Graph, Chart, and Table Construction | Read and Interpret Bar Graphs                 | Analyze a bar graph to find the number of bars that fall within a given range.               |
| 3     | Data Analysis | SA353      | SMMA_LO_01302 | Graph, Chart, and Table Construction | Read and Interpret Bar Graphs                 | Read and interpret data about tree growth from a bar graph.                                  |
| 3     | Data Analysis | SA370      | SMMA_LO_01303 | Graph, Chart, and Table Construction | Read and Interpret Bar Graphs                 | Given a bar graph of tree growth, calculate the height a tree grew from one year to another. |
| 3     | Data Analysis | SA380      | SMMA_LO_01304 | Graph, Chart, and Table Construction | Read and Interpret Bar Graphs                 | Read a bar graph and answer questions about tree growth over time.                           |

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic                                    | Description   |
|-------|---------------|------------|---------------|--------------------------------------|--|---|
| 3     | Data Analysis | PR360      | SMMA_LO_01160 | Graph, Chart, and Table Construction | Read and Interpret Circle Graphs         | Select a circle graph whose sectors are in the same proportions as the data displayed in a given table. |
| 3     | Data Analysis | PR320      | SMMA_LO_01156 | Graph, Chart, and Table Construction | Read and Interpret Line Graphs           | Analyze a line plot to find the total number of items that fall at, above, or below a given value.      |
| 3     | Data Analysis | PR340      | SMMA_LO_01158 | Graph, Chart, and Table Construction | Read and Interpret Pictographs           | Read and interpret a pictograph with a scale of 2, 5 or 10.   |
| 3     | Data Analysis | SA330      | SMMA_LO_01299 | Graph, Chart, and Table Construction | Read and Interpret Pictographs           | Read and interpret a pictograph about birds counted (2 to 5 birds in each row).                         |
| 3     | Data Analysis | SA350      | SMMA_LO_01301 | Graph, Chart, and Table Construction | Read and Interpret Tables and Charts     | Read weights from a chart; choose two weights that equal a given total (sums to 1,500).                 |
| 3     | Data Analysis | SA390      | SMMA_LO_01305 | Graph, Chart, and Table Construction | Read and Interpret Tables and Charts     | Given a chart of tree growth, infer which of two years there was more rainfall.                         |
| 3     | Data Analysis | SA355      | SMMA_LO_01646 | Graph, Chart, and Table Construction | Read and Interpret Tables and Charts     | Read and interpret a table about temperature.   |
| 3     | Data Analysis | AP340      | SMMA_LO_00144 | Graph, Chart, and Table Construction | Read and Interpret a Vertical Pictograph | Read and interpret a vertical pictograph (five items).  |
| 3     | Fluency       | SG300      | SMMA_SG_00300 | Operations with Numbers              | Add Using Basic Math Facts               | Practice addition using basic facts; sums less than or equal to 15.                                     |

| Grade | Strand  | MCS* Level | LO ID         | Concept                 | Topic                           | Description   |
|-------|---------|------------|---------------|-------------------------|---------------------------------|---|
| 3     | Fluency | SG310      | SMMA_SG_00310 | Operations with Numbers | Add Using Basic Math Facts      | Practice addition using basic facts; sums less than or equal to 15.                     |
| 3     | Fluency | SG340      | SMMA_SG_00340 | Operations with Numbers | Add Using Basic Math Facts      | Practice addition using basic facts; sums less than or equal to 15.                     |
| 3     | Fluency | SG350      | SMMA_SG_00350 | Operations with Numbers | Add Using Basic Math Facts      | Practice addition using basic facts; sums less than or equal to 15.                     |
| 3     | Fluency | SG390      | SMMA_SG_00390 | Operations with Numbers | Add Using Basic Math Facts      | Practice addition using basic facts; sums less than or equal to 20.                     |
| 3     | Fluency | SG320      | SMMA_SG_00320 | Operations with Numbers | Subtract Using Basic Math Facts | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 3     | Fluency | SG330      | SMMA_SG_00330 | Operations with Numbers | Subtract Using Basic Math Facts | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 3     | Fluency | SG360      | SMMA_SG_00360 | Operations with Numbers | Subtract Using Basic Math Facts | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 3     | Fluency | SG370      | SMMA_SG_00370 | Operations with Numbers | Subtract Using Basic Math Facts | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 3     | Fluency | SG380      | SMMA_SG_00380 | Operations with Numbers | Subtract Using Basic Math Facts | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic  | Description   |
|-------|-------------|------------|---------------|--|--|---|
| 3     | Geometry    | GE385      | SMMA_LO_00613 | Attributes of Two-Dimensional Figures  | Identify Figures Based on Their Attributes         | Identify figures that do not have attribute A (type of figure) and do not have attribute B (color). |
| 3     | Geometry    | GE340      | SMMA_LO_01677 | Geometric Comparisons                  | Sort Two-Dimensional and Three-Dimensional Figures | Sort two-dimensional and three-dimensional shapes.  |
| 3     | Geometry    | GE380      | SMMA_LO_00612 | Lines, Line Segments, and Rays         | Draw Diagonal Lines                                | Draw all the diagonals of a polygon.  |
| 3     | Geometry    | GE350      | SMMA_LO_00609 | Lines, Line Segments, and Rays         | Identify Diagonal Lines                            | Determine whether or not a segment is a diagonal of a polygon.                                      |
| 3     | Geometry    | GE300      | SMMA_LO_00605 | Lines, Line Segments, and Rays         | Identify Line Segments                             | Identify line segments.   |
| 3     | Geometry    | GE370      | SMMA_LO_00611 | Similarity and Congruence              | Draw a Congruent Two-Dimensional Figure            | Connect points on a geoboard to copy a figure.  |
| 3     | Geometry    | GE310      | SMMA_LO_00606 | Similarity and Congruence              | Identify Congruent Two-Dimensional Figures         | Identify congruent figures on a geoboard.   |
| 3     | Geometry    | GE360      | SMMA_LO_00610 | Similarity and Congruence              | Identify Similar Two-Dimensional Figures           | Identify similar polygons.  |
| 3     | Geometry    | GE335      | SMMA_LO_00608 | Symmetry                               | Draw Using Symmetry                                | Draw a vertical or horizontal line of symmetry.   |
| 3     | Measurement | ME310      | SMMA_LO_00773 | Measurement of Two-Dimensional Figures | Calculate Area Using Metric Units                  | Find the area of a rectangle (5 to 25 square centimeters).  |



| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic   | Description  |
|-------|-------------|------------|---------------|--|---|--|
| 3     | Measurement | PS390      | SMMA_LO_01262 | Measurement of Two-Dimensional Figures | Calculate Area Using Metric Units                       | Use guess and check to solve a two-step problem.   |
| 3     | Measurement | ME385      | SMMA_LO_00783 | Measurement of Two-Dimensional Figures | Calculate the Area of an Irregular Figure               | Count squares and half squares to find the area of a figure in square centimeters.                 |
| 3     | Measurement | ME330      | SMMA_LO_00776 | Measurement of Two-Dimensional Figures | Identify the Figure with the Least or Greatest Area     | Identify the figure in a set with the least or greatest area (figures are made up of squares).     |
| 3     | Measurement | DC300      | SMMA_LO_00180 | Money                                  | Identify Monetary Amounts (Dollars and Dimes)           | Identify the number of dollars and dimes that represent a given amount (\$1.10 to \$3.50).         |
| 3     | Measurement | AP320      | SMMA_LO_00143 | Money                                  | Identify Monetary Amounts (Pennies, Nickels, and Dimes) | Determine the number of cents in 1 to 100 pennies, 1 to 20 nickels, or 1 to 10 dimes.              |
| 3     | Measurement | ME350      | SMMA_LO_00778 | Money                                  | Represent Money in Multiple Ways                        | Show the given amount of money in coins (25 to 90 cents in pennies, nickels, dimes, and quarters). |
| 3     | Measurement | AP304      | SMMA_LO_01671 | Time                                   | Convert Time to Equivalent Units                        | Determine number of hours equivalent to number of minutes.   |
| 3     | Measurement | AP302      | SMMA_LO_01672 | Time                                   | Convert Time to Equivalent Units                        | Convert hours to minutes.  |
| 3     | Measurement | AP300      | SMMA_LO_00142 | Time                                   | Determine Elapsed Time on an Analog Clock               | Find the elapsed time (differences from 1 to 6 hours, does not cross 12 o'clock).                  |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic   | Description   |
|-------|-------------|------------|---------------|------------------|---|---|
| 3     | Measurement | ME325      | SMMA_LO_00775 | Time             | Determine Elapsed Time on an Analog Clock               | Show time 1 to 11 hours and 5 to 55 minutes before or after the time shown (analog and digital clocks). |
| 3     | Measurement | ME355      | SMMA_LO_00779 | Time             | Identify Alternative Ways of Stating Time               | Identify another way to state the time (minutes before or after the hour).                              |
| 3     | Measurement | ME380      | SMMA_LO_00782 | Time             | Recognize and Order Days, Weeks, and Months             | Order the days of the week on a calendar.   |
| 3     | Measurement | SA340      | SMMA_LO_01300 | Time             | Recognize and Order Days, Weeks, and Months             | Identify a given date on a calendar; then find the date 3 to 8 weeks later.                             |
| 3     | Measurement | ME300      | SMMA_LO_00771 | Time             | Use Analog and Digital Clocks to Tell Time              | Show time to the minute using digital and analog clocks.  |
| 3     | Measurement | AP212      | SMMA_LO_01670 | Time             | Use Analog and Digital Clocks to Tell Time              | Set the digital clock to match the time on the analog clock to the exact minute.                        |
| 3     | Measurement | AP332      | SMMA_LO_01673 | Units of Measure | Choose the Appropriate Customary Unit of Linear Measure | Choose the appropriate customary units of linear measure (inches, feet, yards, and miles).              |
| 3     | Measurement | ME360      | SMMA_LO_00780 | Units of Measure | Choose the Appropriate Customary Units of Length        | Identify the reasonable length of an object (inches, feet, and yards).                                  |
| 3     | Measurement | ME375      | SMMA_LO_00781 | Units of Measure | Compare the Weight/Mass of Familiar Objects             | Identify which familiar object is heavier.  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept          | Topic                                  | Description   |
|-------|-----------------------------|------------|---------------|------------------|--|---|
| 3     | Measurement                 | AP330      | SMMA_LO_01674 | Units of Measure | Customary Units of Capacity and Volume | Choose the appropriate customary units of liquid measure (cups, quarts, and gallons).             |
| 3     | Measurement                 | ME340      | SMMA_LO_00777 | Units of Measure | Measure Length in Nonstandard Units    | Measure the length of an object (2 to 7 nonstandard units).                                       |
| 3     | Number Sense and Operations | PS360      | SMMA_LO_01259 | Estimation       | Determine Reasonableness               | Determine the reasonableness of a sum or difference (two- and three-digit numbers).               |
| 3     | Number Sense and Operations | WP360      | SMMA_LO_01586 | Estimation       | Determine Reasonableness               | Identify the most reasonable quantity for a context (order of magnitude differs).                 |
| 3     | Number Sense and Operations | WP305      | SMMA_LO_01675 | Estimation       | Estimate Sums to Nearest Hundred       | Estimate the sum by rounding to the nearest hundred (three-digit addends).                        |
| 3     | Number Sense and Operations | WP303      | SMMA_LO_01615 | Estimation       | Estimate Sums to Nearest Ten           | Estimate the sum by rounding to the nearest 10 (two-digit addends).                               |
| 3     | Number Sense and Operations | NC395      | SMMA_LO_01052 | Estimation       | Estimate Sums/Differences              | Identify the best estimate for a sum of two numbers (two-digit addends, round to the nearest 10). |
| 3     | Number Sense and Operations | AP307      | SMMA_LO_01676 | Estimation       | Estimate Sums/Differences              | Estimate the difference (three-digit, differences 100 to 800).                                    |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic   | Description  |
|-------|-----------------------------|------------|---------------|--------------|---|--|
| 3     | Number Sense and Operations | WP330      | SMMA_LO_01580 | Estimation   | Estimate Sums/Differences Involving Money               | Estimate the sum or difference in a money problem by rounding to the nearest 10 (two-digit sums and differences).      |
| 3     | Number Sense and Operations | WP385      | SMMA_LO_01591 | Estimation   | Estimate Sums/Differences Involving Money               | Estimate the total cost of four items by rounding to the nearest dollar (sums to \$15.00).                             |
| 3     | Number Sense and Operations | PS365      | SMMA_LO_01668 | Estimation   | Estimate Sums/Differences Involving Money               | Use estimation to choose two items with a total cost less than \$10.00.  |
| 3     | Number Sense and Operations | AP306      | SMMA_LO_01669 | Estimation   | Estimate Sums/Differences Involving Money               | Estimate the difference by rounding to the nearest dollar (minuends \$5.00 to \$20.00, subtrahends \$3.00 to \$15.00). |
| 3     | Number Sense and Operations | DC390      | SMMA_LO_00191 | Number Sense | Compare Decimals to Tenths                              | Compare decimal numbers (0.1 to 9.9).  |
| 3     | Number Sense and Operations | EQ330      | SMMA_LO_00337 | Number Sense | Compare Differences Using Symbols                       | Compare differences (minuends 1 to 9).   |
| 3     | Number Sense and Operations | FR395      | SMMA_LO_00429 | Number Sense | Compare Fractions with Unlike Denominators Using Models | Use a model to compare two fractions (halves to eighths, unlike denominators).   |
| 3     | Number Sense and Operations | NC310      | SMMA_LO_01026 | Number Sense | Compare Numbers to 1,001                                | Identify the greatest or least number (three-digit).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description  |
|-------|-----------------------------|------------|---------------|--------------|--|--|
| 3     | Number Sense and Operations | NC355      | SMMA_LO_01039 | Number Sense | Compare Numbers to 10,001                        | Compare numbers (1,000 to 9,999).  |
| 3     | Number Sense and Operations | EQ300      | SMMA_LO_00334 | Number Sense | Compare Sums                                     | Compare sums (two-digit addends, multiples of 10).   |
| 3     | Number Sense and Operations | FR380      | SMMA_LO_00427 | Number Sense | Determine Equal Parts Using Fraction Models      | Find a fraction equal to 1 (halves to eighths).  |
| 3     | Number Sense and Operations | DC340      | SMMA_LO_00184 | Number Sense | Determine Equivalent Fractions and Decimals      | Match a fraction to a decimal (tenths, 0.1 to 0.9).  |
| 3     | Number Sense and Operations | DC350      | SMMA_LO_00185 | Number Sense | Determine Equivalent Mixed Numbers and Decimals  | Determine the fraction and decimal that represent a model (base-ten blocks, tenths, 0.1 to 0.9). |
| 3     | Number Sense and Operations | DC370      | SMMA_LO_00187 | Number Sense | Determine Equivalent Mixed Numbers and Decimals  | Enter a decimal number for a mixed number (tenths, 1.1 to 9.9).                                  |
| 3     | Number Sense and Operations | FR300      | SMMA_LO_00419 | Number Sense | Determine Fractional Amounts Using Regions/Areas | Count shaded parts and the total number of parts (halves to eighths).                            |
| 3     | Number Sense and Operations | FR310      | SMMA_LO_00420 | Number Sense | Determine Fractional Amounts Using Regions/Areas | Identify the figure showing a fraction of a region shaded (halves to eighths).                   |
| 3     | Number Sense and Operations | FR330      | SMMA_LO_00422 | Number Sense | Determine Fractional Amounts Using Regions/Areas | Enter the fraction representing the shaded amount (halves to eighths).                           |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic                                   | Description  |
|-------|-----------------------------|------------|---------------|--------------|---|--|
| 3     | Number Sense and Operations | FR320      | SMMA_LO_00421 | Number Sense | Determine Fractional Amounts Using Sets | Identify a fraction representing the shaded part (halves to eighths).                                  |
| 3     | Number Sense and Operations | FR340      | SMMA_LO_00423 | Number Sense | Determine Fractional Amounts Using Sets | Count the shaded and total number of elements in a set (halves to eighths).                            |
| 3     | Number Sense and Operations | FR350      | SMMA_LO_00424 | Number Sense | Determine Fractional Amounts Using Sets | Solve a problem by finding the fractional amount of a set (halves to eighths).                         |
| 3     | Number Sense and Operations | FR360      | SMMA_LO_00425 | Number Sense | Determine Fractional Amounts Using Sets | Identify a fractional portion of a set (halves to eighths).  |
| 3     | Number Sense and Operations | FR370      | SMMA_LO_00426 | Number Sense | Determine Fractional Amounts Using Sets | Write a fraction for the shaded elements of a set (halves to eighths).                                 |
| 3     | Number Sense and Operations | FR390      | SMMA_LO_00428 | Number Sense | Determine Fractional Amounts Using Sets | Using pictures, find a fractional amount of a whole number (product of halves to fourths and 2 to 16). |
| 3     | Number Sense and Operations | NC382      | SMMA_LO_01049 | Number Sense | Identify Numbers Using Clues            | Find two numbers when given place value clues (two-digit).   |
| 3     | Number Sense and Operations | NC304      | SMMA_LO_01024 | Number Sense | Identify Ordinal Numbers to 20th        | Find the number of objects behind the nth object in a line (15 to 20 objects).                         |
| 3     | Number Sense and Operations | NC300      | SMMA_LO_01022 | Number Sense | Identify Ordinal Numbers to 5th         | Identify the nth object in a sequence (first to fifth).  |
| 3     | Number Sense and Operations | NC357      | SMMA_LO_01040 | Number Sense | Order Numbers to 10,001                 | Order four numbers from least to greatest (1,000 to 9,999).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description  |
|-------|-----------------------------|------------|---------------|--------------|--|--|
| 3     | Number Sense and Operations | PR380      | SMMA_LO_01162 | Number Sense | Ratios and Proportions   | Select a table that contains data that are in the same proportions as the sectors of a graph.        |
| 3     | Number Sense and Operations | ME315      | SMMA_LO_00774 | Number Sense | Represent Decimal Money Amounts Using Coins and Dollars            | Show a decimal money amount in dollars and coins (\$1.00 to \$5.00).                                 |
| 3     | Number Sense and Operations | NC315      | SMMA_LO_01027 | Number Sense | Sequence Numbers   | Identify a number that is between two numbers, or before, after, or closer to a number (101 to 999). |
| 3     | Number Sense and Operations | NC320      | SMMA_LO_01029 | Number Sense | Sequence Numbers   | Identify four numbers that are in consecutive order (three-digit).                                   |
| 3     | Number Sense and Operations | NC302      | SMMA_LO_01023 | Number Sense | Sequence Numbers Using a Number Line                               | Identify whole numbers on a number line that satisfy the inequality (0 to 10).                       |
| 3     | Number Sense and Operations | NC350      | SMMA_LO_01037 | Number Sense | Sequence Numbers Using a Number Line                               | Enter a number on a partially numbered number line (100 to 999).                                     |
| 3     | Number Sense and Operations | AP390      | SMMA_LO_00148 | Number Sense | Solve Fraction Problems in Context                                 | Identify the items in a pictograph with a scale of 2 that represent a given fraction of the data.    |
| 3     | Number Sense and Operations | DC380      | SMMA_LO_00189 | Number Sense | Use Base-Ten Models to Represent Fractions, Decimals, and Percents | Use base-ten blocks to represent a decimal number (tenths, 1.0 to 3.9).                              |
| 3     | Number Sense and Operations | DC330      | SMMA_LO_00183 | Number Sense | Write Money Amounts Using Decimal Notation                         | Write the value of a set of dimes in dollar form (\$1.10 to \$3.90).                                 |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                      | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 3     | Number Sense and Operations | ME390      | SMMA_LO_00784 | Number Sense            | Write Money Amounts Using Decimal Notation | Write the value of a set of coins as a decimal amount (\$1.00 to \$3.20).   |
| 3     | Number Sense and Operations | NC370      | SMMA_LO_01044 | Number Systems          | Roman Numerals                             | Match a Roman numeral to an Arabic numeral or complete the sum that gives the value of a Roman numeral (1 to 11). |
| 3     | Number Sense and Operations | NC345      | SMMA_LO_01035 | Number Theory           | Add/Subtract Using Fact Families           | Identify a missing number in an addition and subtraction fact family.   |
| 3     | Number Sense and Operations | NC396      | SMMA_LO_01857 | Number Theory           | Add/Subtract Using Fact Families           | Create a fact family (addition and subtraction).  |
| 3     | Number Sense and Operations | NC385      | SMMA_LO_01050 | Number Theory           | Identify Odd/Even Numbers                  | Identify an even or odd number (2 to 99).   |
| 3     | Number Sense and Operations | NC397      | SMMA_LO_01053 | Number Theory           | Identify Odd/Even Numbers                  | Identify the expression whose sum is odd or even (basic facts).   |
| 3     | Number Sense and Operations | NC399      | SMMA_LO_01054 | Number Theory           | Identify Odd/Even Numbers                  | Identify odd or even numbers (two- and three-digit).  |
| 3     | Number Sense and Operations | WP300      | SMMA_LO_01576 | Operations with Numbers | Add Basic Math Facts in Context            | Solve an addition problem in context (three addends, sums 9 to 18).   |
| 3     | Number Sense and Operations | WP365      | SMMA_LO_01587 | Operations with Numbers | Add Basic Math Facts in Context            | Solve an addition problem in context (four addends, sums 0 to 25).  |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 3     | Number Sense and Operations | AD330      | SMMA_LO_00068 | Operations with Numbers | Add Multiples of 10 Horizontally with Regrouping         | Add two addends displayed horizontally (multiples of 10, sums 100 to 180, regrouping).             |
| 3     | Number Sense and Operations | AD335      | SMMA_LO_00069 | Operations with Numbers | Add One-Digit Whole Numbers                              | Add three addends (student choice, one-digit addends, sums 20 to 27).                              |
| 3     | Number Sense and Operations | AD300      | SMMA_LO_00062 | Operations with Numbers | Add One-Digit Whole Numbers Horizontally                 | Add three addends displayed horizontally (one-digit addends, sums 20 to 27).                       |
| 3     | Number Sense and Operations | AD385      | SMMA_LO_00079 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers without Regrouping | Add three addends (student choice, one-digit and two-digit addends, sums 21 to 99, no regrouping). |
| 3     | Number Sense and Operations | AD325      | SMMA_LO_00067 | Operations with Numbers | Add Three-Digit Whole Numbers Vertically with Regrouping | Add two addends (student choice, two-digit addends, sums 30 to 98, regrouping).                    |
| 3     | Number Sense and Operations | AD375      | SMMA_LO_00077 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add two addends (student choice, three-digit addends, sums 1000 to 1899, regrouping).              |
| 3     | Number Sense and Operations | AD345      | SMMA_LO_00071 | Operations with Numbers | Add Three-Digit Whole Numbers without Regrouping         | Add two addends (student choice, three-digit addends, sums 200 to 999, no regrouping).             |
| 3     | Number Sense and Operations | AD395      | SMMA_LO_00081 | Operations with Numbers | Add Three-Digit Whole Numbers without Regrouping         | Add two addends (student choice, three-digit addends, sums 300 to 989, no regrouping).             |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 3     | Number Sense and Operations | AD310      | SMMA_LO_00064 | Operations with Numbers | Add Two-Digit Whole Numbers Horizontally                   | Add two addends displayed horizontally (two-digit addends, sums 21 to 99).  |
| 3     | Number Sense and Operations | AD365      | SMMA_LO_00075 | Operations with Numbers | Add Two-Digit Whole Numbers Vertically with Regrouping     | Add two addends (student choice, two-digit addends, sums 100 to 198, no regrouping).  |
| 3     | Number Sense and Operations | AD315      | SMMA_LO_00065 | Operations with Numbers | Add Two-Digit/Three-Digit Whole Numbers without Regrouping | Add two addends (student choice, a two-digit and a three-digit addend, sums 100 to 999, no regrouping).   |
| 3     | Number Sense and Operations | DC310      | SMMA_LO_00181 | Operations with Numbers | Add/Subtract Money   | Solve an addition problem by finding the total cost of two items (prices expressed as decimals, total < \$0.50, no regrouping).                           |
| 3     | Number Sense and Operations | ME305      | SMMA_LO_00772 | Operations with Numbers | Add/Subtract Money   | Find the amount shown (25 to 90 cents in pennies, nickels, dimes, and quarters).  |
| 3     | Number Sense and Operations | WP310      | SMMA_LO_01577 | Operations with Numbers | Add/Subtract Money   | Solve an addition or subtraction problem by finding the total cost of two items (prices expressed as decimals, sums are less than \$0.50, no regrouping). |
| 3     | Number Sense and Operations | WP345      | SMMA_LO_01583 | Operations with Numbers | Add/Subtract Money   | Make a picture to find the change received from a purchase (change back from \$1.00).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 3     | Number Sense and Operations | PS330      | SMMA_LO_01255 | Operations with Numbers | Connect Pictorial Model with Addition/Subtraction Number Sentence | Identify the picture that can be used to solve an addition or subtraction problem.  |
| 3     | Number Sense and Operations | NC330      | SMMA_LO_01031 | Operations with Numbers | Determine Missing Operations in Number Sentences                  | Identify the missing operation in a subtraction or addition number sentence (basic facts).  |
| 3     | Number Sense and Operations | DV350      | SMMA_LO_00280 | Operations with Numbers | Divide Basic Math Facts   | Divide using basic facts (combinations 5 x 5).  |
| 3     | Number Sense and Operations | DV370      | SMMA_LO_00282 | Operations with Numbers | Divide Basic Math Facts   | Divide using basic facts (combinations 2 x 6 to 9 x 5).   |
| 3     | Number Sense and Operations | DV390      | SMMA_LO_00284 | Operations with Numbers | Divide Basic Math Facts   | Divide (combinations 6 x 6 to 9 x 9).   |
| 3     | Number Sense and Operations | WP380      | SMMA_LO_01590 | Operations with Numbers | Identify Multiplication Number Sentences in Context               | Identify and solve an expression that represents a multiplication problem in context (products 3 x 4 to 9 x 9).                   |
| 3     | Number Sense and Operations | PS320      | SMMA_LO_01254 | Operations with Numbers | Identify Number Sentences to Solve Problems                       | Identify a number sentence that can be used to solve an addition, a subtraction, or a multiplication problem (one- or two-digit). |
| 3     | Number Sense and Operations | EQ395      | SMMA_LO_00344 | Operations with Numbers | Multiply Basic Math Facts   | Complete fact families with four facts (products 2 x 3 to 8 x 9).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 3     | Number Sense and Operations | MU300      | SMMA_LO_00855 | Operations with Numbers | Multiply Basic Math Facts                     | Multiply whole numbers (products to 5 x 5).                                    |
| 3     | Number Sense and Operations | MU320      | SMMA_LO_00857 | Operations with Numbers | Multiply Basic Math Facts                     | Multiply whole numbers (products 6 x 1 to 9 x 5).                              |
| 3     | Number Sense and Operations | MU355      | SMMA_LO_00861 | Operations with Numbers | Multiply Basic Math Facts                     | Multiply whole numbers (products 1 x 2 to 5 x 5).                              |
| 3     | Number Sense and Operations | MU365      | SMMA_LO_00863 | Operations with Numbers | Multiply Basic Math Facts                     | Multiply whole numbers (products 1 x 6 to 5 x 9).                              |
| 3     | Number Sense and Operations | MU375      | SMMA_LO_00865 | Operations with Numbers | Multiply Basic Math Facts                     | Multiply whole numbers (products 6 x 2 to 9 x 5).                              |
| 3     | Number Sense and Operations | MU385      | SMMA_LO_00867 | Operations with Numbers | Multiply Basic Math Facts                     | Multiply whole numbers (products 6 x 6 to 9 x 9).                              |
| 3     | Number Sense and Operations | MU340      | SMMA_LO_00859 | Operations with Numbers | Multiply Basic Math Facts Horizontally        | Multiply whole numbers displayed horizontally (products 1 x 6 to 5 x 9).       |
| 3     | Number Sense and Operations | MU390      | SMMA_LO_00868 | Operations with Numbers | Multiply Basic Math Facts Horizontally        | Multiply whole numbers displayed horizontally (products 6 x 6 to 9 x 9).       |
| 3     | Number Sense and Operations | MU392      | SMMA_LO_00869 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers | Multiply a two-digit number by a one-digit number (products 10 x 1 to 12 x 4). |
| 3     | Number Sense and Operations | MU395      | SMMA_LO_00870 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers | Multiply whole numbers (student choice, products 10 x 2 to 15 x 5).            |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 3     | Number Sense and Operations | WP320      | SMMA_LO_01578 | Operations with Numbers | Multiply Using Repeated Addition                                      | Solve a multiplication problem in context (repeated addition feedback, products 2 x 2 to 5 x 5). |
| 3     | Number Sense and Operations | NC325      | SMMA_LO_01030 | Operations with Numbers | Skip Counting   | Count by 2's, 4's, 5's, or 10's (2 to 20, 4 to 40, 5 to 50, 80 to 200).                          |
| 3     | Number Sense and Operations | NC340      | SMMA_LO_01034 | Operations with Numbers | Skip Counting   | Find the missing numbers on a number line counting by 3's or 9's (3 to 81).                      |
| 3     | Number Sense and Operations | WP395      | SMMA_LO_01593 | Operations with Numbers | Solve Multiplication/Division Problems in Context                     | Solve a problem using data in a table (twice, half, three times, or four times an amount).       |
| 3     | Number Sense and Operations | WP375      | SMMA_LO_01589 | Operations with Numbers | Solve Multiplication/Division Problems with Missing/Extra Information | Solve a multiplication problem in context with extra information.                                |
| 3     | Number Sense and Operations | WP325      | SMMA_LO_01579 | Operations with Numbers | Solve Subtraction Problems in Context                                 | Solve a subtraction problem involving money (two-digit numbers, no regrouping).                  |
| 3     | Number Sense and Operations | WP335      | SMMA_LO_01581 | Operations with Numbers | Solve Subtraction Problems in Context                                 | Solve a subtraction problem in context (extra information, minuends 2 to 99, no regrouping).     |
| 3     | Number Sense and Operations | WP340      | SMMA_LO_01582 | Operations with Numbers | Solve an Addition/Subtraction Problem with Missing Information        | Identify the missing information needed to solve an addition or subtraction problem.             |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 3     | Number Sense and Operations | SU395      | SMMA_LO_01483 | Operations with Numbers | Subtract Three-Digit Whole Numbers with Regrouping    | Find the difference of two three-digit numbers (student choice, regrouping from the tens to the ones place).           |
| 3     | Number Sense and Operations | SU315      | SMMA_LO_01467 | Operations with Numbers | Subtract Three-Digit Whole Numbers without Regrouping | Find the difference of two three-digit numbers.  |
| 3     | Number Sense and Operations | SU325      | SMMA_LO_01469 | Operations with Numbers | Subtract Three-Digit Whole Numbers without Regrouping | Find the difference of two three-digit numbers (no regrouping).  |
| 3     | Number Sense and Operations | SU365      | SMMA_LO_01477 | Operations with Numbers | Subtract Three-Digit Whole Numbers without Regrouping | Find the difference of two three-digit numbers (student choice, no regrouping).  |
| 3     | Number Sense and Operations | SU345      | SMMA_LO_01473 | Operations with Numbers | Subtract Two-Digit Whole Numbers with Regrouping      | Subtract two-digit numbers with regrouping (vertical presentation).  |
| 3     | Number Sense and Operations | SU310      | SMMA_LO_01466 | Operations with Numbers | Subtract Whole Numbers Using Counting Up Strategy     | Subtract two numbers displayed horizontally (counting up strategy, minuends 20 to 99, subtrahends 2 to 9, regrouping). |
| 3     | Number Sense and Operations | SU340      | SMMA_LO_01472 | Operations with Numbers | Subtract Whole Numbers Using Counting Up Strategy     | Subtract two numbers displayed horizontally (counting up strategy, minuends 25 to 98, subtrahends 6 to 9, regrouping). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 3     | Number Sense and Operations | SU350      | SMMA_LO_01474 | Operations with Numbers | Subtract Whole Numbers Using Counting Up Strategy               | Subtract two numbers displayed horizontally (counting up strategy, minuends 10 to 99, regrouping).  |
| 3     | Number Sense and Operations | SU305      | SMMA_LO_01465 | Operations with Numbers | Subtract Whole Numbers with Regrouping                          | Subtract (minuends 20 to 98, subtrahends 1 to 9, regrouping).   |
| 3     | Number Sense and Operations | SU335      | SMMA_LO_01471 | Operations with Numbers | Subtract Whole Numbers with Regrouping                          | Find the difference of two whole numbers (student choice, three-digit minuends, two-digit subtrahends, regrouping from hundreds place to tens place). |
| 3     | Number Sense and Operations | SU355      | SMMA_LO_01475 | Operations with Numbers | Subtract Whole Numbers with Regrouping                          | Find the difference of two whole numbers (student choice, three-digit minuends, two-digit subtrahends, regrouping from tens place to ones place).     |
| 3     | Number Sense and Operations | SU375      | SMMA_LO_01479 | Operations with Numbers | Subtract Whole Numbers with Regrouping                          | Find the difference of two whole numbers (student choice, minuends 201 to 999, subtrahends 11 to 99, regrouping).                                     |
| 3     | Number Sense and Operations | SU385      | SMMA_LO_01481 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds Place | Find the difference of two whole numbers (student choice, three-digit minuends, two-digit subtrahends, regrouping from hundreds place to tens place). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 3     | Number Sense and Operations | PS335      | SMMA_LO_01663 | Operations with Numbers | Use Conceptual Models to Understand Division                          | Share a set of objects equally to show a division problem (6, 7, 10, or 12 objects).                           |
| 3     | Number Sense and Operations | DV320      | SMMA_LO_01664 | Operations with Numbers | Use Conceptual Models to Understand Division                          | Use repeated subtraction to solve a division problem (dividends 4 to 24).                                      |
| 3     | Number Sense and Operations | AP335      | SMMA_LO_01858 | Operations with Numbers | Use Conceptual Models to Understand Multiplication: Arrays/Area Model | Identify four arrays for a given product (products 6 to 30).   |
| 3     | Number Sense and Operations | AP350      | SMMA_LO_01859 | Operations with Numbers | Use Conceptual Models to Understand Multiplication: Arrays/Area Model | Create arrays for a given product (products 6 to 30).  |
| 3     | Number Sense and Operations | PS385      | SMMA_LO_01261 | Operations with Numbers | Use Logic to Solve an Addition Problem                                | Use logical reasoning to complete an addition puzzle with two three-digit addends.                             |
| 3     | Number Sense and Operations | DV340      | SMMA_LO_00279 | Operations with Numbers | Use Pictorial Models to Solve Division Problems                       | Divide using graphic models (combinations to 5 x 5).   |
| 3     | Number Sense and Operations | WP350      | SMMA_LO_01584 | Operations with Numbers | Use Pictorial Models to Solve Multiplication Problems                 | Make a picture to solve a multiplication problem involving total cost (2 to 5 items, 5, 10, or 15 cents each). |
| 3     | Number Sense and Operations | WP390      | SMMA_LO_01592 | Operations with Numbers | Use Pictorial Models to Solve Multiplication Problems                 | Make a picture to solve a multistep addition and multiplication problem in context.                            |



| Grade | Strand                      | MCS* Level | LO ID         | Concept     | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------|--|---|
| 3     | Number Sense and Operations | DC360      | SMMA_LO_00186 | Place Value | Identify Decimal Number Using a Number Line        | Mark the point on a number line that represents a decimal number (0.1 to 0.9).          |
| 3     | Number Sense and Operations | DC375      | SMMA_LO_00188 | Place Value | Identify Decimal Number Using a Number Line        | Find the missing decimal number on a number line (tenths, 0.1 to 0.9).                  |
| 3     | Number Sense and Operations | NC374      | SMMA_LO_01046 | Place Value | Identify Expanded Notation of Numbers to 1,000,001 | Identify the expanded notation of a five- or six-digit number.                          |
| 3     | Number Sense and Operations | NC352      | SMMA_LO_01038 | Place Value | Identify Expanded Notation of Numbers to 10,001    | Identify the expanded notation of a four-digit number.                                  |
| 3     | Number Sense and Operations | NC335      | SMMA_LO_01033 | Place Value | Identify Place Value to 1,000,001                  | Identify a number with a given digit in the ones, tens, hundreds, or thousands place.   |
| 3     | Number Sense and Operations | NC372      | SMMA_LO_01045 | Place Value | Identify Place Value to 1,000,001                  | Identify a number with a given digit in the ones to hundred thousands place.            |
| 3     | Number Sense and Operations | NC375      | SMMA_LO_01047 | Place Value | Identify Place Value to 1,000,001                  | Find a number equal to 1 to 9 hundreds, 0 to 9 tens, and 0 to 9 ones.                   |
| 3     | Number Sense and Operations | NC390      | SMMA_LO_01051 | Place Value | Identify Place Value to 1,000,001                  | Find a number equal to 1 to 9 thousands, 0 to 9 hundreds, 0 to 9 tens, and 0 to 9 ones. |
| 3     | Number Sense and Operations | NC367      | SMMA_LO_01043 | Place Value | Relate Words, Models or Numbers to 1,000,001       | Identify a word name for a four-, five- or six-digit numbers.                           |

| Grade | Strand                      | MCS* Level | LO ID         | Concept     | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------|--|---|
| 3     | Number Sense and Operations | NC365      | SMMA_LO_01042 | Place Value | Relate Words, Models or Numbers to 1,001         | Enter the number for a word name (100 to 999).  |
| 3     | Number Sense and Operations | NC305      | SMMA_LO_01025 | Place Value | Represent Numbers to 1,000 Using Base-Ten Blocks | Enter a three-digit number in a place-value chart (base-ten block models, three-digit). |
| 3     | Number Sense and Operations | NC333      | SMMA_LO_01032 | Place Value | Represent Numbers to 1,000 Using Base-Ten Blocks | Show a four-digit number with base-ten blocks.  |
| 3     | Number Sense and Operations | NC348      | SMMA_LO_01036 | Place Value | Round Three-Digit Numbers to Nearest Hundred     | Round a three-digit number to the nearest hundred.                                      |
| 3     | Number Sense and Operations | NC358      | SMMA_LO_01650 | Place Value | Round to Nearest Hundred                         | Round a three-digit number to the nearest hundred.                                      |
| 3     | Number Sense and Operations | NC359      | SMMA_LO_01651 | Place Value | Round to Nearest Hundred                         | Round a three-digit number to the nearest hundred.                                      |
| 3     | Number Sense and Operations | NC360      | SMMA_LO_01652 | Place Value | Round to Nearest Hundred                         | Round a three-digit number to the nearest hundred.                                      |
| 3     | Number Sense and Operations | NC318      | SMMA_LO_01028 | Place Value | Round to Nearest Ten                             | Round a two-digit number to the nearest ten.  |
| 3     | Number Sense and Operations | NC321      | SMMA_LO_01647 | Place Value | Round to Nearest Ten                             | Round two-digit numbers to the nearest ten.   |
| 3     | Number Sense and Operations | NC323      | SMMA_LO_01648 | Place Value | Round to Nearest Ten                             | Round a two-digit number to the nearest ten (hundreds chart).                           |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|----------------------------------|------------|---------------|-------------------------|--|--|
| 3     | Number Sense and Operations      | NC324      | SMMA_LO_01649 | Place Value             | Round to Nearest Ten                         | Round a two-digit number to the nearest ten.   |
| 3     | Patterns, Algebra, and Functions | PS310      | SMMA_LO_01653 | Functions and Relations | Describe the Rule in a Relation or Function  | Describe the relationship between two sets of numbers in a relation or function using multiplication, addition, or subtraction.            |
| 3     | Patterns, Algebra, and Functions | PS380      | SMMA_LO_01654 | Functions and Relations | Describe the Rule in a Relation or Function  | Describe the relationship between two sets of numbers in a relation or function using subtraction (minuends 30 to 50, subtrahends 2 to 5). |
| 3     | Patterns, Algebra, and Functions | PS382      | SMMA_LO_01655 | Functions and Relations | Describe the Rule in a Relation or Function  | Describe the relationship between two sets of numbers in a relation or function using multiplication (factors 2 - 5).                      |
| 3     | Patterns, Algebra, and Functions | PS370      | SMMA_LO_01722 | Functions and Relations | Describe the Rule in a Relation or Function  | Identify the one-step rule in the relation or function (addition and subtraction).   |
| 3     | Patterns, Algebra, and Functions | EQ340      | SMMA_LO_00338 | One-Step Equations      | Find the Difference to Identify the Variable | Solve for $c$ in $a - b = c$ (minuends 20 to 99, subtrahends 1 to 9, no regrouping).   |
| 3     | Patterns, Algebra, and Functions | EQ360      | SMMA_LO_00340 | One-Step Equations      | Find the Difference to Identify the Variable | Solve for $c$ in $a - b = c$ (minuends 20 to 99, two-digit subtrahends, no regrouping).  |
| 3     | Patterns, Algebra, and Functions | EQ380      | SMMA_LO_00342 | One-Step Equations      | Find the Difference to Identify the Variable | Solve for $c$ in $a - b = c$ (minuends 20 to 99, regrouping).  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic  | Description  |
|-------|----------------------------------|------------|---------------|--------------------|--|--|
| 3     | Patterns, Algebra, and Functions | WP355      | SMMA_LO_01585 | One-Step Equations | Solve One-Step Equations Involving Decimals      | Solve a division problem about money with extra information (round quotient to the nearest whole number).        |
| 3     | Patterns, Algebra, and Functions | EQ310      | SMMA_LO_00335 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a, b, or c in $a + b + c = d$ (sums 10 to 19).   |
| 3     | Patterns, Algebra, and Functions | EQ320      | SMMA_LO_00336 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a + b = c$ (sums 10 to 108).  |
| 3     | Patterns, Algebra, and Functions | EQ370      | SMMA_LO_00341 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a + b = c$ (sums 12 to 98).   |
| 3     | Patterns, Algebra, and Functions | EQ390      | SMMA_LO_00343 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a - b = c$ (minuends 20 to 99, no regrouping).  |
| 3     | Patterns, Algebra, and Functions | AD320      | SMMA_LO_00066 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (three addends, sums 10 to 19).                                     |
| 3     | Patterns, Algebra, and Functions | AD340      | SMMA_LO_00070 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (a one-digit and a two-digit addend, sums 10 to 99, no regrouping). |
| 3     | Patterns, Algebra, and Functions | AD360      | SMMA_LO_00074 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (multiples of 10, sums 100 to 180).                                 |
| 3     | Patterns, Algebra, and Functions | MU310      | SMMA_LO_00856 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing factor (products to $5 \times 5$ ).   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept        | Topic  | Description   |
|-------|----------------------------------|------------|---------------|----------------|--|---|
| 3     | Patterns, Algebra, and Functions | EQ305      | SMMA_LO_01656 | Open Sentences | Find the Missing Addend in a Number Sentence     | Solve an equation with one missing addend (sums 2 to 15).                         |
| 3     | Patterns, Algebra, and Functions | MU330      | SMMA_LO_00858 | Open Sentences | Find the Missing Factor in a Number Sentence     | Find the missing factor (products to $5 \times 5$ ).                              |
| 3     | Patterns, Algebra, and Functions | MU350      | SMMA_LO_00860 | Open Sentences | Find the Missing Factor in a Number Sentence     | Find the missing factor (products $1 \times 6$ to $5 \times 9$ ).                 |
| 3     | Patterns, Algebra, and Functions | MU360      | SMMA_LO_00862 | Open Sentences | Find the Missing Factor in a Number Sentence     | Find the missing factor (products $1 \times 6$ to $5 \times 9$ ).                 |
| 3     | Patterns, Algebra, and Functions | MU370      | SMMA_LO_00864 | Open Sentences | Find the Missing Factor in a Number Sentence     | Find the missing factor (products $1 \times 6$ to $9 \times 5$ ).                 |
| 3     | Patterns, Algebra, and Functions | MU380      | SMMA_LO_00866 | Open Sentences | Find the Missing Factor in a Number Sentence     | Find the missing factor (products $6 \times 1$ to $9 \times 5$ ).                 |
| 3     | Patterns, Algebra, and Functions | SU320      | SMMA_LO_01468 | Open Sentences | Find the Missing Minuend in a Number Sentence    | Find the missing minuend in a subtraction number sentence (minuends 11 to 19).    |
| 3     | Patterns, Algebra, and Functions | SU370      | SMMA_LO_01478 | Open Sentences | Find the Missing Minuend in a Number Sentence    | Find the missing minuend in a number sentence (minuends 21 to 99).                |
| 3     | Patterns, Algebra, and Functions | SU300      | SMMA_LO_01464 | Open Sentences | Find the Missing Subtrahend in a Number Sentence | Find the missing subtrahend in a subtraction number sentence (minuends 11 to 19). |

| Grade | Strand                           | MCS* Level | LO ID         | Concept        | Topic  | Description   |
|-------|----------------------------------|------------|---------------|----------------|--|---|
| 3     | Patterns, Algebra, and Functions | SU330      | SMMA_LO_01470 | Open Sentences | Find the Missing Subtrahend in a Number Sentence | Find the missing subtrahend in a subtraction number sentence (minuends 21 to 99).                       |
| 3     | Patterns, Algebra, and Functions | SU380      | SMMA_LO_01480 | Open Sentences | Find the Missing Subtrahend in a Number Sentence | Find the missing subtrahend in a number sentence (minuends 10 to 99).                                   |
| 3     | Patterns, Algebra, and Functions | EQ350      | SMMA_LO_00339 | Open Sentences | Find the Sum to Identify the Variable            | Solve for d in $a + b + c = d$ (one-digit addends, sums 20 to 27).                                      |
| 3     | Patterns, Algebra, and Functions | AP310      | SMMA_LO_01657 | Patterns       | Extend a Numeric Pattern                         | Extend a repetitive addition or subtraction pattern (addends 3 to 8, subtrahends 3 to 8).               |
| 3     | Patterns, Algebra, and Functions | AP313      | SMMA_LO_01658 | Patterns       | Extend a Numeric Pattern                         | Extend a repetitive addition or subtraction pattern (addends 2 to 4, subtrahends 2 to 4).               |
| 3     | Patterns, Algebra, and Functions | AP305      | SMMA_LO_01659 | Patterns       | Extend a Pattern of Shapes                       | Extend a pattern of shapes (A-B-B-C, A-A-B-C, A-B-C-C).   |
| 3     | Patterns, Algebra, and Functions | AP322      | SMMA_LO_01660 | Patterns       | Extend an Iterative Pattern                      | Identify an iterative pattern by adding or subtracting a number of objects (one to twenty-one objects). |
| 3     | Patterns, Algebra, and Functions | AP324      | SMMA_LO_01661 | Patterns       | Extend an Iterative Pattern                      | Make an iterative pattern using shapes.   |
| 3     | Patterns, Algebra, and Functions | AP326      | SMMA_LO_01662 | Patterns       | Extend an Iterative Pattern                      | Extend an iterative pattern based on Fibonacci's sequence.  |

| Grade | Strand                               | MCS* Level | LO ID         | Concept              | Topic  | Description   |
|-------|--------------------------------------|------------|---------------|----------------------|--|---|
| 3     | Patterns, Algebra, and Functions     | GE320      | SMMA_LO_00607 | Patterns             | Identify the Missing Picture in a Pattern                              | Identify the missing picture in a 1-2-3-1-2-3 pattern.  |
| 3     | Patterns, Algebra, and Functions     | PS345      | SMMA_LO_01258 | Three-Step Equations | Solve Three-Step Equations   | Solve a three-step problem when given the first number and the three steps.   |
| 3     | Patterns, Algebra, and Functions     | PS375      | SMMA_LO_01260 | Two-Step Equations   | Solve Two-Step Equations in Context                                    | Use pictures to solve a two-step problem.   |
| 3     | Probability and Discrete Mathematics | PR307      | SMMA_LO_01666 | Discrete Mathematics | Determine Number of Possible Arrangements                              | Find the number of arrangements that can be made with a group of two items and a group of three items.  |
| 3     | Probability and Discrete Mathematics | PR310      | SMMA_LO_01155 | Probability          | Describe the Probability of Events as Certain, Possible, or Impossible | Given a graphical representation of an urn containing colored balls, indicate whether an event is certain, possible, or impossible.   |
| 3     | Probability and Discrete Mathematics | PR325      | SMMA_LO_01665 | Probability          | Determine Possible Outcomes for Independent Events (Spinners)          | Given a graphical representation of two spinners, count all the possible outcomes for spinning each spinner once.   |
| 3     | Probability and Discrete Mathematics | PR330      | SMMA_LO_01157 | Probability          | Determine Qualitatively the More Probable Event                        | Given a graphical representation of an urn containing balls of three colors, determine qualitatively which event is more probable to occur (5 to 8 times as many balls of one color as of the other color). |

| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic   | Description  |
|-------|--------------------------------------|------------|---------------|-------------|---|--|
| 3     | Probability and Discrete Mathematics | PR350      | SMMA_LO_01159 | Probability | Determine Qualitatively the More Probable Event | Given a graphical representation of an urn containing balls of two colors, determine qualitatively which color is more probable to be randomly selected (2 to 4 times as many balls of one color as of the other color). |
| 3     | Probability and Discrete Mathematics | PR370      | SMMA_LO_01161 | Probability | Determine Qualitatively the More Probable Event | Using a graphical representation of an urn and a set of balls of two colors, modify a random experiment so that the qualitative probability of getting one color is greater than that of getting the other color.        |
| 3     | Probability and Discrete Mathematics | PR390      | SMMA_LO_01163 | Probability | Determine Qualitatively the More Probable Event | Given a graphical representation of an urn containing balls of three colors, determine qualitatively which event is more probable to occur.  |
| 3     | Probability and Discrete Mathematics | PR305      | SMMA_LO_01667 | Probability | Express Probability as a Fraction               | Write a fraction to express the probability of an event.   |

\* Math Concepts and Skills



## Grade 4

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic  | Description  |
|-------|---------------|------------|---------------|--------------------------------------|--|--|
| 4     | Data Analysis | SA450      | SMMA_LO_01311 | Data Interpretation                  | Interpret Categorical Data Not from a Chart or Table | Identify all the towns with temperatures below 32 degrees Fahrenheit on a weather map.   |
| 4     | Data Analysis | SA460      | SMMA_LO_01312 | Data Interpretation                  | Interpret Categorical Data Not from a Chart or Table | Predict the effect of changing temperatures on the weather.  |
| 4     | Data Analysis | SA410      | SMMA_LO_01307 | Graph, Chart, and Table Construction | Collect, Organize, and Analyze Data                  | Record, graph, and interpret data about the effects of plant food on growth.   |
| 4     | Data Analysis | SA470      | SMMA_LO_01313 | Graph, Chart, and Table Construction | Collect, Organize, and Analyze Data                  | Read, graph, and interpret data from weighing washers on a scale, and infer the weight of 1 to 6 washers from data on a table. |
| 4     | Data Analysis | SA400      | SMMA_LO_01306 | Graph, Chart, and Table Construction | Complete a Chart Using Data from a Bar Graph         | Fill in a chart based on plant growth data represented in a bar graph.   |
| 4     | Data Analysis | AP442      | SMMA_LO_01693 | Graph, Chart, and Table Construction | Construct Venn Diagrams                              | Place data in a Venn diagram according to its attributes.  |
| 4     | Data Analysis | AP435      | SMMA_LO_01697 | Graph, Chart, and Table Construction | Construct a Line Graph                               | Create a line graph using data from a table.   |
| 4     | Data Analysis | AP444      | SMMA_LO_01698 | Graph, Chart, and Table Construction | Construct a Pictograph                               | Create a pictograph from a set of data.  |

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic   | Description   |
|-------|---------------|------------|---------------|--------------------------------------|---|---|
| 4     | Data Analysis | AP430      | SMMA_LO_01696 | Graph, Chart, and Table Construction | Construct a Vertical Bar Graph Using Data from a Chart or Table | Create a bar graph using data from a chart of values.   |
| 4     | Data Analysis | AP420      | SMMA_LO_00150 | Graph, Chart, and Table Construction | Read and Interpret Horizontal or Vertical Pictographs           | Read and interpret a horizontal or vertical pictograph (six items).                           |
| 4     | Data Analysis | AP450      | SMMA_LO_00152 | Graph, Chart, and Table Construction | Read and Interpret Line Graphs                                  | Read and interpret the data in a line graph.  |
| 4     | Data Analysis | AP470      | SMMA_LO_00154 | Graph, Chart, and Table Construction | Read and Interpret Line Graphs                                  | Identify the minimum and maximum values on a line graph.                                      |
| 4     | Data Analysis | AP433      | SMMA_LO_01694 | Graph, Chart, and Table Construction | Read and Interpret Line Graphs                                  | Read and interpret the data in a line graph.  |
| 4     | Data Analysis | PR460      | SMMA_LO_01172 | Graph, Chart, and Table Construction | Read and Interpret Pictographs                                  | Compare the amounts of two rows in a pictograph whose scale is 2, 5, or 10 items per picture. |
| 4     | Data Analysis | PR480      | SMMA_LO_01174 | Graph, Chart, and Table Construction | Read and Interpret Pictographs                                  | Compare the amounts of two rows in a pictograph whose scale is 2, 5, or 10 items per picture. |
| 4     | Data Analysis | SA490      | SMMA_LO_01314 | Graph, Chart, and Table Construction | Read and Interpret Tables and Charts                            | Read and interpret data in a table to determine the time it would take for skin to freeze.    |
| 4     | Data Analysis | AP440      | SMMA_LO_01695 | Graph, Chart, and Table Construction | Read and Interpret Tables and Charts                            | Read and interpret a table.   |
| 4     | Data Analysis | AP425      | SMMA_LO_00151 | Measures of Center and Spread        | Determine the Mean of a Data Set                                | Find the average of 3 numbers.  |

| Grade | Strand        | MCS* Level | LO ID         | Concept                       | Topic   | Description   |
|-------|---------------|------------|---------------|-------------------------------|---|---|
| 4     | Data Analysis | PR440      | SMMA_LO_01168 | Measures of Center and Spread | Determine the Median of a Data Set with an Even Number of Items | Identify the median of a data set with an odd number of items.  |
| 4     | Data Analysis | PR442      | SMMA_LO_01169 | Measures of Center and Spread | Determine the Median of a Data Set with an Even Number of Items | Identify the median of a data set with an even number of items and the two middle values are equal.     |
| 4     | Data Analysis | PR444      | SMMA_LO_01170 | Measures of Center and Spread | Determine the Median of a Data Set with an Even Number of Items | Identify the median of a data set with an even number of items and the two middle values are not equal. |
| 4     | Data Analysis | PR400      | SMMA_LO_01164 | Measures of Center and Spread | Determine the Mode of a Data Set                                | Identify the mode of a set of data.   |
| 4     | Data Analysis | PR420      | SMMA_LO_01166 | Measures of Center and Spread | Determine the Range of a Data Set                               | Find the range of a set of data.  |
| 4     | Fluency       | SG410      | SMMA_SG_00410 | Operations with Numbers       | Add Using Basic Math Facts                                      | Practice addition using basic facts; sums less than or equal to 20.                                     |
| 4     | Fluency       | SG430      | SMMA_SG_00430 | Operations with Numbers       | Add Using Basic Math Facts                                      | Practice addition using basic facts; sums less than or equal to 20.                                     |
| 4     | Fluency       | SG470      | SMMA_SG_00470 | Operations with Numbers       | Add Using Basic Math Facts                                      | Practice addition using basic facts; sums less than or equal to 20.                                     |
| 4     | Fluency       | SG450      | SMMA_SG_00450 | Operations with Numbers       | Multiply Using Basic Math Facts                                 | Practice multiplication using basic facts; products less than or equal to 12.                           |
| 4     | Fluency       | SG460      | SMMA_SG_00460 | Operations with Numbers       | Multiply Using Basic Math Facts                                 | Practice multiplication using basic facts; products less than or equal to 12.                           |

| Grade | Strand   | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|----------|------------|---------------|-------------------------|--|---|
| 4     | Fluency  | SG490      | SMMA_SG_00490 | Operations with Numbers | Multiply Using Basic Math Facts                    | Practice multiplication using basic facts; products less than or equal to 12.               |
| 4     | Fluency  | SG400      | SMMA_SG_00400 | Operations with Numbers | Subtract Using Basic Math Facts                    | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12.     |
| 4     | Fluency  | SG420      | SMMA_SG_00420 | Operations with Numbers | Subtract Using Basic Math Facts                    | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12.     |
| 4     | Fluency  | SG440      | SMMA_SG_00440 | Operations with Numbers | Subtract Using Basic Math Facts                    | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12.     |
| 4     | Fluency  | SG480      | SMMA_SG_00480 | Operations with Numbers | Subtract Using Basic Math Facts                    | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12.     |
| 4     | Geometry | GE445      | SMMA_LO_00624 | Angle Relationships     | Determine the Measure of an Angle                  | Determine whether an angle is larger than, smaller than, or the same size as a right angle. |
| 4     | Geometry | GE470      | SMMA_LO_00628 | Angle Relationships     | Identify Acute, Obtuse, Right, and Straight Angles | Identify an angle as acute, right, or obtuse.   |
| 4     | Geometry | GE485      | SMMA_LO_00630 | Angle Relationships     | Identify Acute, Obtuse, Right, and Straight Angles | Identify right, acute, and obtuse angles in polygons.                                       |

| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic   | Description   |
|-------|----------|------------|---------------|---|---|---|
| 4     | Geometry | GE490      | SMMA_LO_00631 | Angle Relationships                     | Identify Acute, Obtuse, Right, and Straight Angles                      | Given the measure of an angle (initial side at 0 degrees, measure 10 to 180 degrees).       |
| 4     | Geometry | GE410      | SMMA_LO_00617 | Angle Relationships                     | Identify Angle Notation   | Match the labeled angles to the correct angle notation.                                     |
| 4     | Geometry | GE492      | SMMA_LO_00632 | Attributes of Three-Dimensional Figures | Identify Bases, Edges, Faces, and Vertices of Three-Dimensional Figures | Identify faces, edges, and vertices of solids.  |
| 4     | Geometry | GE405      | SMMA_LO_00616 | Attributes of Three-Dimensional Figures | Identify Geometric Solids   | Identify a geometric solid (cylinder, pyramid, or rectangular prism).                       |
| 4     | Geometry | GE435      | SMMA_LO_00622 | Attributes of Three-Dimensional Figures | Identify Geometric Solids   | Identify geometric solids (cones, cubes, cylinders, pyramids, rectangular prisms, spheres). |
| 4     | Geometry | GE465      | SMMA_LO_00627 | Attributes of Two-Dimensional Figures   | Identify Two-Dimensional Figures by Name                                | Identify polygons and circles (pentagons, hexagons, octagons, parallelograms).              |
| 4     | Geometry | GE400      | SMMA_LO_00615 | Attributes of Two-Dimensional Figures   | Identify and/or Classify Quadrilaterals                                 | Identify the quadrilaterals in a set of figures.  |
| 4     | Geometry | GE427      | SMMA_LO_00620 | Attributes of Two-Dimensional Figures   | Identify and/or Classify Quadrilaterals                                 | Identify parallelograms, rhombuses, and trapezoids.   |
| 4     | Geometry | GE430      | SMMA_LO_00621 | Attributes of Two-Dimensional Figures   | Identify and/or Classify Quadrilaterals                                 | In a set of quadrilaterals, identify all the parallelograms.                                |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic   | Description   |
|-------|-------------|------------|---------------|--|---|---|
| 4     | Geometry    | GE450      | SMMA_LO_00625 | Attributes of Two-Dimensional Figures  | Identify the Vertices of a Polygon                          | Identify the set of vertices on a grid can be connected to form a figure (triangle, quadrilateral, rectangle, or square). |
| 4     | Geometry    | GE495      | SMMA_LO_00633 | Circle Geometry                        | Identify the Center, Radius, Chord, or Diameter of a Circle | Identify parts of a circle (center, radius, and diameter).  |
| 4     | Geometry    | NC410      | SMMA_LO_01057 | Coordinate Geometry                    | Points in the Coordinate Plane                              | Identify a point on a grid given an ordered pair, or identify the ordered pair for a point shown on the grid.             |
| 4     | Geometry    | GE423      | SMMA_LO_00619 | Lines, Line Segments, and Rays         | Identify Parallel and Perpendicular Lines                   | Identify parallel and perpendicular streets on a map.   |
| 4     | Geometry    | GE420      | SMMA_LO_00618 | Similarity and Congruence              | Identify Figures as Being Similar, Congruent, or Neither    | Identify two figures as being similar, congruent, or neither.   |
| 4     | Geometry    | AP428      | SMMA_LO_01700 | Symmetry                               | Draw Using Symmetry   | Draw a symmetrical design.  |
| 4     | Geometry    | GE440      | SMMA_LO_00623 | Symmetry                               | Identify Lines of Symmetry                                  | Identify lines that are lines of symmetry.  |
| 4     | Geometry    | GE442      | SMMA_LO_01699 | Symmetry                               | Identify Lines of Symmetry                                  | Identify the lines of symmetry in an object.  |
| 4     | Geometry    | PS430      | SMMA_LO_01269 | Transformations                        | Identify Rotations (Turns)                                  | Use logical reasoning to identify which rotated object is part of a pair.   |
| 4     | Measurement | ME405      | SMMA_LO_00786 | Measurement of Two-Dimensional Figures | Calculate Area Using Nonstandard Units                      | Using a grid, find the area of a simple figure (8 to 60 nonstandard units).   |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic  | Description   |
|-------|-------------|------------|---------------|--|--|---|
| 4     | Measurement | PS493      | SMMA_LO_01280 | Measurement of Two-Dimensional Figures | Calculate the Area of an Irregular Figure          | Find the area of an irregular figure displayed on a grid (12 to 50 square units).               |
| 4     | Measurement | ME415      | SMMA_LO_00788 | Measurement of Two-Dimensional Figures | Calculate the Perimeter of a Simple, Closed Figure | Given the length of one side of a rectangle, measure another side, and then find the perimeter. |
| 4     | Measurement | ME430      | SMMA_LO_00790 | Measurement of Two-Dimensional Figures | Determine Perimeter Using Metric Units             | Find the perimeter of a polygon (decimal numbers, metric units).                                |
| 4     | Measurement | ME495      | SMMA_LO_00805 | Measurement of Two-Dimensional Figures | Determine Perimeter Using Metric Units             | Find the perimeter of a polygon (decimal numbers, metric units).                                |
| 4     | Measurement | ME480      | SMMA_LO_00802 | Measurement of Two-Dimensional Figures | Identify and Compare Areas                         | Identify a figure with a given area on a geoboard (4 to 15 square units).                       |
| 4     | Measurement | ME425      | SMMA_LO_00789 | Temperature                            | Read the Temperature on a Thermometer              | Show temperature to 5 degrees on a thermometer with a range of 0 to 100 degrees.                |
| 4     | Measurement | ME490      | SMMA_LO_00804 | Temperature                            | Read the Temperature on a Thermometer              | Read the temperature on a thermometer to nearest degree (-10 to 10 degrees).                    |
| 4     | Measurement | AP460      | SMMA_LO_00153 | Time                                   | Determine Elapsed Time on an Analog Clock          | Find the time one to five hours before or after a given time (not crossing 12 o'clock).         |
| 4     | Measurement | AP480      | SMMA_LO_00155 | Time                                   | Determine Elapsed Time on an Analog Clock          | Compare the difference of two times to a given time (1 to 24 hours, across 12 o'clock).         |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic  | Description   |
|-------|-------------|------------|---------------|------------------|--|---|
| 4     | Measurement | ME460      | SMMA_LO_00798 | Time             | Determine Elapsed Time on an Analog Clock        | Find the time 5 to 50 minutes after the time shown (analog clock).                          |
| 4     | Measurement | PS410      | SMMA_LO_01705 | Time             | Determine Elapsed Time on an Analog Clock        | Determine elapsed time.   |
| 4     | Measurement | ME445      | SMMA_LO_00793 | Time             | Recognize and Order Days, Weeks, and Months      | Identify the month that precedes or follows a given month.                                  |
| 4     | Measurement | ME453      | SMMA_LO_00795 | Time             | Recognize and Order Days, Weeks, and Months      | Place the months of the year in consecutive order.  |
| 4     | Measurement | SA420      | SMMA_LO_01702 | Units of Measure | Choose the Appropriate Customary Units of Length | Identify the appropriate unit of measure (inches, feet, yards, and miles)                   |
| 4     | Measurement | ME450      | SMMA_LO_00794 | Units of Measure | Customary Units of Capacity and Volume           | Identify the reasonable customary capacity of an object (cups, pints, quarts, and gallons). |
| 4     | Measurement | ME465      | SMMA_LO_00799 | Units of Measure | Customary Units of Capacity and Volume           | Compare unlike customary units of capacity (cups, pints, quarts, and gallons).              |
| 4     | Measurement | ME470      | SMMA_LO_00800 | Units of Measure | Customary Units of Linear Measure                | Draw a line segment using a ruler (to 1/4 inch and 0.5 cm).                                 |
| 4     | Measurement | ME457      | SMMA_LO_00797 | Units of Measure | Customary Units of Weight and Mass               | Convert between customary units of weight (ounces and pounds).                              |



| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic   | Description   |
|-------|-------------|------------|---------------|------------------|---|---|
| 4     | Measurement | ME475      | SMMA_LO_00801 | Units of Measure | Customary Units of Weight and Mass                              | Compare unlike customary units of weight and identify the correct statement (ounces and pounds).      |
| 4     | Measurement | ME455      | SMMA_LO_00796 | Units of Measure | Determine Equivalent Customary Units of Capacity                | Convert customary units of capacity (cups, pints, quarts, and gallons).                               |
| 4     | Measurement | ME435      | SMMA_LO_00791 | Units of Measure | Determine Equivalent Customary Units of Length                  | Convert customary units of length (inches, feet, and yards).  |
| 4     | Measurement | ME440      | SMMA_LO_00792 | Units of Measure | Determine Equivalent Customary Units of Linear Measure          | Compare unlike customary units of length (inches, feet, and yards).                                   |
| 4     | Measurement | ME410      | SMMA_LO_00787 | Units of Measure | Identify the Reasonable Weight for an Object in Customary Units | Identify the reasonable weight of an object (ounces, pounds, and tons).                               |
| 4     | Measurement | SA424      | SMMA_LO_01703 | Units of Measure | Measure Distance in Metric Units                                | Identify distances or objects that would be measured in cm, m, or km.                                 |
| 4     | Measurement | ME485      | SMMA_LO_00803 | Units of Measure | Measure Height, Length, or Width in Metric Units                | Identify the reasonable length, width, or height of an object (millimeters, centimeters, and meters). |
| 4     | Measurement | SA426      | SMMA_LO_01701 | Units of Measure | Measure Length in Metric Units                                  | Identify the appropriate unit of measure (cm, m, km).   |
| 4     | Measurement | SA422      | SMMA_LO_01704 | Units of Measure | Metric Units of Capacity and Volume                             | Identify the appropriate unit of measure (l, kl, g, kg, m, km).                                       |

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|-------|-----------------------------|------------|---------------|------------------|---|---|
| 4     | Measurement                 | ME400      | SMMA_LO_00785 | Units of Measure | Metric Units of Linear Measure                  | Measure the length of an object in centimeters or inches (whole numbers).           |
| 4     | Number Sense and Operations | WP460      | SMMA_LO_01603 | Estimation       | Estimate Products/Quotients                     | Estimate the product by rounding the second factor.                                 |
| 4     | Number Sense and Operations | WP485      | SMMA_LO_01606 | Estimation       | Estimate Products/Quotients                     | Estimate the distance by rounding ( $d = rt$ ).                                     |
| 4     | Number Sense and Operations | PS483      | SMMA_LO_01278 | Estimation       | Estimate Products/Quotients Using Money Amounts | Identify the most reasonable answer to a multiplication problem involving money.    |
| 4     | Number Sense and Operations | PS487      | SMMA_LO_01279 | Estimation       | Estimate Products/Quotients Using Money Amounts | Identify the most reasonable answer to a division problem involving money.          |
| 4     | Number Sense and Operations | FR460      | SMMA_LO_00441 | Number Sense     | Add Fractions Using Models                      | Using models, add fractions, no simplifying (like denominators, thirds to eighths). |
| 4     | Number Sense and Operations | DC490      | SMMA_LO_00216 | Number Sense     | Compare Decimals to Hundredths                  | Compare two decimal numbers (10.01 to 99.99).                                       |
| 4     | Number Sense and Operations | FR454      | SMMA_LO_00438 | Number Sense     | Compare Fractions with Unlike Denominators      | Using models, compare fractions (unlike denominators, halves to eighths).           |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic   | Description  |
|-------|-----------------------------|------------|---------------|--------------|---|--|
| 4     | Number Sense and Operations | FR440      | SMMA_LO_00435 | Number Sense | Compare Fractions with Unlike Denominators Using Models | Using models, compare fractions (unlike denominators, numerators equal to one, halves to sixteenths).    |
| 4     | Number Sense and Operations | FR450      | SMMA_LO_00436 | Number Sense | Compare Fractions with Unlike Denominators Using Models | Using models, compare fractions (unlike denominators, halves to sixteenths).                             |
| 4     | Number Sense and Operations | FR452      | SMMA_LO_00437 | Number Sense | Compare Fractions with Unlike Denominators Using Models | Identify the fraction that is greater than a given fraction (unlike denominators, halves to eighths).    |
| 4     | Number Sense and Operations | DC460      | SMMA_LO_00209 | Number Sense | Compare Fractions, Decimals, and Percents               | Compare hundredths to multiples of $\frac{1}{4}$ .   |
| 4     | Number Sense and Operations | NC455      | SMMA_LO_01068 | Number Sense | Compare Numbers   | Identify a set of numbers between two numbers, or less than or greater than a given number (101 to 999). |
| 4     | Number Sense and Operations | NC475      | SMMA_LO_01072 | Number Sense | Compare Numbers   | Identify a number that is one or two greater than or less than a five- or six-digit number.              |
| 4     | Number Sense and Operations | EQ440      | SMMA_LO_00350 | Number Sense | Compare Products Using Symbols                          | Compare products (products $2 \times 2$ to $9 \times 9$ ).   |
| 4     | Number Sense and Operations | NC403      | SMMA_LO_01711 | Number Sense | Compare Whole Numbers through Millions                  | Compare two whole numbers (three to seven-digit numbers).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic   | Description  |
|-------|-----------------------------|------------|---------------|--------------|---|--|
| 4     | Number Sense and Operations | AP405      | SMMA_LO_01714 | Number Sense | Convert between Percents, Fractions, and Decimals | Express a fraction as a percent (denominator is 100).  |
| 4     | Number Sense and Operations | FR420      | SMMA_LO_00433 | Number Sense | Determine Equivalent Fractions Using Models       | Using models, find equivalent fractions (halves to sixteenths).  |
| 4     | Number Sense and Operations | FR480      | SMMA_LO_00443 | Number Sense | Determine Equivalent Fractions Using Models       | Using a model, rewrite a whole number as a fraction (halves to eighths).   |
| 4     | Number Sense and Operations | FR425      | SMMA_LO_01706 | Number Sense | Determine Equivalent Fractions for One-Half       | Use addition to find an equivalent fraction for $\frac{1}{2}$ .  |
| 4     | Number Sense and Operations | FR428      | SMMA_LO_01708 | Number Sense | Determine Equivalent Fractions for One-Half       | Identify two equivalent fractions for $\frac{1}{2}$ .  |
| 4     | Number Sense and Operations | DC450      | SMMA_LO_00205 | Number Sense | Determine Equivalent Mixed Numbers and Decimals   | Enter the decimal equivalent for a mixed number (hundredths, 0.10 to 9.99).  |
| 4     | Number Sense and Operations | NC440      | SMMA_LO_01063 | Number Sense | Identify Ordinal Numbers to 20th                  | Find the total number of people in a line given the ordinal position of a person and the number of people in front of or behind him or her (8 to 15 people). |
| 4     | Number Sense and Operations | FR400      | SMMA_LO_00430 | Number Sense | Identify/Compare Fractions Using a Number Line    | Enter the missing fraction on a number line (halves to eighths).   |
| 4     | Number Sense and Operations | FR405      | SMMA_LO_00431 | Number Sense | Identify/Compare Fractions Using a Number Line    | Identify a fraction for a given point on a number line divided into tenths, twelfths, or sixteenths.   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept       | Topic  | Description  |
|-------|-----------------------------|------------|---------------|---------------|--|--|
| 4     | Number Sense and Operations | FR410      | SMMA_LO_00432 | Number Sense  | Identify/Compare Fractions Using a Number Line | Compare fractions to 1 on the number line (halves to eighths).                           |
| 4     | Number Sense and Operations | FR430      | SMMA_LO_00434 | Number Sense  | Identify/Compare Fractions Using a Number Line | Using a number line, compare fractions (like denominators, halves to sixteenths).        |
| 4     | Number Sense and Operations | DC495      | SMMA_LO_00218 | Number Sense  | Order Decimals to Hundredths                   | Order three decimal numbers (tenths to hundredths).                                      |
| 4     | Number Sense and Operations | FR458      | SMMA_LO_00440 | Number Sense  | Order Fractions with Unlike Denominators       | Order three fractions from least to greatest (unlike denominators, halves to twelfths).  |
| 4     | Number Sense and Operations | NC447      | SMMA_LO_01710 | Number Sense  | Order Whole Numbers through Millions           | Order five numbers from least to greatest (three- to six-digit numbers).                 |
| 4     | Number Sense and Operations | PR455      | SMMA_LO_01712 | Number Sense  | Ratios   | Identify the ratio.  |
| 4     | Number Sense and Operations | SA430      | SMMA_LO_01309 | Number Sense  | Sequence Numbers                               | Compare and sequence animals by their life spans.  |
| 4     | Number Sense and Operations | FR470      | SMMA_LO_00442 | Number Sense  | Subtract Fractions Using Models                | Using models, subtract fractions, no simplifying (like denominators, halves to eighths). |
| 4     | Number Sense and Operations | NC470      | SMMA_LO_01071 | Number Theory | Factors  | Identify the complete set of factors for a number (2 to 25).                             |

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|-------|-----------------------------|------------|---------------|-------------------------|------------------------------|--|
| 4     | Number Sense and Operations | NC453      | SMMA_LO_01067 | Number Theory           | Multiples                    | Identify the number that is both odd and a multiple of 3, 5, 7, or 9.                          |
| 4     | Number Sense and Operations | NC460      | SMMA_LO_01069 | Number Theory           | Multiples                    | Identify numbers that are multiples of a given number.   |
| 4     | Number Sense and Operations | NC480      | SMMA_LO_01073 | Number Theory           | Prime and Composite Numbers  | Find the factors of a number and determine if the number is prime or composite (3 to 30).      |
| 4     | Number Sense and Operations | DC452      | SMMA_LO_00206 | Operations with Numbers | Add Decimals to Hundredths   | Add decimals using addition facts (sums 0.02-0.99).  |
| 4     | Number Sense and Operations | DC492      | SMMA_LO_00217 | Operations with Numbers | Add Decimals to Tenths       | Add decimal numbers using mental math (sums 1.0 to 99.8, regrouping).                          |
| 4     | Number Sense and Operations | DC400      | SMMA_LO_00192 | Operations with Numbers | Add Decimals with Regrouping | Add two decimal numbers (tenths, sums 1.0 to 2.0, regrouping).                                 |
| 4     | Number Sense and Operations | DC430      | SMMA_LO_00199 | Operations with Numbers | Add Decimals with Regrouping | Add decimal numbers (sums less than 10.0, regrouping).   |
| 4     | Number Sense and Operations | DC442      | SMMA_LO_00201 | Operations with Numbers | Add Decimals with Regrouping | Add two decimal numbers (sums 1.0 to 98.9, regrouping).  |
| 4     | Number Sense and Operations | DC470      | SMMA_LO_00211 | Operations with Numbers | Add Decimals with Regrouping | Align the decimal numbers in a vertical addition problem; then solve (hundredths, regrouping). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 4     | Number Sense and Operations | DC405      | SMMA_LO_00193 | Operations with Numbers | Add Decimals without Regrouping to Tenths                | Add two decimal numbers using mental math (sums 1.1 to 9.9, no regrouping).                   |
| 4     | Number Sense and Operations | DC415      | SMMA_LO_00196 | Operations with Numbers | Add Decimals without Regrouping to Tenths                | Add two decimal numbers using mental math (sums 10.1 to 99.9, no regrouping).                 |
| 4     | Number Sense and Operations | FR485      | SMMA_LO_01709 | Operations with Numbers | Add Fractions with Like Denominators                     | Add fractions with like denominators (no simplifying).  |
| 4     | Number Sense and Operations | AD445      | SMMA_LO_00090 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers with Regrouping    | Add three addends (student choice, one- and two-digit addends, sums 30 to 98, regrouping).    |
| 4     | Number Sense and Operations | AD465      | SMMA_LO_00092 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers with Regrouping    | Add three addends (student choice, one- and two-digit addends, sums 100 to 207, regrouping).  |
| 4     | Number Sense and Operations | AD425      | SMMA_LO_00087 | Operations with Numbers | Add One-Digit/Two-Digit Whole Numbers without Regrouping | Add three addends (student choice, one- and two-digit addends, sums 20 to 99, no regrouping). |
| 4     | Number Sense and Operations | AD415      | SMMA_LO_00085 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add two addends (student choice, three-digit addends, sums 210 to 999, regrouping).           |
| 4     | Number Sense and Operations | AD455      | SMMA_LO_00091 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add two addends (student choice, three-digit addends, sums 1010 to 1898, regrouping).         |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 4     | Number Sense and Operations | AD475      | SMMA_LO_00093 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add two addends (student choice, three-digit addends, sums 1000 to 1989, regrouping).                |
| 4     | Number Sense and Operations | AD485      | SMMA_LO_00094 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add two addends (student choice, three-digit addends, sums 300 to 999, regrouping).                  |
| 4     | Number Sense and Operations | WP430      | SMMA_LO_01597 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping in Context | Solve an addition problem in context (3 three-digit addends, regrouping).                            |
| 4     | Number Sense and Operations | AD495      | SMMA_LO_00095 | Operations with Numbers | Add Two-Digit Whole Numbers with Regrouping              | Add three addends (student choice, two-digit addends, sums 40 to 297, regrouping).                   |
| 4     | Number Sense and Operations | AD405      | SMMA_LO_00083 | Operations with Numbers | Add Two-Digit/Three-Digit Whole Numbers with Regrouping  | Add two addends (student choice, a two-digit and a three-digit addend, sums 120 to 999, regrouping). |
| 4     | Number Sense and Operations | AD435      | SMMA_LO_00089 | Operations with Numbers | Add Two-Digit/Three-Digit Whole Numbers with Regrouping  | Add two addends (a two-digit and a three-digit addend, sums 111 to 899, regrouping).                 |
| 4     | Number Sense and Operations | DC465      | SMMA_LO_00210 | Operations with Numbers | Add and/or Subtract Decimals                             | Add or subtract decimals using mental math (sums less than 1.00, with or without regrouping).        |
| 4     | Number Sense and Operations | WP420      | SMMA_LO_01596 | Operations with Numbers | Add/Subtract Money                                       | Find the amount spent (sums to \$1.00, no regrouping).   |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 4     | Number Sense and Operations | WP495      | SMMA_LO_01608 | Operations with Numbers | Add/Subtract Money                               | Solve a problem in context that involves adding three amounts expressed as dollars and cents. |
| 4     | Number Sense and Operations | NC450      | SMMA_LO_01066 | Operations with Numbers | Determine Divisibility of Whole Number Factors   | Identify the number that is divisible by a given factor (numbers 2 to 81, factors 2 to 9).    |
| 4     | Number Sense and Operations | NC400      | SMMA_LO_01055 | Operations with Numbers | Determine Missing Operations in Number Sentences | Identify the missing operation (sums 20 to 99, differences 10 to 70).                         |
| 4     | Number Sense and Operations | NC485      | SMMA_LO_01074 | Operations with Numbers | Determine Missing Operations in Number Sentences | Identify the missing operation in a number sentence (all operations).                         |
| 4     | Number Sense and Operations | PS405      | SMMA_LO_01713 | Operations with Numbers | Determine Percent                                | Determine the percent (100 total items).  |
| 4     | Number Sense and Operations | DV410      | SMMA_LO_00286 | Operations with Numbers | Divide Basic Math Facts                          | Divide (combinations 2 x 10 to 5 x 12).   |
| 4     | Number Sense and Operations | DV430      | SMMA_LO_00288 | Operations with Numbers | Divide Basic Math Facts                          | Divide (combinations 5 x 9 to 6 x 12).  |
| 4     | Number Sense and Operations | DV460      | SMMA_LO_00291 | Operations with Numbers | Divide Multiples of 10                           | Divide (combinations 2 x 20 to 5 x 90).   |
| 4     | Number Sense and Operations | DV480      | SMMA_LO_00293 | Operations with Numbers | Divide Multiples of 10                           | Divide (combinations 6 x 20 to 9 x 90).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 4     | Number Sense and Operations | DV470      | SMMA_LO_00292 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Divide using the long division algorithm (one-digit divisor, remainder).                              |
| 4     | Number Sense and Operations | DV450      | SMMA_LO_00290 | Operations with Numbers | Divide Whole Numbers without Remainders Using Long Division | Divide using the long division algorithm (one-digit divisor, no remainder).                           |
| 4     | Number Sense and Operations | DV490      | SMMA_LO_00294 | Operations with Numbers | Divide Whole Numbers without Remainders Using Long Division | Divide using the long division algorithm (one-digit divisor, no remainder).                           |
| 4     | Number Sense and Operations | FR498      | SMMA_LO_01707 | Operations with Numbers | Estimate Fraction Differences                               | Estimate the difference of two fractions.   |
| 4     | Number Sense and Operations | MU400      | SMMA_LO_00871 | Operations with Numbers | Multiply Basic Math Facts                                   | Multiply whole numbers (products $10 \times 2$ to $12 \times 12$ ).                                   |
| 4     | Number Sense and Operations | MU420      | SMMA_LO_00875 | Operations with Numbers | Multiply Basic Math Facts                                   | Multiply whole numbers (products $2 \times 12$ to $12 \times 12$ ).                                   |
| 4     | Number Sense and Operations | MU435      | SMMA_LO_00878 | Operations with Numbers | Multiply Multiples of 10                                    | Multiply whole numbers (student choice, products $20 \times 2$ to $90 \times 9$ , multiples of 10).   |
| 4     | Number Sense and Operations | MU465      | SMMA_LO_00884 | Operations with Numbers | Multiply Multiples of 10                                    | Multiply whole numbers (student choice, products $10 \times 10$ to $15 \times 90$ , multiples of 10). |
| 4     | Number Sense and Operations | MU470      | SMMA_LO_00885 | Operations with Numbers | Multiply Multiples of 10                                    | Multiply whole numbers (products $2 \times 20$ to $90 \times 9$ , multiples of 10).                   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 4     | Number Sense and Operations | MU485      | SMMA_LO_00888 | Operations with Numbers | Multiply Multiples of 10                        | Multiply whole numbers (student choice, products 16 x 10 to 19 x 90, multiples of 10). |
| 4     | Number Sense and Operations | MU490      | SMMA_LO_00889 | Operations with Numbers | Multiply Multiples of 10                        | Multiply whole numbers (products 20 x 20 to 90 x 90, multiples of 10).                 |
| 4     | Number Sense and Operations | MU495      | SMMA_LO_00890 | Operations with Numbers | Multiply Multiples of 10                        | Multiply whole numbers (student choice, products 20 x 10 to 90 x 90, multiples of 10). |
| 4     | Number Sense and Operations | MU800      | SMMA_LO_00911 | Operations with Numbers | Multiply Multiples of 10                        | Multiply whole numbers (multiples of 10 or 100).                                       |
| 4     | Number Sense and Operations | MU455      | SMMA_LO_00882 | Operations with Numbers | Multiply Three-Digit by One-Digit Whole Numbers | Multiply whole numbers (student choice, products 100 x 2 to 990 x 9, multiples of 10). |
| 4     | Number Sense and Operations | MU475      | SMMA_LO_00886 | Operations with Numbers | Multiply Three-Digit by One-Digit Whole Numbers | Multiply whole numbers (student choice, products 101 x 2 to 999 x 9).                  |
| 4     | Number Sense and Operations | MU405      | SMMA_LO_00872 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers   | Multiply whole numbers (student choice, products 16 x 2 to 19 x 5).                    |
| 4     | Number Sense and Operations | MU415      | SMMA_LO_00874 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers   | Multiply whole numbers (student choice, products 10 x 6 to 15 x 9).                    |
| 4     | Number Sense and Operations | MU425      | SMMA_LO_00876 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers   | Multiply whole numbers (student choice, products 16 x 6 to 19 x 9).                    |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 4     | Number Sense and Operations | MU445      | SMMA_LO_00880 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers           | Multiply whole numbers (student choice, products 21 x 2 to 99 x 9).              |
| 4     | Number Sense and Operations | NC430      | SMMA_LO_01061 | Operations with Numbers | Skip Counting   | Count by 8's or 9's (up to 90).  |
| 4     | Number Sense and Operations | WP410      | SMMA_LO_01595 | Operations with Numbers | Solve Addition Problems in Context                      | Solve an addition problem using data in a table (sums 100 to 198).               |
| 4     | Number Sense and Operations | WP455      | SMMA_LO_01602 | Operations with Numbers | Solve Addition and Subtraction Problems Involving Money | Solve a money problem involving subtraction and multiplication.                  |
| 4     | Number Sense and Operations | WP448      | SMMA_LO_01600 | Operations with Numbers | Solve Division Problems in Context                      | Solve a one-step division problem (math facts $2 \times 2$ to $9 \times 9$ ).    |
| 4     | Number Sense and Operations | WP470      | SMMA_LO_01604 | Operations with Numbers | Solve Multiplication Problems in Context                | Solve a multiplication problem in context (one-, two-, and three-digit factors). |
| 4     | Number Sense and Operations | PS423      | SMMA_LO_01267 | Operations with Numbers | Solve Problems with Missing/Extra Information           | Identify the method to solve a multiplication problem with extra information.    |
| 4     | Number Sense and Operations | PS425      | SMMA_LO_01268 | Operations with Numbers | Solve Problems with Missing/Extra Information           | Identify the method to solve a division problem with extra information.          |
| 4     | Number Sense and Operations | PS440      | SMMA_LO_01272 | Operations with Numbers | Solve Problems with Missing/Extra Information           | Identify extra information in a problem.   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 4     | Number Sense and Operations | PS470      | SMMA_LO_01274 | Operations with Numbers | Solve Problems with Missing/Extra Information              | Identify the missing information needed to solve a two-step problem; then solve the problem.      |
| 4     | Number Sense and Operations | SA440      | SMMA_LO_01310 | Operations with Numbers | Solve Subtraction Problems in Context                      | Calculate the difference between the life spans of two animals (differences 2 to 59).             |
| 4     | Number Sense and Operations | DC475      | SMMA_LO_00212 | Operations with Numbers | Subtract Decimals Vertically with Regrouping to Hundredths | Align the decimal numbers in a vertical subtraction problem; then solve (hundredths, regrouping). |
| 4     | Number Sense and Operations | DC454      | SMMA_LO_00207 | Operations with Numbers | Subtract Decimals to Hundredths                            | Subtract decimal numbers (minuends and subtrahends 0.01 to 9.99).                                 |
| 4     | Number Sense and Operations | DC410      | SMMA_LO_00194 | Operations with Numbers | Subtract Decimals with Regrouping to Tenths                | Subtract decimal numbers (minuends 2.0 to 3.0, subtrahends 0.1 to 0.9, regrouping).               |
| 4     | Number Sense and Operations | DC420      | SMMA_LO_00198 | Operations with Numbers | Subtract Decimals with Regrouping to Tenths                | Subtract decimal numbers (minuends 2.0 to 9.9, subtrahends 0.1 to 0.9, regrouping).               |
| 4     | Number Sense and Operations | WP445      | SMMA_LO_01599 | Operations with Numbers | Subtract Decimals with Regrouping to Tenths                | Solve a decimal subtraction problem in context (tenths, regrouping).                              |
| 4     | Number Sense and Operations | DC446      | SMMA_LO_00203 | Operations with Numbers | Subtract Decimals with/without Regrouping to Tenths        | Subtract decimal numbers (minuends and subtrahends 0.1 to 99.9, with or without regrouping).      |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 4     | Number Sense and Operations | DC413      | SMMA_LO_00195 | Operations with Numbers | Subtract Decimals without Regrouping to Tenths     | Subtract decimal numbers using mental math (minuends and subtrahends 0.1 to 9.9, no regrouping).             |
| 4     | Number Sense and Operations | DC417      | SMMA_LO_00197 | Operations with Numbers | Subtract Decimals without Regrouping to Tenths     | Subtract decimal numbers using mental math (minuends and subtrahends 10.1 to 99.9, no regrouping).           |
| 4     | Number Sense and Operations | WP440      | SMMA_LO_01598 | Operations with Numbers | Subtract Money Amounts                             | Find the change from one dollar (item costs 55 to 99 cents).   |
| 4     | Number Sense and Operations | WP490      | SMMA_LO_01607 | Operations with Numbers | Subtract Money Amounts                             | Find the difference of two amounts express as dollars and cents.   |
| 4     | Number Sense and Operations | DC455      | SMMA_LO_00208 | Operations with Numbers | Subtract Money Amounts with Regrouping             | Subtract money amounts (sums less than \$17.00, regrouping).   |
| 4     | Number Sense and Operations | DC485      | SMMA_LO_00214 | Operations with Numbers | Subtract Money Amounts with Regrouping             | Subtract money amounts (sums less than \$50.00, regrouping).   |
| 4     | Number Sense and Operations | SU405      | SMMA_LO_01485 | Operations with Numbers | Subtract Three-Digit Whole Numbers with Regrouping | Find the difference of two three-digit numbers (student choice, regrouping from the tens to the ones place). |
| 4     | Number Sense and Operations | SU415      | SMMA_LO_01487 | Operations with Numbers | Subtract Three-Digit Whole Numbers with Regrouping | Find the difference of two three-digit numbers (student choice, regrouping from the tens to the ones place). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 4     | Number Sense and Operations | SU435      | SMMA_LO_01490 | Operations with Numbers | Subtract Three-Digit Whole Numbers with Regrouping              | Find the difference of two three-digit numbers (student choice, regrouping from the tens to the ones place and the hundreds to the tens place). |
| 4     | Number Sense and Operations | SU400      | SMMA_LO_01484 | Operations with Numbers | Subtract Two-Digit Whole Numbers with Regrouping                | Find the difference of two whole numbers (two-digit numbers, regrouping).   |
| 4     | Number Sense and Operations | SU420      | SMMA_LO_01488 | Operations with Numbers | Subtract Two-Digit Whole Numbers with Regrouping                | Find the difference of two whole numbers (two-digit numbers, regrouping).   |
| 4     | Number Sense and Operations | SU425      | SMMA_LO_01489 | Operations with Numbers | Subtract Whole Numbers with Regrouping                          | Find the difference of two whole numbers (student choice, regrouping from tens place to ones place and hundreds place to tens place).           |
| 4     | Number Sense and Operations | SU450      | SMMA_LO_01493 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens Place          | Subtract a three-digit number from a four-digit number (regrouping from the tens place).  |
| 4     | Number Sense and Operations | SU445      | SMMA_LO_01492 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds Place | Subtract a two-digit number from a three-digit number (regrouping from the tens place and hundreds place).                                      |
| 4     | Number Sense and Operations | SU480      | SMMA_LO_01496 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds Place | Subtract a three-digit number from a four-digit number (regrouping from the tens and hundreds places).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 4     | Number Sense and Operations | SU490      | SMMA_LO_01497 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds Place       | Subtract a three-digit number from a four-digit number (regrouping from the tens and hundreds places).  |
| 4     | Number Sense and Operations | SU460      | SMMA_LO_01494 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Thousands Place      | Subtract a three-digit number from a four-digit number (regrouping from the tens and thousands places). |
| 4     | Number Sense and Operations | SU470      | SMMA_LO_01495 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Thousands Place      | Subtract a three-digit number from a four-digit number (regrouping from the tens and thousands places). |
| 4     | Number Sense and Operations | FR495      | SMMA_LO_00445 | Operations with Numbers | Subtraction Fractions from 2  | Identify the difference when a fraction is subtracted from 1 (fourths to twelfths).                     |
| 4     | Number Sense and Operations | AP400      | SMMA_LO_01715 | Operations with Numbers | Use Conceptual Models to Understand Multiplication: Arrays/Area Model | Identify equivalent arrays with different factors.  |
| 4     | Number Sense and Operations | AP403      | SMMA_LO_01716 | Operations with Numbers | Use Conceptual Models to Understand Multiplication: Arrays/Area Model | Use partial sums and arrays to solve a two-digit by a one-digit multiplication problem.                 |
| 4     | Number Sense and Operations | DC440      | SMMA_LO_00200 | Place Value             | Determine Decimal Numbers Using Place-Value Charts                    | Convert from base-ten blocks to a place value chart to decimal form (0.01 to 1.89).                     |



| Grade | Strand                      | MCS* Level | LO ID         | Concept     | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------|--|---|
| 4     | Number Sense and Operations | DC480      | SMMA_LO_00213 | Place Value | Identify Decimal Number Using a Number Line        | Enter a decimal number on a number line (1.11 to 9.89).   |
| 4     | Number Sense and Operations | DC487      | SMMA_LO_00215 | Place Value | Identify Decimal Number Using a Number Line        | Find the missing decimal number on a number line (1.0 to 9.89).   |
| 4     | Number Sense and Operations | DC444      | SMMA_LO_00202 | Place Value | Identify Decimal Place Value to Hundredths         | Identify the decimal number with a 0 to 9 in the tenths or hundredths place.                                      |
| 4     | Number Sense and Operations | NC465      | SMMA_LO_01070 | Place Value | Identify Place Value to 1,000,000 Using Charts     | Enter a number in a place-value chart (10,000 to 999,999).  |
| 4     | Number Sense and Operations | NC490      | SMMA_LO_01075 | Place Value | Identify Place Value to 1,000,000,000 Using Charts | Enter each individual digit in a place-value chart for a five- to nine-digit number given the name of the number. |
| 4     | Number Sense and Operations | NC435      | SMMA_LO_01062 | Place Value | Identify Place Value to 1,000,001                  | Identify the value of a given digit in a four-digit number.   |
| 4     | Number Sense and Operations | NC443      | SMMA_LO_01064 | Place Value | Identify Place Value to 1,000,001                  | Identify a number with a given digit in the thousands to hundred millions place.                                  |
| 4     | Number Sense and Operations | DC448      | SMMA_LO_00204 | Place Value | Relate Word Name to Decimal Number                 | Match the word name with the decimal number (0.10 to 9.99).   |
| 4     | Number Sense and Operations | NC445      | SMMA_LO_01065 | Place Value | Relate Words, Models or Numbers to 1,000,001       | Enter the number for a word name (1000 to 9999).  |
| 4     | Number Sense and Operations | NC495      | SMMA_LO_01076 | Place Value | Relate Words, Models or Numbers to 1,000,001       | Identify the number when given the word name (10,000 to 999,999).   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|----------------------------------|------------|---------------|-------------------------|--|---|
| 4     | Number Sense and Operations      | NC420      | SMMA_LO_01059 | Place Value             | Round to Nearest Ten                             | Round a two-digit or three-digit number to the nearest ten.   |
| 4     | Patterns, Algebra, and Functions | AP492      | SMMA_LO_01683 | Expressions             | Evaluate Expressions                             | Given the value for the variable, evaluate an addition expression (sums 4 to 12).                             |
| 4     | Patterns, Algebra, and Functions | AP494      | SMMA_LO_01685 | Expressions             | Evaluate Expressions                             | Evaluate an expression with variables using substitution and a value chart (addition, sums to 18).            |
| 4     | Patterns, Algebra, and Functions | EQ425      | SMMA_LO_00348 | Functions and Relations | Describe the Rule in a Relation or Function      | Determine output of one-function machine, given input and sample inputs and outputs (sums, minuends 1 to 20). |
| 4     | Patterns, Algebra, and Functions | PS450      | SMMA_LO_01681 | Functions and Relations | Describe the Rule in a Relation or Function      | Describe the rule of a function (addition, subtraction, multiplication, and division).                        |
| 4     | Patterns, Algebra, and Functions | EQ445      | SMMA_LO_01688 | One-Step Equations      | Solve One-Step Equations                         | Solve a one-step equation (subtraction).  |
| 4     | Patterns, Algebra, and Functions | EQ455      | SMMA_LO_01690 | One-Step Equations      | Solve One-Step Equations                         | Solve a one-step equation (multiplication).   |
| 4     | Patterns, Algebra, and Functions | EQ465      | SMMA_LO_01692 | One-Step Equations      | Solve One-Step Equations                         | Solve a one-step equation (division).   |
| 4     | Patterns, Algebra, and Functions | EQ400      | SMMA_LO_00345 | One-Step Equations      | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a + b = c$ (sums 101 to 199, no regrouping).   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic  | Description  |
|-------|----------------------------------|------------|---------------|--------------------|--|--|
| 4     | Patterns, Algebra, and Functions | EQ420      | SMMA_LO_00347 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a - b = c$ (minuends 21 to 99, subtrahends 1 to 9, no regrouping).  |
| 4     | Patterns, Algebra, and Functions | EQ450      | SMMA_LO_00351 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \times b = c$ (products $1 \times 2$ to $5 \times 9$ ).           |
| 4     | Patterns, Algebra, and Functions | EQ460      | SMMA_LO_00352 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \div b = c$ (combinations $1 \times 2$ to $5 \times 5$ ).         |
| 4     | Patterns, Algebra, and Functions | EQ480      | SMMA_LO_00354 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \div b = c$ (combinations $6 \times 6$ to $9 \times 9$ ).         |
| 4     | Patterns, Algebra, and Functions | AP490      | SMMA_LO_01686 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve a one-step equation (addition, sums to 100).                                       |
| 4     | Patterns, Algebra, and Functions | AD400      | SMMA_LO_00082 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (three addends, sums 20 to 27, regrouping). |
| 4     | Patterns, Algebra, and Functions | AD410      | SMMA_LO_00084 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (two addends, sums 20 to 98, regrouping).   |
| 4     | Patterns, Algebra, and Functions | AD420      | SMMA_LO_00086 | Open Sentences     | Find the Missing Addend in a Number Sentence     | Find the missing addend in a number sentence (two addends, sums 100 to 199, regrouping). |

| Grade | Strand                           | MCS* Level | LO ID         | Concept        | Topic   | Description  |
|-------|----------------------------------|------------|---------------|----------------|---|--|
| 4     | Patterns, Algebra, and Functions | AD430      | SMMA_LO_00088 | Open Sentences | Find the Missing Addend in a Number Sentence              | Find the missing addend in a number sentence (a two-digit and a three-digit addend, multiples of 10, sums 110 to 990). |
| 4     | Patterns, Algebra, and Functions | PS435      | SMMA_LO_01687 | Open Sentences | Find the Missing Addend in a Number Sentence              | Identify the missing variable of addition or subtraction equations (sums 10 to 50, minuends 10 to 50).                 |
| 4     | Patterns, Algebra, and Functions | DV400      | SMMA_LO_00285 | Open Sentences | Find the Missing Dividend or Divisor in a Number Sentence | Find the missing dividend or divisor (combinations $4 \times 4$ to $7 \times 7$ ).                                     |
| 4     | Patterns, Algebra, and Functions | MU410      | SMMA_LO_00873 | Open Sentences | Find the Missing Factor in a Number Sentence              | Find the missing factor (products $6 \times 6$ to $9 \times 9$ ).  |
| 4     | Patterns, Algebra, and Functions | MU430      | SMMA_LO_00877 | Open Sentences | Find the Missing Factor in a Number Sentence              | Find the missing factor (products $6 \times 6$ to $9 \times 9$ ).  |
| 4     | Patterns, Algebra, and Functions | MU450      | SMMA_LO_00881 | Open Sentences | Find the Missing Factor in a Number Sentence              | Find the missing factor (products $2 \times 2$ to $12 \times 12$ ).  |
| 4     | Patterns, Algebra, and Functions | SU410      | SMMA_LO_01486 | Open Sentences | Find the Missing Minuend in a Number Sentence             | Find the missing minuend in a subtraction number sentence (minuends 10 to 99, no regrouping).                          |
| 4     | Patterns, Algebra, and Functions | SU440      | SMMA_LO_01491 | Open Sentences | Find the Missing Minuend in a Number Sentence             | Find the missing minuend in a subtraction number sentence (minuends 20 to 98, subtrahends 11 to 89).                   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept        | Topic  | Description   |
|-------|----------------------------------|------------|---------------|----------------|--|---|
| 4     | Patterns, Algebra, and Functions | NC425      | SMMA_LO_01060 | Open Sentences | Find the Missing Number in a Number Sentence | Identify a missing number in related addition and subtraction number sentences (two-digit sums, two-digit differences). |
| 4     | Patterns, Algebra, and Functions | EQ410      | SMMA_LO_00346 | Open Sentences | Find the Product to Identify the Variable    | Solve for $c$ in $a \times b = c$ (products $1 \times 2$ to $5 \times 9$ ).   |
| 4     | Patterns, Algebra, and Functions | EQ470      | SMMA_LO_00353 | Open Sentences | Find the Product to Identify the Variable    | Solve for $c$ in $a \times b = c$ (products $6 \times 2$ to $9 \times 12$ ).  |
| 4     | Patterns, Algebra, and Functions | EQ430      | SMMA_LO_00349 | Open Sentences | Find the Quotient to Identify the Variable   | Find the quotient (dividends $6 \times 6$ to $9 \times 9$ ).  |
| 4     | Patterns, Algebra, and Functions | NC405      | SMMA_LO_01056 | Patterns       | Extend a Numeric Pattern                     | Count by 2's, 3's, or 10's (11 to 209, not multiples of 2, 3, 10).  |
| 4     | Patterns, Algebra, and Functions | NC415      | SMMA_LO_01058 | Patterns       | Extend a Numeric Pattern                     | Count by 5's, 6's, or 7's (through 70).   |
| 4     | Patterns, Algebra, and Functions | PS477      | SMMA_LO_01276 | Patterns       | Extend a Numeric Pattern                     | Look for a pattern to solve a problem.  |
| 4     | Patterns, Algebra, and Functions | PS445      | SMMA_LO_01689 | Patterns       | Extend a Numeric Pattern                     | Identify the addition rule based on a pattern.  |
| 4     | Patterns, Algebra, and Functions | PS455      | SMMA_LO_01691 | Patterns       | Extend a Numeric Pattern                     | Extend a multiplication pattern.  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic   | Description   |
|-------|----------------------------------|------------|---------------|--------------------|---|---|
| 4     | Patterns, Algebra, and Functions | PS413      | SMMA_LO_01682 | Patterns           | Identify the Rule of the Function                                 | Identify the addition or subtraction rule of the function.  |
| 4     | Patterns, Algebra, and Functions | PS415      | SMMA_LO_01684 | Patterns           | Identify the Rule of the Function                                 | Identify the multiplication or division rule of the function.   |
| 4     | Patterns, Algebra, and Functions | EQ490      | SMMA_LO_00355 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                      | Compare quotients (combinations $2 \times 2$ to $9 \times 9$ ).   |
| 4     | Patterns, Algebra, and Functions | PS420      | SMMA_LO_01266 | Two-Step Equations | Work Backwards to Solve a Two-Step Problem                        | Work backwards to solve a problem with a missing number.  |
| 4     | Patterns, Algebra, and Functions | PS433      | SMMA_LO_01270 | Written Equations  | Identify the Equation That Is a Translation of the Written Phrase | Identify a number sentence that could be used to solve a multiplication problem.                                    |
| 4     | Patterns, Algebra, and Functions | PS437      | SMMA_LO_01271 | Written Equations  | Identify the Equation That Is a Translation of the Written Phrase | Identify a number sentence that could be used to solve a division problem.  |
| 4     | Patterns, Algebra, and Functions | PS473      | SMMA_LO_01275 | Written Equations  | Identify the Equation That Is a Translation of the Written Phrase | Identify an expression that can be used to solve a problem (inverse operations).                                    |
| 4     | Patterns, Algebra, and Functions | WP480      | SMMA_LO_01605 | Written Equations  | Identify the Equation That Is a Translation of the Written Phrase | Identify the expression that represents a division problem in context; then solve the problem (dividends 12 to 81). |

| Grade | Strand                               | MCS* Level | LO ID         | Concept              | Topic   | Description   |
|-------|--------------------------------------|------------|---------------|----------------------|---|---|
| 4     | Probability and Discrete Mathematics | PR415      | SMMA_LO_01717 | Discrete Mathematics | Determine Number of Possible Arrangements   | Determine the number of arrangements that can be made from two groups with two items.   |
| 4     | Probability and Discrete Mathematics | AP475      | SMMA_LO_01718 | Discrete Mathematics | Determine Number of Possible Arrangements   | Determine the arrangements that can be made with a group of two and a group of three items.   |
| 4     | Probability and Discrete Mathematics | PR470      | SMMA_LO_01173 | Probability          | Determine Qualitatively the High Probability Event                                  | Given a graphical representation of two urns containing different compositions of balls of two colors, select the urn in which an event is qualitatively determined to have a high probability.         |
| 4     | Probability and Discrete Mathematics | PR490      | SMMA_LO_01175 | Probability          | Determine Qualitatively the Probability of Events as Equal or Unequal               | Given a graphical representation of two bowls containing colored marbles of different, but equivalent compositions, qualitatively determine whether the probability of an event is equal in both bowls. |
| 4     | Probability and Discrete Mathematics | PR450      | SMMA_LO_01171 | Probability          | Represent the Probability of Complementary Events Using a Qualitative Ordinal Scale | Given a graphical representation of a bowl containing marbles of two colors, represent on a qualitative ordinal scale the probability of an event and its complement.                                   |

| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic   | Description  |
|-------|--------------------------------------|------------|---------------|-------------|---|--|
| 4     | Probability and Discrete Mathematics | PR410      | SMMA_LO_01165 | Probability | Represent the Probability of Events Using a Qualitative Ordinal Scale | Given the graphical representation of a bowl containing marbles of two colors, represent on a qualitative ordinal scale the probability of an event (6 to 11 marbles in the bowl). |

\* Math Concepts and Skills

## Grade 5

| Grade | Strand        | MCS* Level | LO ID         | Concept                                | Topic   | Description  |
|-------|---------------|------------|---------------|--|---|--|
| 5     | Data Analysis | PR540      | SMMA_LO_01180 | Graph, Chart, and Table Interpretation | Read and Interpret Double Bar Graphs                  | Analyze and interpret information displayed in a double-bar graph.                         |
| 5     | Data Analysis | AP510      | SMMA_LO_01763 | Graph, Chart, and Table Interpretation | Read and Interpret Double Bar Graphs                  | Read and interpret a double-bar graph.   |
| 5     | Data Analysis | AP540      | SMMA_LO_00160 | Graph, Chart, and Table Interpretation | Read and Interpret Horizontal or Vertical Pictographs | Read and interpret a horizontal or vertical pictograph (eight items).                      |
| 5     | Data Analysis | PR520      | SMMA_LO_01178 | Graph, Chart, and Table Interpretation | Read and Interpret Line Graphs                        | Find the amount of increase or decrease between two points in a line graph.                |
| 5     | Data Analysis | SA580      | SMMA_LO_01324 | Graph, Chart, and Table Interpretation | Read and Interpret Line Graphs                        | Interpret a line graph with time and temperature data, and add a point to line graph.      |
| 5     | Data Analysis | SA590      | SMMA_LO_01325 | Graph, Chart, and Table Interpretation | Read and Interpret Line Graphs                        | Given the survival needs for a bug, interpret a line graph with time and temperature data. |



| Grade | Strand        | MCS* Level | LO ID         | Concept                                | Topic                                  | Description  |
|-------|---------------|------------|---------------|--|--|--|
| 5     | Data Analysis | PR560      | SMMA_LO_01183 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Locate a given value (0 to 99) on a stem-and-leaf plot.                                    |
| 5     | Data Analysis | PR562      | SMMA_LO_01184 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Locate a given value (0 to 99) on a stem-and-leaf plot.                                    |
| 5     | Data Analysis | PR564      | SMMA_LO_01185 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Locate a given value on a stem-and-leaf plot (0 0 to 9 0).                                 |
| 5     | Data Analysis | PR566      | SMMA_LO_01186 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Identify the value of a data item on a stem-and-leaf plot.                                 |
| 5     | Data Analysis | PR580      | SMMA_LO_01188 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Find the frequency of a single data item on a stem-and-leaf plot.                          |
| 5     | Data Analysis | PR582      | SMMA_LO_01189 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Find the frequency of a tens digit occurring on a stem-and-leaf plot.                      |
| 5     | Data Analysis | PR584      | SMMA_LO_01190 | Graph, Chart, and Table Interpretation | Read and Interpret Stem-and-Leaf Plots | Find the frequency of a ones digit (leaf) occurring on a stem-and-leaf plot.               |
| 5     | Data Analysis | ME567      | SMMA_LO_00819 | Graph, Chart, and Table Interpretation | Read and Interpret Tables and Charts   | Read a bus schedule.   |
| 5     | Data Analysis | SA500      | SMMA_LO_01315 | Graph, Chart, and Table Interpretation | Read and Interpret Tables and Charts   | Read and interpret data in a table to determine the time it would take for skin to freeze. |
| 5     | Data Analysis | AP580      | SMMA_LO_00164 | Measures of Center and Spread          | Determine the Mean of a Data Set       | Determine the divisor to find mean of a data set from a list of data.                      |
| 5     | Data Analysis | PR515      | SMMA_LO_01727 | Measures of Center and Spread          | Determine the Mean of a Data Set       | Determine the mean of a data set.  |
| 5     | Data Analysis | PR517      | SMMA_LO_01767 | Measures of Center and Spread          | Determine the Mean of a Data Set       | Determine the mean of a set of data.   |

| Grade | Strand        | MCS* Level | LO ID         | Concept                       | Topic                                       | Description   |
|-------|---------------|------------|---------------|-------------------------------|---|---|
| 5     | Data Analysis | WP580      | SMMA_LO_01619 | Measures of Center and Spread | Determine the Mean of a Data Set in Context | Solve a problem in context by finding the average of three to seven numbers.  |
| 5     | Data Analysis | PR521      | SMMA_LO_01726 | Measures of Center and Spread | Determine the Median of a Data Set          | Determine the median of a data set.   |
| 5     | Data Analysis | PR522      | SMMA_LO_01768 | Measures of Center and Spread | Determine the Median of a Data Set          | Determine the median of a set of data.  |
| 5     | Data Analysis | PR523      | SMMA_LO_01719 | Measures of Center and Spread | Determine the Mode of a Data Set            | Determine the mode of a data set.   |
| 5     | Data Analysis | PR526      | SMMA_LO_01765 | Measures of Center and Spread | Determine the Mode of a Data Set            | Determine the mode of a set of data.  |
| 5     | Data Analysis | PR500      | SMMA_LO_01176 | Measures of Center and Spread | Determine the Range of a Data Set           | Determine the range of a set of data represented in a line graph.             |
| 5     | Data Analysis | PR519      | SMMA_LO_01720 | Measures of Center and Spread | Determine the Range of a Data Set           | Determine the range of a data set.  |
| 5     | Data Analysis | PR524      | SMMA_LO_01766 | Measures of Center and Spread | Determine the Range of a Data Set           | Determine the range of a set of data.   |
| 5     | Fluency       | SG530      | SMMA_SG_00530 | Operations with Numbers       | Add Using Basic Math Facts                  | Practice addition using basic facts; sums less than or equal to 20.           |
| 5     | Fluency       | SG590      | SMMA_SG_00590 | Operations with Numbers       | Add Using Basic Math Facts                  | Practice addition using basic facts; sums less than or equal to 20.           |
| 5     | Fluency       | SG500      | SMMA_SG_00500 | Operations with Numbers       | Multiply Using Basic Math Facts             | Practice multiplication using basic facts; products less than or equal to 30. |

| Grade | Strand   | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|----------|------------|---------------|-------------------------|--|---|
| 5     | Fluency  | SG510      | SMMA_SG_00510 | Operations with Numbers | Multiply Using Basic Math Facts                      | Practice multiplication using basic facts; products less than or equal to 30.           |
| 5     | Fluency  | SG520      | SMMA_SG_00520 | Operations with Numbers | Multiply Using Basic Math Facts                      | Practice multiplication using basic facts; products less than or equal to 30.           |
| 5     | Fluency  | SG540      | SMMA_SG_00540 | Operations with Numbers | Multiply Using Basic Math Facts                      | Practice multiplication using basic facts; products less than or equal to 50.           |
| 5     | Fluency  | SG550      | SMMA_SG_00550 | Operations with Numbers | Multiply Using Basic Math Facts                      | Practice multiplication using basic facts; products less than or equal to 50.           |
| 5     | Fluency  | SG570      | SMMA_SG_00570 | Operations with Numbers | Multiply Using Basic Math Facts                      | Practice multiplication using basic facts; products less than or equal to 50.           |
| 5     | Fluency  | SG580      | SMMA_SG_00580 | Operations with Numbers | Multiply Using Basic Math Facts                      | Practice multiplication using basic facts; products less than or equal to 50.           |
| 5     | Fluency  | SG560      | SMMA_SG_00560 | Operations with Numbers | Subtract Using Basic Math Facts                      | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 5     | Geometry | GE510      | SMMA_LO_00636 | Angle Relationships     | Determine the Measure of an Angle Using a Protractor | Use a protractor to measure an angle.   |
| 5     | Geometry | GE555      | SMMA_LO_00644 | Angle Relationships     | Determine the Measure of an Angle Using a Protractor | Select the appropriate protractor to measure an angle.                                  |
| 5     | Geometry | GE570      | SMMA_LO_00646 | Angle Relationships     | Determine the Measure of an Angle Using a Protractor | Measure an angle using the appropriate protractor.                                      |

| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic   | Description   |
|-------|----------|------------|---------------|---|---|---|
| 5     | Geometry | GE595      | SMMA_LO_00650 | Angle Relationships                     | Determine the Measure of an Angle Using a Protractor                    | Use a protractor to measure an angle in a triangle or quadrilateral; then find the sum of all the angles in the figure. |
| 5     | Geometry | GE520      | SMMA_LO_00637 | Angle Relationships                     | Identify Congruent Angles   | Identify congruent angles.  |
| 5     | Geometry | GE550      | SMMA_LO_00643 | Attributes of Three-Dimensional Figures | Identify Bases, Edges, Faces, and Vertices of Three-Dimensional Figures | Count the vertices, edges, or faces of a prism or pyramid.  |
| 5     | Geometry | GE545      | SMMA_LO_01728 | Attributes of Two-Dimensional Figures   | Classify Figures Based on Their Attributes                              | Classify and sort two-dimensional geometric figures by properties and attributes.                                       |
| 5     | Geometry | GE515      | SMMA_LO_01775 | Attributes of Two-Dimensional Figures   | Identify Acute, Obtuse and Right Triangles                              | Identify all triangles of a particular class (acute, right, or obtuse).   |
| 5     | Geometry | PS540      | SMMA_LO_01736 | Coordinate Geometry                     | Determine the Missing Coordinate of a Vertex                            | Determine the missing coordinate of a vertex of a triangle in a transformation.   |
| 5     | Geometry | NC500      | SMMA_LO_01077 | Coordinate Geometry                     | Points in the Coordinate Plane  | Find the coordinates for a point on a grid.   |
| 5     | Geometry | AP500      | SMMA_LO_01735 | Coordinate Geometry                     | Points in the Coordinate Plane  | Graph a point on a coordinate grid (Quadrant I).  |
| 5     | Geometry | GE525      | SMMA_LO_00638 | Lines, Line Segments, and Rays          | Draw Parallel, Perpendicular, or Intersecting Lines                     | Draw parallel, perpendicular, or intersecting lines on a grid.  |
| 5     | Geometry | GE527      | SMMA_LO_00639 | Lines, Line Segments, and Rays          | Identify Parallel and Perpendicular Lines                               | Identify the pairs of parallel line segments in a geometric drawing.  |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic  | Description   |
|-------|-------------|------------|---------------|--|--|---|
| 5     | Geometry    | GE505      | SMMA_LO_00635 | Lines, Line Segments, and Rays         | Identify Points of Intersection                        | Count the points of intersection of two or more lines (0 to 5 intersection points). |
| 5     | Geometry    | GE500      | SMMA_LO_00634 | Similarity and Congruence              | Determine if a Figure is Divided into Congruent Parts  | Determine whether two to six segments divide a figure into congruent parts.         |
| 5     | Geometry    | GE530      | SMMA_LO_00640 | Similarity and Congruence              | Divide a Figure into Congruent Parts                   | Draw one to two segments to divide a figure into two to four congruent parts.       |
| 5     | Geometry    | GE560      | SMMA_LO_00645 | Similarity and Congruence              | Identify the Polygon That Is Not Similar to the Others | Identify the polygon that is not similar to the others.                             |
| 5     | Geometry    | GE540      | SMMA_LO_00642 | Similarity and Congruence              | Match Congruent Two-Dimensional Figures                | Move two geometric figures from a set of figures to complete a puzzle.              |
| 5     | Geometry    | GE580      | SMMA_LO_00647 | Symmetry                               | Draw Using Symmetry                                    | Complete a symmetrical drawing.   |
| 5     | Geometry    | GE583      | SMMA_LO_01773 | Symmetry                               | Identify Lines of Symmetry                             | Identify the shape with a given number of lines of symmetry.                        |
| 5     | Geometry    | GE587      | SMMA_LO_01776 | Transformations                        | Classify the Transformation                            | Identify a transformation as a slide, flip, or a turn.                              |
| 5     | Geometry    | GE589      | SMMA_LO_01777 | Transformations                        | Create Tessellations                                   | Create a tessellation.  |
| 5     | Geometry    | GE585      | SMMA_LO_00648 | Transformations                        | Identify Reflections (Flips)                           | Identify a set of geometric figures that show a reflection (flip).                  |
| 5     | Measurement | ME520      | SMMA_LO_00810 | Measurement of Two-Dimensional Figures | Calculate Area Using Metric Units                      | Find the area of a rectangle using a formula.                                       |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                | Topic   | Description   |
|-------|-------------|------------|---------------|--|---|---|
| 5     | Measurement | ME510      | SMMA_LO_00808 | Measurement of Two-Dimensional Figures | Calculate the Area of an Irregular Figure                   | Estimate the area of a figure on a grid (3 to 11 square units).                   |
| 5     | Measurement | ME580      | SMMA_LO_00821 | Measurement of Two-Dimensional Figures | Determine Perimeter Using Customary Units                   | Given the lengths of all sides, find the perimeter of a rectangle.                |
| 5     | Measurement | ME595      | SMMA_LO_00823 | Measurement of Two-Dimensional Figures | Identify and Compare Areas                                  | Identify rectangles that have equal areas, but different dimensions.              |
| 5     | Measurement | ME563      | SMMA_LO_00818 | Measurement of Two-Dimensional Figures | Identify the Perimeter in Metric Units                      | Identify the expression for the perimeter of a figure.                            |
| 5     | Measurement | AP560      | SMMA_LO_00162 | Time                                   | Determine Elapsed Time on an Analog Clock                   | Find the time one to five hours before or after a given time (across 12 o'clock). |
| 5     | Measurement | WP545      | SMMA_LO_01613 | Time                                   | Determine Elapsed Time on an Analog Clock                   | Given the ending time and the elapsed time, find the starting time.               |
| 5     | Measurement | ME500      | SMMA_LO_00806 | Time                                   | Match Digital Times with Descriptions                       | Match digital times with descriptions (e.g., quarter to or quarter past).         |
| 5     | Measurement | SA510      | SMMA_LO_01885 | Units of Measure                       | Choose the Appropriate Customary Unit of Capacity or Volume | Identify the appropriate unit of capacity.  |
| 5     | Measurement | SA515      | SMMA_LO_01730 | Units of Measure                       | Choose the Appropriate Customary Unit of Weight and Mass    | Identify the appropriate unit of weight.  |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic  | Description   |
|-------|-------------|------------|---------------|------------------|--|---|
| 5     | Measurement | ME530      | SMMA_LO_00812 | Units of Measure | Choose the Appropriate Measuring Instruments               | Select the appropriate ruler to measure vertical or horizontal lengths.                           |
| 5     | Measurement | SA505      | SMMA_LO_01731 | Units of Measure | Choose the Appropriate Metric Units of Capacity or Volume  | Identify the appropriate units of capacity.   |
| 5     | Measurement | SA520      | SMMA_LO_01729 | Units of Measure | Choose the Appropriate Metric Units of Weight and Mass     | Identify the appropriate unit of mass.  |
| 5     | Measurement | ME540      | SMMA_LO_00814 | Units of Measure | Convert between Linear Metric Units                        | Convert metric units of length (mm, cm, m, and km; whole numbers).                                |
| 5     | Measurement | ME570      | SMMA_LO_00820 | Units of Measure | Determine Equivalent Metric Units                          | Compare unlike metric units and identify the correct statement (mm, cm, m, km; mL, L; mg, g, kg). |
| 5     | Measurement | ME505      | SMMA_LO_00807 | Units of Measure | Identify the Reasonable Mass for an Object in Metric Units | Identify the reasonable mass for an object (grams and kilograms).                                 |
| 5     | Measurement | ME535      | SMMA_LO_00813 | Units of Measure | Measure Height, Length, or Width in Metric Units           | Identify the reasonable width, height, or length of an object (metric units).                     |
| 5     | Measurement | ME545      | SMMA_LO_00815 | Units of Measure | Measure Length in Customary or Metric Units                | Determine distances from scale drawings (inches to miles, cm to km).                              |
| 5     | Measurement | ME590      | SMMA_LO_00822 | Units of Measure | Measure Length in Customary or Metric Units                | Measure the length of a bar to the nearest 1/4 inch or 0.5 cm.                                    |

| Grade | Strand                      | MCS* Level | LO ID         | Concept          | Topic  | Description   |
|-------|-----------------------------|------------|---------------|------------------|--|---|
| 5     | Measurement                 | ME525      | SMMA_LO_00811 | Units of Measure | Metric Units of Capacity and Volume            | Identify the reasonable capacity of an object (milliliters and liters).                     |
| 5     | Measurement                 | DC550      | SMMA_LO_00229 | Units of Measure | Metric Units of Linear Measure                 | Identify the most reasonable decimal number in context.                                     |
| 5     | Measurement                 | SA570      | SMMA_LO_01323 | Units of Measure | Metric Units of Linear Measure                 | Measure topsoil in a soil sample; calculate how long it took to form.                       |
| 5     | Number Sense and Operations | WP550      | SMMA_LO_01614 | Estimation       | Estimate Differences to Nearest Thousand       | Estimate the difference of 2 four-digit numbers to the nearest thousand.                    |
| 5     | Number Sense and Operations | DC595      | SMMA_LO_00238 | Estimation       | Estimate Products/Quotients                    | Identify the best estimate for a quotient (decimal divided by a whole number).              |
| 5     | Number Sense and Operations | DC560      | SMMA_LO_00231 | Estimation       | Estimate Sum, Difference, Product, or Quotient | Identify the best estimate of a sum, difference, or product.                                |
| 5     | Number Sense and Operations | WP590      | SMMA_LO_01620 | Estimation       | Estimate Sums/Differences                      | Identify the best estimate for a sum using data in a table (three- and four-digit addends). |
| 5     | Number Sense and Operations | DC530      | SMMA_LO_00225 | Number Sense     | Compare Decimals to Thousandths                | Compare decimal numbers (to thousandths).   |
| 5     | Number Sense and Operations | FR510      | SMMA_LO_00447 | Number Sense     | Compare Fractions with Like Denominators       | Compare fractions (like denominators, thirds to sixteenths).                                |
| 5     | Number Sense and Operations | FR520      | SMMA_LO_00448 | Number Sense     | Compare Fractions with Unlike Denominators     | Compare fractions to 1 (halves to sixteenths).  |



| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic   | Description   |
|-------|-----------------------------|------------|---------------|--------------|---|---|
| 5     | Number Sense and Operations | FR550      | SMMA_LO_00451 | Number Sense | Determine Equivalent Fractions                                  | Find the missing numerator or denominator in an equivalent fraction (simplified fractions $\frac{1}{2}$ to $\frac{3}{4}$ ). |
| 5     | Number Sense and Operations | FR580      | SMMA_LO_00457 | Number Sense | Determine Equivalent Fractions                                  | Find an equivalent fraction of a simplified fraction (simplified fractions $\frac{1}{2}$ to $\frac{8}{9}$ ).                |
| 5     | Number Sense and Operations | FR585      | SMMA_LO_00458 | Number Sense | Determine Equivalent Fractions                                  | Find three equivalent fractions (simplified fractions $\frac{1}{2}$ to $\frac{8}{9}$ ).                                     |
| 5     | Number Sense and Operations | FR557      | SMMA_LO_01791 | Number Sense | Determine Equivalent Fractions                                  | Generate a table of equivalent fractions for a fraction in simplest form.   |
| 5     | Number Sense and Operations | FR583      | SMMA_LO_01792 | Number Sense | Determine Equivalent Fractions                                  | Generate a table of equivalent fractions for a fraction not in simplest form.   |
| 5     | Number Sense and Operations | FR578      | SMMA_LO_01793 | Number Sense | Determine Equivalent Fractions                                  | Identify the fraction equivalent to the given fraction.   |
| 5     | Number Sense and Operations | DC525      | SMMA_LO_00224 | Number Sense | Determine Equivalent Fractions and Decimals                     | Match a decimal number to an equivalent fraction (tenths to thousandths).   |
| 5     | Number Sense and Operations | ME515      | SMMA_LO_00809 | Number Sense | Determine Equivalent Fractions and Decimals Using Money Amounts | Identify the fraction of a dollar a coin is worth (penny to half-dollar).   |
| 5     | Number Sense and Operations | FR500      | SMMA_LO_00446 | Number Sense | Determine Equivalent Fractions and Mixed Numbers                | Using a model, rewrite a mixed number as a fraction (halves to eighths).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description   |
|-------|-----------------------------|------------|---------------|--------------|--|---|
| 5     | Number Sense and Operations | FR530      | SMMA_LO_00449 | Number Sense | Determine Equivalent Fractions and Mixed Numbers | Rewrite a fraction as a mixed number (halves to eighths).   |
| 5     | Number Sense and Operations | FR540      | SMMA_LO_00450 | Number Sense | Determine Equivalent Fractions and Mixed Numbers | Rewrite a mixed number as a fraction (fifths to ninths).  |
| 5     | Number Sense and Operations | DC585      | SMMA_LO_00236 | Number Sense | Order Decimals to Thousandths                    | Order three decimals from least to greatest (to thousandths).   |
| 5     | Number Sense and Operations | FR555      | SMMA_LO_00452 | Number Sense | Simplify Fractions                               | Determine if a fraction can be simplified; simplify if possible (simplified fractions $\frac{1}{2}$ to $\frac{3}{4}$ ).         |
| 5     | Number Sense and Operations | FR560      | SMMA_LO_00453 | Number Sense | Simplify Fractions                               | Find the missing numerator or denominator in an equivalent fraction (simplified fractions $\frac{1}{2}$ to $\frac{7}{8}$ ).     |
| 5     | Number Sense and Operations | FR565      | SMMA_LO_00454 | Number Sense | Simplify Fractions                               | Determine if a fraction can be simplified; simplify if possible (simplified fractions $\frac{1}{2}$ to $\frac{7}{8}$ ).         |
| 5     | Number Sense and Operations | FR570      | SMMA_LO_00455 | Number Sense | Simplify Fractions                               | Write a fraction in simplest form (simplified fractions $\frac{1}{2}$ to $\frac{7}{8}$ ).                                       |
| 5     | Number Sense and Operations | FR575      | SMMA_LO_00456 | Number Sense | Simplify Fractions                               | Determine if a fraction can be simplified; simplify if possible (simplified fractions $\frac{1}{2}$ to $\frac{7}{8}$ ).         |
| 5     | Number Sense and Operations | ME560      | SMMA_LO_00817 | Number Sense | Solve Fraction Problems in Context               | Find a fraction of an hour in minutes ( $\frac{1}{4}$ , $\frac{1}{3}$ , $\frac{1}{2}$ , $\frac{2}{3}$ , or $\frac{3}{4}$ hour). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 5     | Number Sense and Operations | PS515      | SMMA_LO_01285 | Number Sense            | Solve Fraction Problems in Context              | Determine the sale price of an item when the price is reduced by one-half, one-third, or one-fourth. |
| 5     | Number Sense and Operations | PS510      | SMMA_LO_01284 | Number Sense            | Solve Ratios/Proportions in Measurement Context | Solve a proportion problem in context.   |
| 5     | Number Sense and Operations | NC580      | SMMA_LO_01088 | Number Theory           | Factors   | Identify a common factor of two numbers (4 to 81).   |
| 5     | Number Sense and Operations | NC510      | SMMA_LO_01079 | Number Theory           | Identify Odd/Even Numbers                       | Identify if a sum or difference of two numbers is odd or even (one- or two-digit numbers).           |
| 5     | Number Sense and Operations | NC565      | SMMA_LO_01086 | Number Theory           | Identify Odd/Even Numbers                       | Identify if the sum, difference, or product of two numbers is even or odd.                           |
| 5     | Number Sense and Operations | NC570      | SMMA_LO_01087 | Number Theory           | Prime Factors                                   | Using a factor tree, find the prime factors of a number (2 to 32).                                   |
| 5     | Number Sense and Operations | DC509      | SMMA_LO_01785 | Operations with Numbers | Add Decimals to Hundredths                      | Add the decimal numbers provided on a data table.  |
| 5     | Number Sense and Operations | DC535      | SMMA_LO_00226 | Operations with Numbers | Add Decimals with Regrouping                    | Align the decimal numbers for a vertical addition problem; then solve (to thousandths).              |
| 5     | Number Sense and Operations | AD585      | SMMA_LO_00100 | Operations with Numbers | Add Four-Digit Whole Numbers with Regrouping    | Add two addends (student choice, four-digit addends, sums 2111 to 19998, regrouping in all places).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 5     | Number Sense and Operations | FR590      | SMMA_LO_00460 | Operations with Numbers | Add Mixed Numbers with Like Denominators                 | Add mixed numbers; no simplifying (like denominators, thirds to twelfths).  |
| 5     | Number Sense and Operations | AD505      | SMMA_LO_00096 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add two addends (student choice, three-digit addends, sums 1000 to 1998, regrouping in all places).                     |
| 5     | Number Sense and Operations | AD545      | SMMA_LO_00098 | Operations with Numbers | Add Three-Digit Whole Numbers with Regrouping            | Add three addends (student choice, three-digit addends, sums 311 to 2997, regrouping in all places).                    |
| 5     | Number Sense and Operations | AD565      | SMMA_LO_00099 | Operations with Numbers | Add Three-Digit/Four-Digit Whole Numbers with Regrouping | Add two addends (student choice, a three-digit and a four-digit addends, sums 1111 to 10998, regrouping in all places). |
| 5     | Number Sense and Operations | AD525      | SMMA_LO_00097 | Operations with Numbers | Add Two-Digit/Three-Digit Whole Numbers with Regrouping  | Add three addends (student choice, a two-digit and 2 three-digit addends, sums 211 to 2097, regrouping in all places).  |
| 5     | Number Sense and Operations | WP520      | SMMA_LO_01611 | Operations with Numbers | Add/Subtract Money                                       | Find the total value of a group of quarters, dimes, nickels, and pennies (sums to \$1.65).                              |
| 5     | Number Sense and Operations | PS520      | SMMA_LO_01286 | Operations with Numbers | Connect Pictorial Model with Addition Number Sentence    | Use a picture to solve an addition problem with three addends.  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 5     | Number Sense and Operations | DV500      | SMMA_LO_00295 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Divide using the long division algorithm (one-digit divisor, remainder).   |
| 5     | Number Sense and Operations | DV540      | SMMA_LO_00297 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Divide using the long division algorithm (three-digit dividend, one-digit divisor, remainder).                     |
| 5     | Number Sense and Operations | DV560      | SMMA_LO_00298 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Divide using the long division algorithm (three-digit dividend, one-digit divisor, remainder).                     |
| 5     | Number Sense and Operations | DV580      | SMMA_LO_00299 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Multiply multiples of 10 using mental math ( $20 \times 20$ to $90 \times 90$ ).                                   |
| 5     | Number Sense and Operations | DV520      | SMMA_LO_00296 | Operations with Numbers | Divide Whole Numbers without Remainders Using Long Division | Divide using the long division algorithm (three-digit dividend, one-digit divisor, no remainder).                  |
| 5     | Number Sense and Operations | DC500      | SMMA_LO_00219 | Operations with Numbers | Multiply Decimals   | Find the missing factor and quotient in two related number sentences (products $0.2 \times 2$ to $0.9 \times 5$ ). |
| 5     | Number Sense and Operations | DC515      | SMMA_LO_00222 | Operations with Numbers | Multiply Decimals   | Identify the location of the decimal point of the product of two decimals (factors, tenths to hundredths).         |
| 5     | Number Sense and Operations | DC520      | SMMA_LO_00223 | Operations with Numbers | Multiply Decimals   | Multiply two decimals or multiply a decimal by a whole number (tenths to hundredths).                              |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 5     | Number Sense and Operations | DC580      | SMMA_LO_00235 | Operations with Numbers | Multiply Decimals                              | Multiply decimals by 10, 100, or 1000.   |
| 5     | Number Sense and Operations | DC565      | SMMA_LO_00232 | Operations with Numbers | Multiply Decimals Horizontally to Hundredths   | Multiply decimals displayed horizontally (0.2 x 0.6 to 0.9 x 0.12).                    |
| 5     | Number Sense and Operations | DC575      | SMMA_LO_00234 | Operations with Numbers | Multiply Decimals to Hundred-Thousandths       | Multiply decimals (to thousandths x hundredths).                                       |
| 5     | Number Sense and Operations | MU505      | SMMA_LO_00892 | Operations with Numbers | Multiply Four-Digit by One-Digit Whole Numbers | Multiply whole numbers (student choice, products 1000 x 2 to 9999 x 9).                |
| 5     | Number Sense and Operations | MU525      | SMMA_LO_00895 | Operations with Numbers | Multiply Multiples of 10                       | Multiply whole numbers (student choice, products 21 x 10 to 99 x 90, multiples of 10). |
| 5     | Number Sense and Operations | MU550      | SMMA_LO_00898 | Operations with Numbers | Multiply Multiples of 10                       | Multiply whole numbers (student choice, products 20 x 11 to 90 x 99, multiples of 10). |
| 5     | Number Sense and Operations | NC505      | SMMA_LO_01078 | Operations with Numbers | Multiply Multiples of 10                       | Multiply one- to five-digit whole numbers by powers of ten (10 to 100,000).            |
| 5     | Number Sense and Operations | MU540      | SMMA_LO_00897 | Operations with Numbers | Multiply Two-Digit Whole Numbers               | Multiply whole numbers (products 13 x 20 to 19 x 90, multiples of 10).                 |
| 5     | Number Sense and Operations | MU570      | SMMA_LO_00899 | Operations with Numbers | Multiply Two-Digit Whole Numbers               | Multiply whole numbers (student choice, products 11 x 11 to 15 x 99).                  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 5     | Number Sense and Operations | MU590      | SMMA_LO_00900 | Operations with Numbers | Multiply Two-Digit Whole Numbers                          | Multiply whole numbers (products $10,000 \times 2$ to $99,999 \times 9$ ).                           |
| 5     | Number Sense and Operations | MU520      | SMMA_LO_00894 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers             | Multiply whole numbers (products $13 \times 1$ to $19 \times 5$ ).                                   |
| 5     | Number Sense and Operations | MU530      | SMMA_LO_00896 | Operations with Numbers | Multiply Two-Digit by One-Digit Whole Numbers             | Multiply whole numbers (products $12 \times 6$ to $19 \times 9$ ).                                   |
| 5     | Number Sense and Operations | DC510      | SMMA_LO_00221 | Operations with Numbers | Multiply/Divide Decimals by Whole Numbers                 | Multiply a decimal and a whole number displayed horizontally ( $0.02 \times 2$ to $0.09 \times 5$ ). |
| 5     | Number Sense and Operations | DC590      | SMMA_LO_00237 | Operations with Numbers | Multiply/Divide Decimals to Determine Missing Factor      | Divide a decimal by a decimal (horizontal division; dividends to tenths).                            |
| 5     | Number Sense and Operations | MU510      | SMMA_LO_00893 | Operations with Numbers | Multiply/Divide Whole Numbers to Determine Missing Factor | Find the missing factor (products $20 \times 20$ to $90 \times 90$ , multiples of 10).               |
| 5     | Number Sense and Operations | WP570      | SMMA_LO_01616 | Operations with Numbers | Solve Division Problems in Context                        | Solve a division problem in context (remainder).   |
| 5     | Number Sense and Operations | WP573      | SMMA_LO_01617 | Operations with Numbers | Solve Division Problems in Context                        | Interpret the quotient and remainder of a division problem in context (three-digit dividends).       |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 5     | Number Sense and Operations | PS505      | SMMA_LO_01283 | Operations with Numbers | Solve Multiplication/Division Problems with Missing/Extra Information | Identify the missing information needed to solve a multiplication problem in context; then solve the problem.            |
| 5     | Number Sense and Operations | WP510      | SMMA_LO_01610 | Operations with Numbers | Solve Subtraction Problems in Context                                 | Solve a problem in context that involves finding the difference of 2 three-digit numbers.                                |
| 5     | Number Sense and Operations | DC545      | SMMA_LO_00228 | Operations with Numbers | Subtract Decimals Vertically with Regrouping to Thousandths           | Align the decimal numbers for a vertical subtraction problem; then solve (to thousandths).                               |
| 5     | Number Sense and Operations | DC570      | SMMA_LO_00233 | Operations with Numbers | Subtract Decimals Vertically with Regrouping to Thousandths           | Align the decimal numbers in a vertical subtraction problem; then solve (decimals to thousandths).                       |
| 5     | Number Sense and Operations | DC507      | SMMA_LO_01786 | Operations with Numbers | Subtract Decimals to Hundredths                                       | Subtract the decimal numbers provided on a data table.   |
| 5     | Number Sense and Operations | AP530      | SMMA_LO_00159 | Operations with Numbers | Subtract Decimals with Regrouping to Tenths                           | Subtract metric length or weight measurements expressed as decimals (to tenths, difference 1.2 to 8.9, regrouping).      |
| 5     | Number Sense and Operations | SU500      | SMMA_LO_01498 | Operations with Numbers | Subtract Four-Digit Numbers with Regrouping                           | Find the difference of two whole numbers (student choice, four-digit numbers, regrouping from tens and hundreds places). |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 5     | Number Sense and Operations | SU530      | SMMA_LO_01501 | Operations with Numbers | Subtract Four-Digit Numbers with Regrouping                               | Find the difference of two whole numbers (student choice, four-digit numbers, regrouping from tens and thousands places).            |
| 5     | Number Sense and Operations | SU580      | SMMA_LO_01504 | Operations with Numbers | Subtract Four-Digit Numbers with Regrouping                               | Find the difference of two whole numbers (student choice, four-digit numbers, regrouping from tens, hundreds, and thousands places). |
| 5     | Number Sense and Operations | FR595      | SMMA_LO_00461 | Operations with Numbers | Subtract Mixed Numbers with Like Denominators                             | Subtract mixed numbers; no simplifying (like denominators, thirds to twelfths).  |
| 5     | Number Sense and Operations | WP500      | SMMA_LO_01609 | Operations with Numbers | Subtract Money Amounts  | Find the change from one dollar for two to four items (each 10, 15, or 20 cents).  |
| 5     | Number Sense and Operations | SU510      | SMMA_LO_01499 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds/Thousands Place | Subtract a three-digit number from a four-digit number (student choice, regrouping from tens, hundreds, and thousands places).       |
| 5     | Number Sense and Operations | SU520      | SMMA_LO_01500 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds/Thousands Place | Subtract a three-digit number from a four-digit number (student choice, regrouping from tens, hundreds, and thousands places).       |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 5     | Number Sense and Operations | SU540      | SMMA_LO_01502 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds/Thousands Place | Subtract across zero (student choice, four-digit minuends with a 0 in the tens place, regrouping from the tens, hundreds, and thousands places). |
| 5     | Number Sense and Operations | SU560      | SMMA_LO_01503 | Operations with Numbers | Subtract Whole Numbers with Regrouping from Tens/Hundreds/Thousands Place | Subtract across zero (student choice, four-digit minuends with a 0 in the tens place, regrouping from the tens, hundreds, and thousands places). |
| 5     | Number Sense and Operations | AP525      | SMMA_LO_01733 | Operations with Numbers | Use Conceptual Models to Understand Multiplication: Arrays/Area Model     | Identify equivalent arrays with different factors (two-digit factors).   |
| 5     | Number Sense and Operations | AP528      | SMMA_LO_01734 | Operations with Numbers | Use Conceptual Models to Understand Multiplication: Arrays/Area Model     | Use an area model to solve a multiplication problem (two-digit factors).   |
| 5     | Number Sense and Operations | NC590      | SMMA_LO_01089 | Place Value             | Determine Decimal Numbers Using Place-Value Charts                        | Enter a decimal number in a place-value chart (tenths to thousandths).   |
| 5     | Number Sense and Operations | NC550      | SMMA_LO_01083 | Place Value             | Identify Place Value to 1,000,000,001                                     | Identify the digits in the period (hundreds, thousands, millions, and billions).   |
| 5     | Number Sense and Operations | NC555      | SMMA_LO_01084 | Place Value             | Identify Place Value to 1,000,000,001                                     | Identify the digits in the period (hundreds, thousands, millions, and billions).   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|----------------------------------|------------|---------------|-------------------------|--|--|
| 5     | Number Sense and Operations      | DC540      | SMMA_LO_00227 | Place Value             | Relate Word Name to Decimal Number               | Match a decimal number to its word name (to thousandths).  |
| 5     | Number Sense and Operations      | DC555      | SMMA_LO_00230 | Place Value             | Round Decimals to Hundredths                     | Round a decimal to the nearest tenth, hundredth, or whole number.  |
| 5     | Number Sense and Operations      | NC530      | SMMA_LO_01081 | Place Value             | Round to Nearest Hundred                         | Round a three- to five-digit number to the nearest hundred.  |
| 5     | Patterns, Algebra, and Functions | EQ555      | SMMA_LO_01739 | Expressions             | Evaluate Expressions                             | Evaluate the expression $mx + c$ or $mx - c$ .   |
| 5     | Patterns, Algebra, and Functions | AP585      | SMMA_LO_01740 | Expressions             | Evaluate Expressions in Context                  | Evaluate an expression within a context (multiplication).  |
| 5     | Patterns, Algebra, and Functions | EQ515      | SMMA_LO_00358 | Functions and Relations | Describe the Rule in a Relation or Function      | Determine the output of one-function machine, given an input and sample inputs and outputs (combinations $2 \times 2$ to $9 \times 9$ ). |
| 5     | Patterns, Algebra, and Functions | PS530      | SMMA_LO_01723 | Functions and Relations | Describe the Rule in a Relation or Function      | Identify the one-step rule in the relation or function (multiplication and division).  |
| 5     | Patterns, Algebra, and Functions | GE590      | SMMA_LO_00649 | Logical Reasoning       | Identify the Counterexample                      | Identify the example that is a counterexample to a statement.  |
| 5     | Patterns, Algebra, and Functions | EQ510      | SMMA_LO_00357 | One-Step Equations      | Solve One-Step Equations Involving Whole Numbers | Solve for $a$ or $b$ in $a \times b = c$ (products $6 \times 2$ to $9 \times 12$ ).  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic  | Description   |
|-------|----------------------------------|------------|---------------|--------------------|--|---|
| 5     | Patterns, Algebra, and Functions | EQ520      | SMMA_LO_00359 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \div b = c$ (combinations $2 \times 10$ to $5 \times 12$ ).                  |
| 5     | Patterns, Algebra, and Functions | EQ540      | SMMA_LO_00361 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \div b = c$ (combinations $6 \times 10$ to $9 \times 12$ ).                  |
| 5     | Patterns, Algebra, and Functions | EQ560      | SMMA_LO_00363 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \times b = x$ (products $2 \times 10$ to $12 \times 12$ ).                   |
| 5     | Patterns, Algebra, and Functions | EQ580      | SMMA_LO_00365 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \div b = c$ (combinations $6 \times 20$ to $9 \times 90$ , multiples of 10). |
| 5     | Patterns, Algebra, and Functions | EQ590      | SMMA_LO_00366 | One-Step Equations | Solve One-Step Equations Involving Whole Numbers | Solve for a or b in $a \times b = x$ (products $2 \times 20$ to $12 \times 90$ , multiples of 10).  |
| 5     | Patterns, Algebra, and Functions | WP525      | SMMA_LO_01743 | One-Step Equations | Solve One-Step Equations in Context              | Solve a one-step equation in context (addition, two-digit whole numbers).                           |
| 5     | Patterns, Algebra, and Functions | WP530      | SMMA_LO_01744 | One-Step Equations | Solve One-Step Equations in Context              | Solve a one-step equation in context (subtraction, two-digit whole numbers).                        |
| 5     | Patterns, Algebra, and Functions | WP540      | SMMA_LO_01747 | One-Step Equations | Solve One-Step Equations in Context              | Solve a one-step equation in context (division, two-digit whole numbers).                           |
| 5     | Patterns, Algebra, and Functions | MU500      | SMMA_LO_00891 | Open Sentences     | Find the Missing Factor in a Number Sentence     | Find the missing factor (products $20 \times 11$ to $90 \times 99$ , multiples of 10).              |
| 5     | Patterns, Algebra, and Functions | PS535      | SMMA_LO_01748 | Patterns           | Extend an Iterative Pattern                      | Extend an iterative pattern (Pascal's triangle).  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic  | Description  |
|-------|----------------------------------|------------|---------------|--------------------|--|--|
| 5     | Patterns, Algebra, and Functions | AP570      | SMMA_LO_01724 | Patterns           | Generate a Table Given a Rule  | Generate a table of values given a rule.   |
| 5     | Patterns, Algebra, and Functions | DC505      | SMMA_LO_00220 | Patterns           | Identify the Decimal That Completes the Pattern                        | Find the missing decimal number on a number line; then count by multiples of tenths to find the product. |
| 5     | Patterns, Algebra, and Functions | PS560      | SMMA_LO_01289 | Two-Step Equations | Choose a Method to Solve a Two-Step Problem                            | Choose a method to solve a two-step problem.   |
| 5     | Patterns, Algebra, and Functions | EQ500      | SMMA_LO_00356 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                           | Solve for a or c in $a/b + c/b = d/b$ (sums $2/3$ to $11/12$ ).  |
| 5     | Patterns, Algebra, and Functions | EQ530      | SMMA_LO_00360 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                           | Solve for a or c in $(a/b - c/b = d/b)$ (minuends $2/3$ to $11/12$ ).                                    |
| 5     | Patterns, Algebra, and Functions | EQ550      | SMMA_LO_00362 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                           | Solve for a or c in $a/b - c/b = d/b$ (improper fractions, minuends $4/3$ to $35/12$ ).                  |
| 5     | Patterns, Algebra, and Functions | EQ570      | SMMA_LO_00364 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                           | Solve for a or c in $a/b + c/b = d/b$ (improper fractions, sums $4/3$ to $35/12$ ).                      |
| 5     | Patterns, Algebra, and Functions | PS550      | SMMA_LO_01288 | Two-Step Equations | Work Backwards to Solve a Two-Step Problem                             | Work backward to solve a two-step problem.   |
| 5     | Patterns, Algebra, and Functions | NC520      | SMMA_LO_01080 | Written Equations  | Identify the Two Equations That Are Translations of the Written Phrase | Identify related multiplication and division number sentences that can be used to solve a problem.       |

| Grade | Strand                               | MCS* Level | LO ID         | Concept              | Topic  | Description  |
|-------|--------------------------------------|------------|---------------|----------------------|--|--|
| 5     | Probability and Discrete Mathematics | PR505      | SMMA_LO_01737 | Discrete Mathematics | Solve Route Problems   | Determine the number of routes between two locations on a map.   |
| 5     | Probability and Discrete Mathematics | PR510      | SMMA_LO_01177 | Probability          | Determine Qualitatively the Probability of Events as Equal or Unequal                | Given a graphical representation of a bowl containing marbles of two colors, add or remove enough marbles so that choosing a specific marble in either bowl is equally probable. |
| 5     | Probability and Discrete Mathematics | PR570      | SMMA_LO_01187 | Probability          | Determine and Compare Theoretical Probabilities                                      | Given a graphical representation of two bowls containing colored marbles, use theoretical probability to compare two equivalent random experiments (using fractions).            |
| 5     | Probability and Discrete Mathematics | PR590      | SMMA_LO_01191 | Probability          | Determine and Compare Theoretical Probabilities                                      | Given a graphical representation of two bowls containing colored marbles, use theoretical probability to compare two equivalent random experiments (using decimal numbers).      |
| 5     | Probability and Discrete Mathematics | PR525      | SMMA_LO_01738 | Probability          | Determine the Most or Least Likely Event and Conduct a Simulation to Compare Results | Determine the event that is most or least likely; then conduct a simulation in which the results are recorded so that theoretical and experimental probability can be compared.  |

| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic   | Description  |
|-------|--------------------------------------|------------|---------------|-------------|---|--|
| 5     | Probability and Discrete Mathematics | PR550      | SMMA_LO_01181 | Probability | Determine the Probability of Dependent Events | Within the context of selecting without replacement from a bowl containing marbles of two colors, indicate the effect of changes on the probability of the event in both the number of possible outcomes favorable to an event and the total number of possible. |
| 5     | Probability and Discrete Mathematics | PR530      | SMMA_LO_01179 | Probability | Express Probability as a Ratio                | Express an event as a ratio of the number of favorable outcomes to the total number of outcomes (bowl containing marbles of two colors).   |

\* Math Concepts and Skills

## Grade 6

| Grade | Strand        | MCS* Level | LO ID         | Concept             | Topic                               | Description  |
|-------|---------------|------------|---------------|---------------------|-------------------------------------|--|
| 6     | Data Analysis | SA610      | SMMA_LO_01327 | Data Interpretation | Collect, Organize, and Analyze Data | Measure the amount of rainfall for the week; then complete the chart and determine the total amount of rainfall for the month. |
| 6     | Data Analysis | AP633      | SMMA_LO_01770 | Data Interpretation | Construct Double Bar Graphs         | Create a double-bar graph.   |
| 6     | Data Analysis | AP630      | SMMA_LO_01769 | Data Interpretation | Construct a Bar Graph               | Create a bar graph.  |
| 6     | Data Analysis | AP635      | SMMA_LO_01771 | Data Interpretation | Construct a Bar Graph               | Create a line graph.   |

| Grade | Strand        | MCS* Level | LO ID         | Concept             | Topic  | Description  |
|-------|---------------|------------|---------------|---------------------|--|--|
| 6     | Data Analysis | PS695      | SMMA_LO_01298 | Data Interpretation | Interpret Categorical Data Not from a Chart or Table | Identify data needed to solve a problem in context.  |
| 6     | Data Analysis | PR600      | SMMA_LO_01192 | Data Interpretation | Read and Interpret Bar Graphs                        | Predict an outcome based on the trend shown in a series of bar graphs.   |
| 6     | Data Analysis | PR660      | SMMA_LO_01199 | Data Interpretation | Read and Interpret Box-and-Whiskers Plots            | Find the five values (upper and lower extremes, median, and upper and lower quartiles) from a set of data that are needed to create a box-and-whiskers plot. |
| 6     | Data Analysis | PR680      | SMMA_LO_01201 | Data Interpretation | Read and Interpret Box-and-Whiskers Plots            | Identify box-and whiskers plot that matches a given set of data.   |
| 6     | Data Analysis | PR682      | SMMA_LO_01202 | Data Interpretation | Read and Interpret Box-and-Whiskers Plots            | Identify data sets that match the data represented in a given box-and-whiskers plot.   |
| 6     | Data Analysis | AP628      | SMMA_LO_01764 | Data Interpretation | Read and Interpret Line Graphs                       | Read and interpret a line plot.  |
| 6     | Data Analysis | SA620      | SMMA_LO_01328 | Data Interpretation | Read and Interpret Tables and Charts                 | Graph and interpret rainfall data in a chart.  |
| 6     | Data Analysis | SA660      | SMMA_LO_01332 | Data Interpretation | Read and Interpret Tables and Charts                 | Choose a picture of the ocean bottom based on a table of ocean depths.   |
| 6     | Data Analysis | SA670      | SMMA_LO_01333 | Data Interpretation | Read and Interpret Tables and Charts                 | Determine the number of calories in multiple servings given data in a chart.   |



| Grade | Strand        | MCS* Level | LO ID         | Concept                       | Topic                            | Description   |
|-------|---------------|------------|---------------|-------------------------------|----------------------------------|---|
| 6     | Data Analysis | AP640      | SMMA_LO_00167 | Measures of Center and Spread | Determine the Mean of a Data Set | Determine the mean of a data set of numbers, each 2 to 9 (answers are whole numbers). |
| 6     | Fluency       | SG610      | SMMA_SG_00610 | Operations with Numbers       | Add Using Basic Math Facts       | Practice addition using basic facts; sums less than or equal to 20.                   |
| 6     | Fluency       | SG640      | SMMA_SG_00640 | Operations with Numbers       | Add Using Basic Math Facts       | Practice addition using basic facts; sums less than or equal to 24.                   |
| 6     | Fluency       | SG600      | SMMA_SG_00600 | Operations with Numbers       | Divide Using Basic Math Facts    | Practice division using basic facts; dividend, divisor less than or equal to 20.      |
| 6     | Fluency       | SG620      | SMMA_SG_00620 | Operations with Numbers       | Divide Using Basic Math Facts    | Practice division using basic facts; dividend, divisor less than or equal to 20.      |
| 6     | Fluency       | SG670      | SMMA_SG_00670 | Operations with Numbers       | Divide Using Basic Math Facts    | Practice division using basic facts; dividend, divisor less than or equal to 20.      |
| 6     | Fluency       | SG630      | SMMA_SG_00630 | Operations with Numbers       | Multiply Using Basic Math Facts  | Practice multiplication using basic facts; products less than or equal to 50.         |
| 6     | Fluency       | SG660      | SMMA_SG_00660 | Operations with Numbers       | Multiply Using Basic Math Facts  | Practice multiplication using basic facts; products less than or equal to 50.         |
| 6     | Fluency       | SG680      | SMMA_SG_00680 | Operations with Numbers       | Multiply Using Basic Math Facts  | Practice multiplication using basic facts; products less than or equal to 50.         |

| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic   | Description   |
|-------|----------|------------|---------------|---|---|---|
| 6     | Fluency  | SG650      | SMMA_SG_00650 | Operations with Numbers                 | Subtract Using Basic Math Facts   | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 6     | Fluency  | SG690      | SMMA_SG_00690 | Operations with Numbers                 | Subtract Using Basic Math Facts   | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 6     | Geometry | GE640      | SMMA_LO_00657 | Angle Relationships                     | Determine the Measure of an Angle                                       | Identify the better estimate for an angle measure.                                      |
| 6     | Geometry | GE680      | SMMA_LO_00663 | Angle Relationships                     | Draw an Angle   | Draw an angle with a given measure.   |
| 6     | Geometry | GE620      | SMMA_LO_00654 | Angle Relationships                     | Find the Missing Angle  | Find the missing angle in a triangle or quadrilateral.                                  |
| 6     | Geometry | GE660      | SMMA_LO_00661 | Angle Relationships                     | Identify Complementary and Supplementary Angles                         | Measure complementary or supplementary angles and find the sum of the angle measures.   |
| 6     | Geometry | GE605      | SMMA_LO_00652 | Attributes of Three-Dimensional Figures | Identify Bases, Edges, Faces, and Vertices of Three-Dimensional Figures | Complete sentences about bases, faces, edges, and vertices of geometric solids.         |
| 6     | Geometry | GE690      | SMMA_LO_00664 | Attributes of Three-Dimensional Figures | Identify Bases, Edges, Faces, and Vertices of Three-Dimensional Figures | Identify the set of faces for a geometric solid.  |
| 6     | Geometry | GE607      | SMMA_LO_01772 | Attributes of Three-Dimensional Figures | Identify Nets for Three-Dimensional Figures                             | Identify the net that forms a three-dimensional solid.                                  |

| Grade | Strand   | MCS* Level | LO ID         | Concept                               | Topic   | Description  |
|-------|----------|------------|---------------|---------------------------------------|---|--|
| 6     | Geometry | GE630      | SMMA_LO_00655 | Attributes of Two-Dimensional Figures | Identify Acute, Obtuse and Right Triangles                  | Identify acute, obtuse, and right triangles.   |
| 6     | Geometry | GE675      | SMMA_LO_01774 | Attributes of Two-Dimensional Figures | Identify Acute, Obtuse and Right Triangles                  | Identify all triangles of a particular class (acute, right, or obtuse).                  |
| 6     | Geometry | GE645      | SMMA_LO_00658 | Attributes of Two-Dimensional Figures | Identify Equilateral, Isosceles, and Scalene Triangles      | Identify equilateral, isosceles, and scalene triangles.                                  |
| 6     | Geometry | GE600      | SMMA_LO_00651 | Attributes of Two-Dimensional Figures | Identify Regular Polygons                                   | Identify the regular polygons.   |
| 6     | Geometry | GE635      | SMMA_LO_00656 | Attributes of Two-Dimensional Figures | Identify and/or Classify Quadrilaterals                     | Identify the true statement about a relationship among quadrilaterals.                   |
| 6     | Geometry | GE650      | SMMA_LO_00659 | Attributes of Two-Dimensional Figures | Identify and/or Classify Quadrilaterals                     | Identify the quadrilaterals that are trapezoids or rhombuses.                            |
| 6     | Geometry | GE610      | SMMA_LO_00653 | Circle Geometry                       | Identify the Center, Radius, Chord, or Diameter of a Circle | Identify a part of a circle (center, radius, chord, or diameter).                        |
| 6     | Geometry | ME605      | SMMA_LO_00828 | Circle Geometry                       | Measure the Radius, Diameter, and Circumference of a Circle | Find the circumference, given the length of the diameter or the radius ( $\pi = 3.14$ ). |
| 6     | Geometry | NC620      | SMMA_LO_01092 | Coordinate Geometry                   | Points in the Coordinate Plane                              | Identify a point on a coordinate grid given the ordered pair.                            |
| 6     | Geometry | GE695      | SMMA_LO_00665 | Transformations                       | Classify the Transformation                                 | Identify a reflection, a rotation, and a translation of a geometric figure.              |

| Grade | Strand      | MCS* Level | LO ID         | Concept                                  | Topic  | Description  |
|-------|-------------|------------|---------------|--|--|--|
| 6     | Measurement | GE615      | SMMA_LO_01784 | Circle Measurement                       | Measure the Circumference of a Circle                              | Determine the most accurate representation of the circumference of a circle. |
| 6     | Measurement | ME635      | SMMA_LO_01781 | Circle Measurement                       | Measure the Diameter of a Circle, then Determine the Area.         | Measure the diameter of a circle, and then determine the area.               |
| 6     | Measurement | ME610      | SMMA_LO_01779 | Circle Measurement                       | Measure the Diameter of a Circle, then Determine the Circumference | Measure the diameter of a circle, and then determine the circumference.      |
| 6     | Measurement | ME637      | SMMA_LO_01783 | Circle Measurement                       | Measure the Radius of a Circle, then Determine the Area.           | Measure the radius of a circle, and then determine the area.                 |
| 6     | Measurement | ME615      | SMMA_LO_01780 | Circle Measurement                       | Measure the Radius of a Circle, then Determine the Circumference   | Measure the radius of a circle, and then determine the circumference.        |
| 6     | Measurement | ME690      | SMMA_LO_00833 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Cube                                     | Find the volume of a rectangular solid by counting cubes.                    |
| 6     | Measurement | ME600      | SMMA_LO_00824 | Measurement of Two-Dimensional Figures   | Calculate Area Using Metric Units                                  | Use a formula to find the area of a parallelogram.                           |
| 6     | Measurement | AP680      | SMMA_LO_00169 | Measurement of Two-Dimensional Figures   | Calculate the Perimeter of a Simple, Closed Figure                 | Find the perimeter of a rectangle (24 to 48 customary or metric units).      |
| 6     | Measurement | ME620      | SMMA_LO_00826 | Measurement of Two-Dimensional Figures   | Determine if a Problem Relates to Perimeter, Area, or Volume       | Determine if the perimeter, area, or volume is needed to solve the problem.  |
| 6     | Measurement | ME630      | SMMA_LO_00827 | Measurement of Two-Dimensional Figures   | Find the Area of a Triangle  | Find the area of a triangle using a formula.                                 |

| Grade | Strand      | MCS* Level | LO ID         | Concept          | Topic   | Description   |
|-------|-------------|------------|---------------|------------------|---|---|
| 6     | Measurement | SA630      | SMMA_LO_01329 | Time             | Determine Elapsed Time in Context                           | Determine the length of time for a boat trip given a diagram and tidal information.                           |
| 6     | Measurement | AP605      | SMMA_LO_01864 | Units of Measure | Choose the Appropriate Customary Unit of Capacity or Volume | Choose the appropriate unit of capacity (ounce, cup, pint, quart, and gallon).                                |
| 6     | Measurement | AP610      | SMMA_LO_01866 | Units of Measure | Choose the Appropriate Customary Unit of Weight and Mass    | Choose appropriate units of weight (ounces, pounds, and tons).  |
| 6     | Measurement | AP617      | SMMA_LO_01865 | Units of Measure | Choose the Appropriate Metric Units of Capacity or Volume   | Choose appropriate unit of capacity (milliliter and liter).   |
| 6     | Measurement | SA640      | SMMA_LO_01330 | Units of Measure | Customary Units of Linear Measure                           | Identify ports as suitable or unsuitable for visiting based on the depth of water at high tide and low tide.  |
| 6     | Measurement | AP620      | SMMA_LO_00166 | Units of Measure | Determine Equivalent Customary Units of Length              | Express yards and feet as an equivalent number of feet, or feet and inches as an equivalent number of inches. |
| 6     | Measurement | AP660      | SMMA_LO_00168 | Units of Measure | Determine Equivalent Metric Units                           | Add metric measurements with unlike units and express the sum in terms of the smaller unit.                   |
| 6     | Measurement | ME650      | SMMA_LO_00829 | Units of Measure | Determine Volume Using Nonstandard Units                    | Find the volume of a rectangular solid by counting cubes.   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept          | Topic  | Description  |
|-------|-----------------------------|------------|---------------|------------------|--|--|
| 6     | Measurement                 | ME680      | SMMA_LO_01782 | Units of Measure | Determine the More Precise Unit of Measure                               | By measuring the length of an object, determine the more precise unit of measure.                        |
| 6     | Measurement                 | PS680      | SMMA_LO_01296 | Units of Measure | Identify the Number Sentence That Is a Translation of the Written Phrase | Find the missing information needed to solve a problem; then solve.                                      |
| 6     | Measurement                 | AP615      | SMMA_LO_01867 | Units of Measure | Identify the Reasonable Weight for an Object in Metric Units             | Identify the reasonable mass for an object (grams and kilograms).  |
| 6     | Measurement                 | SA650      | SMMA_LO_01331 | Units of Measure | Metric Units of Linear Measure   | Choose a picture of the ocean bottom based on a table of ocean depths.                                   |
| 6     | Number Sense and Operations | DV610      | SMMA_LO_00301 | Estimation       | Estimate Products/Quotients  | Estimate the quotient in a long division problem — (three-digit dividend, two-digit divisor, remainder). |
| 6     | Number Sense and Operations | NC640      | SMMA_LO_01095 | Estimation       | Estimate Products/Quotients  | Estimate the sum, product, or quotient in problems with fractions.                                       |
| 6     | Number Sense and Operations | NC680      | SMMA_LO_01099 | Estimation       | Estimate Products/Quotients  | Estimate the product of three factors (1,000 to 350,000).  |
| 6     | Number Sense and Operations | WP620      | SMMA_LO_01622 | Estimation       | Estimate Products/Quotients  | Estimate the product by rounding each factor.  |
| 6     | Number Sense and Operations | WP600      | SMMA_LO_01621 | Estimation       | Estimate Sums to Nearest Hundred   | Estimate the sum by rounding to the nearest hundred (three-digit addends).                               |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description  |
|-------|-----------------------------|------------|---------------|--------------|--|--|
| 6     | Number Sense and Operations | DC675      | SMMA_LO_00254 | Number Sense | Compare Decimals Using Symbols                         | Identify the symbol (< or >) needed to complete the inequality.                            |
| 6     | Number Sense and Operations | FR600      | SMMA_LO_00462 | Number Sense | Compare Fractions with Unlike Denominators             | Compare fractions (unlike denominators).   |
| 6     | Number Sense and Operations | FR695      | SMMA_LO_00482 | Number Sense | Compare Fractions with Unlike Denominators             | Identify the greatest or least fraction in a problem (unlike denominators).                |
| 6     | Number Sense and Operations | NC695      | SMMA_LO_01102 | Number Sense | Compare Integers                                       | Determine the least or greatest integer (-10 to 10).                                       |
| 6     | Number Sense and Operations | FR698      | SMMA_LO_00483 | Number Sense | Determine Equivalent Fractions Using Models            | Identify the figures with the equivalent fractional parts shaded.                          |
| 6     | Number Sense and Operations | DC690      | SMMA_LO_00257 | Number Sense | Determine Equivalent Fractions and Decimals            | Identify the division problem that can be used to rewrite a fraction as a decimal.         |
| 6     | Number Sense and Operations | DC695      | SMMA_LO_00258 | Number Sense | Determine Equivalent Fractions and Decimals            | Divide to convert from a fraction to a decimal equivalent.                                 |
| 6     | Number Sense and Operations | NC630      | SMMA_LO_01094 | Number Sense | Determine Equivalent Fractions and Decimals            | Identify decimals or fractions that are not equivalent to a given decimal or fraction.     |
| 6     | Number Sense and Operations | NC632      | SMMA_LO_01820 | Number Sense | Determine Equivalent Fractions, Decimals, and Percents | Complete the equivalence table by expressing a decimal number as a fraction and a percent. |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description  |
|-------|-----------------------------|------------|---------------|--------------|--|--|
| 6     | Number Sense and Operations | NC634      | SMMA_LO_01821 | Number Sense | Determine Equivalent Fractions, Decimals, and Percents             | Complete the equivalence table by expressing a decimal number as a fraction and a percent (round answer to the nearest hundredth). |
| 6     | Number Sense and Operations | NC636      | SMMA_LO_01822 | Number Sense | Determine Equivalent Fractions, Decimals, and Percents             | Complete the equivalence table by expressing a fraction as a decimal number and a percent (round answer to the nearest hundredth). |
| 6     | Number Sense and Operations | DC680      | SMMA_LO_00255 | Number Sense | Determine Equivalent Mixed Numbers and Decimals                    | Find an equivalent mixed number for a decimal (tenths to ten thousandths).   |
| 6     | Number Sense and Operations | PR630      | SMMA_LO_01825 | Number Sense | Ratios and Proportions   | Write a ratio in three different forms.  |
| 6     | Number Sense and Operations | FR603      | SMMA_LO_01827 | Number Sense | Ratios and Proportions   | Determine the fraction needed to complete the proportion.  |
| 6     | Number Sense and Operations | AP650      | SMMA_LO_01826 | Number Sense | Solve Ratios/Proportion Problems Involving Time/Cost               | Identify the correct proportion for the context, and then solve.   |
| 6     | Number Sense and Operations | GE655      | SMMA_LO_00660 | Number Sense | Solve Ratios/Proportions in Measurement Context                    | Form a proportion that can be used to solve for the height of an object.   |
| 6     | Number Sense and Operations | DC685      | SMMA_LO_00256 | Number Sense | Use Base-Ten Models to Represent Fractions, Decimals, and Percents | Determine the decimal and percent that is represented by a model (base-ten blocks, hundredths).                                    |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 6     | Number Sense and Operations | SU690      | SMMA_LO_01514 | Number Theory           | Identify Equivalent Integer Expressions            | Identify $a - b$ as equivalent to $a + (-b)$ , where $a$ and $b$ are 1 to 20.               |
| 6     | Number Sense and Operations | NC650      | SMMA_LO_01096 | Number Theory           | Multiples  | Identify the common multiples for two to three numbers (2 to 20).                           |
| 6     | Number Sense and Operations | NC610      | SMMA_LO_01091 | Number Theory           | Order of Operations with Grouping Symbols          | Evaluate an expression using the order of operations.                                       |
| 6     | Number Sense and Operations | NC625      | SMMA_LO_01093 | Number Theory           | Prime Factorization                                | Identify the prime factorization of a two-digit number.                                     |
| 6     | Number Sense and Operations | NC670      | SMMA_LO_01098 | Number Theory           | Prime Factorization                                | Give the value of a number (1 to 10) raised to a power (1 to 5).                            |
| 6     | Number Sense and Operations | NC685      | SMMA_LO_01100 | Number Theory           | Prime Factorization                                | Match expressions with repeated factors to numbers in exponential form to create equations. |
| 6     | Number Sense and Operations | NC600      | SMMA_LO_01090 | Number Theory           | Use Commutative/Associative Properties of Addition | Use the commutative and associative properties of addition to find the missing number.      |
| 6     | Number Sense and Operations | FR615      | SMMA_LO_00465 | Operations with Numbers | Add Fractions with Unlike Denominators             | Add fractions; no simplifying (unlike denominators).  |
| 6     | Number Sense and Operations | FR625      | SMMA_LO_00467 | Operations with Numbers | Add Fractions with Unlike Denominators             | Add fractions; no simplifying (unlike denominators).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                    | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 6     | Number Sense and Operations | FR645      | SMMA_LO_00471 | Operations with Numbers | Add Fractions with Unlike Denominators   | Add fractions; simplify if necessary (unlike denominators).                         |
| 6     | Number Sense and Operations | FR655      | SMMA_LO_00473 | Operations with Numbers | Add Fractions with Unlike Denominators   | Add fractions; simplify if necessary (unlike denominators).                         |
| 6     | Number Sense and Operations | AD670      | SMMA_LO_00108 | Operations with Numbers | Add Integers                             | Add a positive and a negative integer (one-digit addends, sums -9 to 9).            |
| 6     | Number Sense and Operations | AD680      | SMMA_LO_00109 | Operations with Numbers | Add Integers                             | Add two integers using addition facts (addends -10 to 10, sums -20 to 20).          |
| 6     | Number Sense and Operations | FR605      | SMMA_LO_00463 | Operations with Numbers | Add Mixed Numbers with Like Denominators | Add mixed numbers; simplify if necessary (like denominators, halves to sixteenths). |
| 6     | Number Sense and Operations | FR685      | SMMA_LO_00480 | Operations with Numbers | Add Mixed Numbers with Like Denominators | Add mixed numbers within a context; simplify if necessary (like denominators).      |
| 6     | Number Sense and Operations | WP640      | SMMA_LO_01623 | Operations with Numbers | Add Mixed Numbers with Like Denominators | Determine the number of dollar bills needed to buy three to five items).            |
| 6     | Number Sense and Operations | WP660      | SMMA_LO_01624 | Operations with Numbers | Add Mixed Numbers with Like Denominators | Add mixed numbers with like denominators in context; simplify if necessary.         |
| 6     | Number Sense and Operations | AD660      | SMMA_LO_00107 | Operations with Numbers | Add Negative Integers                    | Add two negative integers (sums -20 to 0).  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 6     | Number Sense and Operations | SU680      | SMMA_LO_01513 | Operations with Numbers | Add Negative Integers                                 | Subtract integers (minuends -20 to -10, subtrahends 0 to 10).                                       |
| 6     | Number Sense and Operations | AD610      | SMMA_LO_00102 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend     | Find the missing one-digit addend in a number sentence (positive or negative integers, sums are 0). |
| 6     | Number Sense and Operations | AD620      | SMMA_LO_00103 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend     | Find the missing two-digit addend in a number sentence (sums are 0).                                |
| 6     | Number Sense and Operations | AD630      | SMMA_LO_00104 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend     | Find the missing two-digit addend in a number sentence (sums are 0).                                |
| 6     | Number Sense and Operations | AD640      | SMMA_LO_00105 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend     | Find the missing negative addend in a number sentence (sums 1 to 8).                                |
| 6     | Number Sense and Operations | AD690      | SMMA_LO_00110 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend     | Find the missing addend in a number sentence (missing addends -10 to 10, sums -20 to 20).           |
| 6     | Number Sense and Operations | SU630      | SMMA_LO_01508 | Operations with Numbers | Add/Subtract Integers to Determine Missing Subtrahend | Subtract integers (minuends 0 to 19, subtrahends 1 to 20, negative differences).                    |
| 6     | Number Sense and Operations | AP600      | SMMA_LO_00165 | Operations with Numbers | Add/Subtract Money                                    | Determine the value of a combination of nickels, dimes, and quarters (values to \$5.00).            |
| 6     | Number Sense and Operations | NC690      | SMMA_LO_01101 | Operations with Numbers | Determine Divisibility of Whole Number Factors        | Identify which numbers are divisible by another number (divisors 2 to 10).                          |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--------------------------------------|--|
| 6     | Number Sense and Operations | DC635      | SMMA_LO_00246 | Operations with Numbers | Determine Reasonableness of Quotient | Identify a reasonable answer for a division problem.   |
| 6     | Number Sense and Operations | AD650      | SMMA_LO_00106 | Operations with Numbers | Determine Signs of Integer Sums      | Determine if the sum is positive or negative (one- and two-digit addends).                             |
| 6     | Number Sense and Operations | DC640      | SMMA_LO_00247 | Operations with Numbers | Divide Decimals Using Long Division  | Move the decimal point in the divisor and dividend in a long division problem.                         |
| 6     | Number Sense and Operations | DC650      | SMMA_LO_00249 | Operations with Numbers | Divide Decimals Using Long Division  | Move the decimal point in the divisor and dividend in a long division problem; then find the quotient. |
| 6     | Number Sense and Operations | DC630      | SMMA_LO_00245 | Operations with Numbers | Divide Decimals to Hundredths        | Divide decimals ( $0.3 \times 0.3$ to $0.9 \times 0.09$ ).   |
| 6     | Number Sense and Operations | DC660      | SMMA_LO_00251 | Operations with Numbers | Divide Decimals to Tenths            | Divide decimals ( $1.0 \times 0.2$ to $1.2 \times 0.5$ ).  |
| 6     | Number Sense and Operations | FR697      | SMMA_LO_01790 | Operations with Numbers | Divide Mixed Numbers                 | Divide a mixed number by a mixed number; simplify if necessary.  |
| 6     | Number Sense and Operations | FR699      | SMMA_LO_01788 | Operations with Numbers | Divide Mixed Numbers by Fractions    | Divide a mixed number by a fraction; simplify if necessary.  |
| 6     | Number Sense and Operations | FR694      | SMMA_LO_01789 | Operations with Numbers | Divide Mixed Numbers by Fractions    | Divide a mixed number by a fraction; simplify if necessary.  |
| 6     | Number Sense and Operations | FR692      | SMMA_LO_01787 | Operations with Numbers | Divide Whole Numbers by Fractions    | Divide a whole number by a fraction; simplify if necessary.  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 6     | Number Sense and Operations | DV600      | SMMA_LO_00300 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Divide using the long division algorithm (four-digit dividend, one-digit divisor, remainder). |
| 6     | Number Sense and Operations | DV660      | SMMA_LO_00304 | Operations with Numbers | Divide Whole Numbers with Remainders Using Long Division    | Divide using the long division algorithm (three-digit number, two-digit divisor, remainder).  |
| 6     | Number Sense and Operations | DV680      | SMMA_LO_00305 | Operations with Numbers | Divide Whole Numbers without Remainders Using Long Division | Divide (combinations 2 x 13 to 5 x 19, no remainder).   |
| 6     | Number Sense and Operations | AD600      | SMMA_LO_00101 | Operations with Numbers | Identify Integers Using a Number Line                       | Locate the missing integer on a number line (-3 to -12).                                      |
| 6     | Number Sense and Operations | SU600      | SMMA_LO_01505 | Operations with Numbers | Identify Integers Using a Number Line                       | Locate an integer on the number line (differences -5 to 1).                                   |
| 6     | Number Sense and Operations | FR683      | SMMA_LO_00479 | Operations with Numbers | Identify Reciprocals  | Determine the denominator of the reciprocal of a fraction.                                    |
| 6     | Number Sense and Operations | DC655      | SMMA_LO_00250 | Operations with Numbers | Multiply Decimals   | Identify the probable error in a multiplication calculation with decimals.                    |
| 6     | Number Sense and Operations | DC665      | SMMA_LO_00252 | Operations with Numbers | Multiply Decimals   | Multiply a whole number or a decimal by 0.1, 0.01, or 0.001.                                  |
| 6     | Number Sense and Operations | DC625      | SMMA_LO_00244 | Operations with Numbers | Multiply Decimals to Hundred-Thousandths                    | Multiply decimals (to ten-thousandths x ten-thousandths).                                     |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--------------------------------------|--|
| 6     | Number Sense and Operations | FR635      | SMMA_LO_00469 | Operations with Numbers | Multiply Fractions                   | Multiply fractions; no simplifying.  |
| 6     | Number Sense and Operations | FR665      | SMMA_LO_00475 | Operations with Numbers | Multiply Fractions                   | Multiply fractions; simplify.  |
| 6     | Number Sense and Operations | FR670      | SMMA_LO_00476 | Operations with Numbers | Multiply Fractions                   | Multiply fractions; simplify first.  |
| 6     | Number Sense and Operations | FR640      | SMMA_LO_00470 | Operations with Numbers | Multiply Fractions and Whole Numbers | Multiply a whole number by a proper fraction; no simplifying.                            |
| 6     | Number Sense and Operations | FR675      | SMMA_LO_00477 | Operations with Numbers | Multiply Fractions and Whole Numbers | Multiply a fraction and a whole number; simplify.  |
| 6     | Number Sense and Operations | FR680      | SMMA_LO_00478 | Operations with Numbers | Multiply Fractions and Whole Numbers | Multiply a fraction and a whole number; simplify first.                                  |
| 6     | Number Sense and Operations | MU620      | SMMA_LO_00902 | Operations with Numbers | Multiply Multiples of 10             | Multiply whole numbers (student choice, products 100 x 20 to 990 x 90, multiples of 10). |
| 6     | Number Sense and Operations | MU660      | SMMA_LO_00904 | Operations with Numbers | Multiply Multiples of 10             | Multiply whole numbers (student choice, products 101 x 20 to 999 x 90, multiples of 10). |
| 6     | Number Sense and Operations | MU680      | SMMA_LO_00905 | Operations with Numbers | Multiply Multiples of 10             | Multiply whole numbers (student choice, products 100 x 21 to 990 x 90, multiples of 10). |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 6     | Number Sense and Operations | MU600      | SMMA_LO_00901 | Operations with Numbers | Multiply Two-Digit Whole Numbers                                    | Multiply whole numbers (student choice, products $16 \times 11$ to $19 \times 99$ ).               |
| 6     | Number Sense and Operations | MU640      | SMMA_LO_00903 | Operations with Numbers | Multiply Two-Digit Whole Numbers                                    | Multiply whole numbers (student choice, products $21 \times 11$ to $99 \times 99$ ).               |
| 6     | Number Sense and Operations | ME660      | SMMA_LO_00830 | Operations with Numbers | Multiply and Divide Decimals in Context                             | Find the unit price of an item (products $2 \times 6$ to $25 \times 32$ ).                         |
| 6     | Number Sense and Operations | WP680      | SMMA_LO_01625 | Operations with Numbers | Multiply and Divide Decimals in Context                             | Find the number of hours worked given the hourly rate and total earned.                            |
| 6     | Number Sense and Operations | DC600      | SMMA_LO_00239 | Operations with Numbers | Multiply/Divide Decimals by Whole Numbers                           | Divide a decimal by a whole number.  |
| 6     | Number Sense and Operations | DC645      | SMMA_LO_00248 | Operations with Numbers | Multiply/Divide Decimals by Whole Numbers                           | Divide a decimal by a whole number.  |
| 6     | Number Sense and Operations | DC605      | SMMA_LO_00240 | Operations with Numbers | Multiply/Divide Decimals to Determine Missing Factor                | Determine the missing factor in the multiplication number sentence (decimals, to ten-thousandths). |
| 6     | Number Sense and Operations | DV640      | SMMA_LO_00303 | Operations with Numbers | Multiply/Divide Whole Numbers to Determine Missing Dividend/Divisor | Find the missing dividend or divisor (combinations $20 \times 20$ to $90 \times 90$ ).             |
| 6     | Number Sense and Operations | DC615      | SMMA_LO_00242 | Operations with Numbers | Relate Decimal to Model   | Match a decimal number to a model (thousandths).   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 6     | Number Sense and Operations | DC620      | SMMA_LO_00243 | Operations with Numbers | Subtract Decimals with Regrouping to Ten-Thousandths | Subtract decimals with regrouping (to ten-thousandths).   |
| 6     | Number Sense and Operations | FR620      | SMMA_LO_00466 | Operations with Numbers | Subtract Fractions with Unlike Denominators          | Subtract fractions; no simplifying (unlike denominators).   |
| 6     | Number Sense and Operations | FR630      | SMMA_LO_00468 | Operations with Numbers | Subtract Fractions with Unlike Denominators          | Subtract fractions; no simplifying (unlike denominators).   |
| 6     | Number Sense and Operations | FR650      | SMMA_LO_00472 | Operations with Numbers | Subtract Fractions with Unlike Denominators          | Subtract fractions; simplify if necessary (unlike denominators).  |
| 6     | Number Sense and Operations | FR660      | SMMA_LO_00474 | Operations with Numbers | Subtract Fractions with Unlike Denominators          | Subtract fractions; simplify if necessary (unlike denominators).  |
| 6     | Number Sense and Operations | SU610      | SMMA_LO_01506 | Operations with Numbers | Subtract Integers                                    | Subtract integers (minuends 0 to 10, subtrahends 1 to 10, differences negative).                                |
| 6     | Number Sense and Operations | SU620      | SMMA_LO_01507 | Operations with Numbers | Subtract Integers                                    | Subtract integers (minuends 0 to 19, subtrahends 1 to 20, negative differences).                                |
| 6     | Number Sense and Operations | SU640      | SMMA_LO_01509 | Operations with Numbers | Subtract Integers                                    | Find the missing subtrahend in a number sentence (minuends 0 to 10, subtrahends 2 to 11, negative differences). |
| 6     | Number Sense and Operations | SU670      | SMMA_LO_01512 | Operations with Numbers | Subtract Integers                                    | Find the missing subtrahend in a number sentence (minuends -9 to 0, differences -9 to 0).                       |



| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|----------------------------------|------------|---------------|-------------------------|---|--|
| 6     | Number Sense and Operations      | SU650      | SMMA_LO_01510 | Operations with Numbers | Subtract Integers Using a Number Line           | Subtract integers (minuends 0 to 20, subtrahends 1 to 40).                               |
| 6     | Number Sense and Operations      | SU660      | SMMA_LO_01511 | Operations with Numbers | Subtract Integers Using a Number Line           | Subtract integers using a number line.   |
| 6     | Number Sense and Operations      | FR690      | SMMA_LO_00481 | Operations with Numbers | Subtract Mixed Numbers with Like Denominators   | Subtract mixed numbers in context; simplify if necessary (like denominators).            |
| 6     | Number Sense and Operations      | FR610      | SMMA_LO_00464 | Operations with Numbers | Subtraction Fractions from 2                    | Subtract a fraction from 1; simplify (halves to sixteenths).                             |
| 6     | Number Sense and Operations      | NC660      | SMMA_LO_01097 | Place Value             | Estimate Products                               | Express a number in expanded notation or determine the number from an expanded notation. |
| 6     | Number Sense and Operations      | DC610      | SMMA_LO_00241 | Place Value             | Identify Decimal Place Value to Ten-Thousandths | Identify the place value of a digit in a decimal number (tenths to ten thousandths).     |
| 6     | Patterns, Algebra, and Functions | PS660      | SMMA_LO_01750 | Functions and Relations | Generate a Table Given a Rule                   | Complete a table given a two-step rule (single-digit whole numbers).                     |
| 6     | Patterns, Algebra, and Functions | PS665      | SMMA_LO_01751 | Functions and Relations | Generate a Table Given a Rule                   | Complete a table given a two-step rule (whole numbers).                                  |
| 6     | Patterns, Algebra, and Functions | WP610      | SMMA_LO_01755 | Functions and Relations | Generate a Table Given a Rule                   | Generate a table of values given a one-step rule.  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic                                       | Description   |
|-------|----------------------------------|------------|---------------|-------------------------|---|---|
| 6     | Patterns, Algebra, and Functions | WP630      | SMMA_LO_01756 | Functions and Relations | Generate a Table Given a Rule               | Generate a table of values given a two-step rule.   |
| 6     | Patterns, Algebra, and Functions | AP690      | SMMA_LO_01757 | Functions and Relations | Generate a Table Given a Rule and Graph     | Complete an input/output table given a one-step rule; then plot the ordered pairs on a coordinate grid. |
| 6     | Patterns, Algebra, and Functions | AP695      | SMMA_LO_01758 | Functions and Relations | Generate a Table Given a Rule and Graph     | Complete an input/output table given a two-step rule; then plot the ordered pairs on coordinate grid.   |
| 6     | Patterns, Algebra, and Functions | GE670      | SMMA_LO_00662 | Logical Reasoning       | Determine if a Conclusion Is Correct        | Given a true if-then (conditional) statement, determine whether or not a conclusion is correct.         |
| 6     | Patterns, Algebra, and Functions | EQ600      | SMMA_LO_00367 | One-Step Equations      | Solve One-Step Equations Involving Decimals | Solve for a or b in $a + b = c$ (decimals to tenths, no regrouping).                                    |
| 6     | Patterns, Algebra, and Functions | EQ610      | SMMA_LO_00368 | One-Step Equations      | Solve One-Step Equations Involving Decimals | Solve for a or b in $a - b = c$ (decimals to tenths, regrouping).                                       |
| 6     | Patterns, Algebra, and Functions | EQ620      | SMMA_LO_00369 | One-Step Equations      | Solve One-Step Equations Involving Decimals | Solve for a or b in $a \times b = c$ (products from $0.2 \times 0.6$ to $0.9 \times 0.9$ ).             |
| 6     | Patterns, Algebra, and Functions | EQ630      | SMMA_LO_00370 | One-Step Equations      | Solve One-Step Equations Involving Decimals | Solve for a or b in $a \div b = c$ (combinations $0.6 \times 0.6$ to $0.9 \times 0.9$ ).                |
| 6     | Patterns, Algebra, and Functions | EQ660      | SMMA_LO_00373 | One-Step Equations      | Solve One-Step Equations Involving Decimals | Solve for a or b in $a + b = c$ (decimals to hundredths).   |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic   | Description   |
|-------|----------------------------------|------------|---------------|--------------------|---|---|
| 6     | Patterns, Algebra, and Functions | EQ670      | SMMA_LO_00374 | One-Step Equations | Solve One-Step Equations Involving Decimals     | Solve for a or b in $a - b = c$ (decimals to hundredths, regrouping).                       |
| 6     | Patterns, Algebra, and Functions | WP635      | SMMA_LO_01745 | One-Step Equations | Solve One-Step Equations in Context             | Solve a one-step equation in context (division, two-digit whole numbers).                   |
| 6     | Patterns, Algebra, and Functions | PS670      | SMMA_LO_01754 | Patterns           | Extend a Recursive Pattern                      | Extend a recursive pattern.   |
| 6     | Patterns, Algebra, and Functions | PS630      | SMMA_LO_01741 | Patterns           | Identify an Expression to Describe a Pattern    | Identify an expression to describe the pattern generated by a table.                        |
| 6     | Patterns, Algebra, and Functions | AP623      | SMMA_LO_01742 | Patterns           | Identify an Expression to Describe a Pattern    | Identify an expression to describe the pattern generated by a table.                        |
| 6     | Patterns, Algebra, and Functions | AP625      | SMMA_LO_01752 | Patterns           | Identify an Expression to Describe a Pattern    | Identify a two-step expression to describe the pattern generated by a table (input = 100).  |
| 6     | Patterns, Algebra, and Functions | AP626      | SMMA_LO_01753 | Patterns           | Identify an Expression to Describe a Pattern    | Identify a two-step expression to describe the pattern generated by a table (input = 1000). |
| 6     | Patterns, Algebra, and Functions | DC670      | SMMA_LO_00253 | Patterns           | Identify the Decimal That Completes the Pattern | Find the missing decimal number in a pattern (to ten-thousandths).                          |
| 6     | Patterns, Algebra, and Functions | AP655      | SMMA_LO_01749 | Patterns           | Identify the Missing Number in a Pattern        | Describe an iterative pattern.  |

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|-------|--------------------------------------|------------|---------------|----------------------|---|--|
| 6     | Patterns, Algebra, and Functions     | EQ640      | SMMA_LO_00371 | Two-Step Equations   | Solve Two-Step Equations Involving Fractions                        | Solve for a, b, or c in $a \times b/c = d/e$ (combinations to $12 \times 12$ ).      |
| 6     | Patterns, Algebra, and Functions     | EQ650      | SMMA_LO_00372 | Two-Step Equations   | Solve Two-Step Equations Involving Fractions                        | Solve for a, b, c, or d in $a/b \times c/d = e/f$ (combinations to $12 \times 12$ ). |
| 6     | Patterns, Algebra, and Functions     | PS690      | SMMA_LO_01297 | Written Equations    | Identify the Equation That Is a Translation of the Written Phrase   | Identify an equation that can be used to solve a two-step problem in context.        |
| 6     | Patterns, Algebra, and Functions     | PS620      | SMMA_LO_01293 | Written Equations    | Translate Written Phrases into Equations and Solve                  | Find the missing information needed to solve a problem; then solve.                  |
| 6     | Patterns, Algebra, and Functions     | AP670      | SMMA_LO_01759 | Written Expressions  | Identify the Expression That Is a Translation of the Written Phrase | Identify the expression that is a translation of the written phrase.                 |
| 6     | Patterns, Algebra, and Functions     | AP674      | SMMA_LO_01761 | Written Expressions  | Identify the Expression That Is a Translation of the Written Phrase | Identify the written phrase that is a translation of the expression.                 |
| 6     | Patterns, Algebra, and Functions     | AP676      | SMMA_LO_01762 | Written Expressions  | Identify the Expression That Is a Translation of the Written Phrase | Identify the written phrase that is a translation of an expression.                  |
| 6     | Patterns, Algebra, and Functions     | AP672      | SMMA_LO_01760 | Written Expressions  | Identify the Written Phrase That Is a Translation of the Expression | Identify the expression that is a translation of the written phrase.                 |
| 6     | Probability and Discrete Mathematics | PS640      | SMMA_LO_01294 | Discrete Mathematics | Solve Map Problems  | Use the calculator to show the numerical representation of a map problem.            |

| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic  | Description   |
|-------|--------------------------------------|------------|---------------|-------------|--|---|
| 6     | Probability and Discrete Mathematics | PR690      | SMMA_LO_01203 | Probability | Apply the Addition Rule for Computing Probabilities of Inclusive Classes | Using a graphical representation of a bowl containing marbles of four colors, begin to apply the addition rule for computing the probabilities of inclusive classes using light and dark colored marbles. |
| 6     | Probability and Discrete Mathematics | PR670      | SMMA_LO_01200 | Probability | Create Equivalent Experiments Using Different Representations            | Given a random experiment represented graphically by a spinner, prepare an equivalent random experiment using a representation based on an urn and colored balls.   |
| 6     | Probability and Discrete Mathematics | PR650      | SMMA_LO_01198 | Probability | Create a Random Experiment to Reflect Prescribed Outcomes                | Using a graphical representation of a bowl and a set of colored marbles, prepare a random experiment for which the probability of getting one color has a prescribed value.                               |
| 6     | Probability and Discrete Mathematics | PR610      | SMMA_LO_01193 | Probability | Determine and Compare Theoretical Probabilities                          | Given a graphical representation of two bowls containing colored marbles, use theoretical probability to compare two random experiments (using percents).   |

| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic  | Description   |
|-------|--------------------------------------|------------|---------------|-------------|--|---|
| 6     | Probability and Discrete Mathematics | PR695      | SMMA_LO_01204 | Probability | Determine the Sample Space and Probability for Independent Events (Coin Tossing) | Determine the possible outcomes of tossing a coin twice, and then compute the probability of events defined by two coin tosses. |
| 6     | Probability and Discrete Mathematics | PR605      | SMMA_LO_01794 | Probability | Determine the Sample Space for an Event  | Determine the number of possible outcomes of an event.  |
| 6     | Probability and Discrete Mathematics | PR640      | SMMA_LO_01197 | Probability | Determine the Theoretical Probability of a Compound Event                        | Determine the theoretical probability of a complementary event.   |

\* Math Concepts and Skills

## Grade 7

| Grade | Strand        | MCS* Level | LO ID         | Concept                              | Topic                            | Description   |
|-------|---------------|------------|---------------|--------------------------------------|----------------------------------|---|
| 7     | Data Analysis | PR700      | SMMA_LO_01205 | Graph, Chart, and Table Construction | Construct Frequency Tables       | Complete a frequency table; find a fraction of the total (sums 12 to 48). |
| 7     | Data Analysis | PR730      | SMMA_LO_01208 | Graph, Chart, and Table Construction | Read and Interpret Circle Graphs | Read and interpret data from a circle graph labeled with percents.        |
| 7     | Data Analysis | PR710      | SMMA_LO_01206 | Graph, Chart, and Table Construction | Read and Interpret Line Graphs   | Read and interpret a line graph.  |
| 7     | Data Analysis | PR720      | SMMA_LO_01207 | Graph, Chart, and Table Construction | Read and Interpret Pictographs   | Complete and interpret a pictograph.                                      |

| Grade | Strand        | MCS* Level | LO ID         | Concept                       | Topic   | Description  |
|-------|---------------|------------|---------------|-------------------------------|---|--|
| 7     | Data Analysis | AP700      | SMMA_LO_00170 | Measures of Center and Spread | Determine the Mean of a Data Set                          | Determine the mean of a data set of three or four numbers, each 8 to 16 (answers are whole numbers). |
| 7     | Data Analysis | ME730      | SMMA_LO_00836 | Measures of Center and Spread | Determine the Mean of a Data Set                          | Determine the mean of a data set of three to five customary weights or metric masses.                |
| 7     | Data Analysis | PR750      | SMMA_LO_01210 | Measures of Center and Spread | Determine the Range, Mean, Median, and Mode of a Data Set | Determine the range, mean, median, and mode (one-digit numbers).                                     |
| 7     | Fluency       | SG710      | SMMA_SG_00710 | Operations with Numbers       | Add Using Basic Math Facts                                | Practice addition using basic facts; sums less than or equal to 24.                                  |
| 7     | Fluency       | SG720      | SMMA_SG_00720 | Operations with Numbers       | Divide Using Basic Math Facts                             | Practice division using basic facts; dividend, divisor less than or equal to 30.                     |
| 7     | Fluency       | SG740      | SMMA_SG_00740 | Operations with Numbers       | Divide Using Basic Math Facts                             | Practice division using basic facts; dividend, divisor less than or equal to 30.                     |
| 7     | Fluency       | SG770      | SMMA_SG_00770 | Operations with Numbers       | Divide Using Basic Math Facts                             | Practice division using basic facts; dividend, divisor less than or equal to 50.                     |
| 7     | Fluency       | SG780      | SMMA_SG_00780 | Operations with Numbers       | Divide Using Basic Math Facts                             | Practice division using basic facts; dividend, divisor less than or equal to 50.                     |
| 7     | Fluency       | SG730      | SMMA_SG_00730 | Operations with Numbers       | Multiply Using Basic Math Facts                           | Practice division using basic facts; dividend, divisor less than or equal to 30.                     |

| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic   | Description   |
|-------|----------|------------|---------------|---|---|---|
| 7     | Fluency  | SG750      | SMMA_SG_00750 | Operations with Numbers                 | Multiply Using Basic Math Facts                           | Practice multiplication using basic facts; products less than or equal to 100.          |
| 7     | Fluency  | SG760      | SMMA_SG_00760 | Operations with Numbers                 | Multiply Using Basic Math Facts                           | Practice multiplication using basic facts; products less than or equal to 100.          |
| 7     | Fluency  | SG790      | SMMA_SG_00790 | Operations with Numbers                 | Multiply Using Basic Math Facts                           | Practice multiplication using basic facts; products less than or equal to 100.          |
| 7     | Fluency  | SG700      | SMMA_SG_00700 | Operations with Numbers                 | Subtract Using Basic Math Facts                           | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 7     | Geometry | GE780      | SMMA_LO_00674 | Angle Relationships                     | Find the Missing Angle                                    | Find the measure of the missing angle in a diagram.                                     |
| 7     | Geometry | GE740      | SMMA_LO_00670 | Angle Relationships                     | Identify Vertical Angles                                  | Establish that vertical angles are congruent.   |
| 7     | Geometry | GE760      | SMMA_LO_00672 | Angle Relationships                     | Identify the Angles Formed by Two Lines and a Transversal | Establish that alternate interior angles are congruent for parallel lines.              |
| 7     | Geometry | GE720      | SMMA_LO_00668 | Attributes of Three-Dimensional Figures | Identify Cross Sections of a Three-Dimensional Figure     | Identify the cross section of a three-dimensional figure.                               |
| 7     | Geometry | GE710      | SMMA_LO_00667 | Attributes of Three-Dimensional Figures | Identify Geometric Solids                                 | Identify geometric solids (prisms, pyramids, cones, or spheres).                        |
| 7     | Geometry | GE790      | SMMA_LO_00675 | Attributes of Three-Dimensional Figures | Identify Nets for Three-Dimensional Figures               | Identify the net for a geometric solid.   |



| Grade | Strand      | MCS* Level | LO ID         | Concept                                  | Topic   | Description  |
|-------|-------------|------------|---------------|--|---|--|
| 7     | Geometry    | GE750      | SMMA_LO_00671 | Similarity and Congruence                | Match Congruent Two-Dimensional Figures                   | Match the corresponding parts of two congruent shapes.   |
| 7     | Geometry    | GE770      | SMMA_LO_00673 | Similarity and Congruence                | Match Congruent Two-Dimensional Figures                   | Match the corresponding sides or angles of two similar figures.  |
| 7     | Measurement | ME770      | SMMA_LO_00840 | Measurement of Three-Dimensional Figures | Calculate the Surface Area of a Cylinder or Sphere        | Use a formula to find the surface area of a cylinder or sphere.  |
| 7     | Measurement | ME760      | SMMA_LO_00839 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Cylinder                        | Use a formula to find the volume of a cylinder.  |
| 7     | Measurement | AP780      | SMMA_LO_00174 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Rectangular Prism               | Determine the volume of a box given the height, width, and length (60 to 480 customary or metric cubic units).   |
| 7     | Measurement | AP785      | SMMA_LO_01819 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Rectangular Prism               | Calculate the volume of a rectangular prism; then convert the cubic feet or cubic meters into gallons or liters. |
| 7     | Measurement | ME750      | SMMA_LO_00838 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Rectangular or Triangular Prism | Find the volume of a rectangular or triangular prism.  |
| 7     | Measurement | AP760      | SMMA_LO_00173 | Measurement of Two-Dimensional Figures   | Calculate Area Using Customary or Metric Units            | Find the area of a rectangle (36 to 144 customary or metric square units).                                       |

| Grade | Strand                      | MCS* Level | LO ID         | Concept          | Topic   | Description  |
|-------|-----------------------------|------------|---------------|------------------|---|--|
| 7     | Measurement                 | ME740      | SMMA_LO_00837 | Time             | Convert Months to Years                                 | Convert units of time (seconds, minutes, hours, days, weeks, months, and years).                                 |
| 7     | Measurement                 | ME700      | SMMA_LO_00834 | Units of Measure | Determine Equivalent Customary Units of Weight and Mass | Add or convert customary weights; then compare the weights (pounds and tons).                                    |
| 7     | Measurement                 | AP740      | SMMA_LO_00172 | Units of Measure | Determine Equivalent Metric Units                       | Add metric measurements with unlike units and express the sum in terms of the larger unit.                       |
| 7     | Number Sense and Operations | NC760      | SMMA_LO_01109 | Estimation       | Estimate Sum, Difference, Product, or Quotient          | Estimate the sum, difference, product or quotient to solve a problem in context (round to the nearest thousand). |
| 7     | Number Sense and Operations | WP700      | SMMA_LO_01626 | Estimation       | Estimate Sums/Differences Involving Money               | Estimate the total cost of five items (each \$0.91 to \$6.09).   |
| 7     | Number Sense and Operations | WP740      | SMMA_LO_01628 | Estimation       | Estimate Sums/Differences Involving Money               | Estimate the total cost of three items (each \$0.35 to \$1.09).  |
| 7     | Number Sense and Operations | WP760      | SMMA_LO_01629 | Estimation       | Estimate Sums/Differences Involving Money               | Find the number of dollar bills needed to buy two to four items (each \$1.79 to \$3.99 each).                    |
| 7     | Number Sense and Operations | NC705      | SMMA_LO_01823 | Number Sense     | Absolute Value  | Identify absolute value as a distance from zero on a number line.  |
| 7     | Number Sense and Operations | AP707      | SMMA_LO_01824 | Number Sense     | Absolute Value  | Evaluate the absolute value of a number.   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic   | Description   |
|-------|-----------------------------|------------|---------------|--------------|---|---|
| 7     | Number Sense and Operations | DC700      | SMMA_LO_00259 | Number Sense | Determine Equivalent Decimals and Percents      | Determine the equivalent fraction for a decimal (the denominator is a factor of 100). |
| 7     | Number Sense and Operations | DC710      | SMMA_LO_00260 | Number Sense | Determine Equivalent Decimals and Percents      | Express a decimal number from tenths to thousandths as a percent.                     |
| 7     | Number Sense and Operations | DC720      | SMMA_LO_00261 | Number Sense | Determine Equivalent Decimals and Percents      | Express a decimal number from tenths to thousandths as a percent.                     |
| 7     | Number Sense and Operations | DC760      | SMMA_LO_00265 | Number Sense | Determine Equivalent Decimals and Percents      | Determine the equivalent percent for a decimal number (0.001 to 20.0).                |
| 7     | Number Sense and Operations | DC770      | SMMA_LO_00266 | Number Sense | Determine Equivalent Mixed Numbers and Percents | Express a mixed number as a percent (denominator a factor of 100).                    |
| 7     | Number Sense and Operations | DC790      | SMMA_LO_00268 | Number Sense | Determine Equivalent Mixed Numbers and Percents | Express a mixed number as a percent (denominator a factor of 100).                    |
| 7     | Number Sense and Operations | DC730      | SMMA_LO_00262 | Number Sense | Determine Equivalent Percents and Fractions     | Express a fraction as a percent (denominator is a multiple of 10).                    |
| 7     | Number Sense and Operations | DC750      | SMMA_LO_00264 | Number Sense | Determine Equivalent Percents and Fractions     | Express a fraction as a percent (the denominator is a factor of 100).                 |
| 7     | Number Sense and Operations | NC700      | SMMA_LO_01103 | Number Sense | Order Decimals                                  | Identify a list of decimal numbers ordered from least to greatest.                    |

| Grade | Strand                      | MCS* Level | LO ID         | Concept       | Topic   | Description  |
|-------|-----------------------------|------------|---------------|---------------|---|--|
| 7     | Number Sense and Operations | FR765      | SMMA_LO_00497 | Number Sense  | Order Fractions   | Identify a list of fractions that is ordered from least to greatest.               |
| 7     | Number Sense and Operations | NC795      | SMMA_LO_01113 | Number Sense  | Scientific Notation                                     | Express a number in scientific notation (exponents 1 to 6).                        |
| 7     | Number Sense and Operations | ME790      | SMMA_LO_00842 | Number Sense  | Solve Ratios/Proportion Problems Involving Time/Cost    | Solve time and distance problems (whole numbers).                                  |
| 7     | Number Sense and Operations | SA700      | SMMA_LO_01336 | Number Sense  | Solve Ratios/Proportion Problems Involving Time/Cost    | Given the number of kilowatt-hours used and a price, find the total cost of power. |
| 7     | Number Sense and Operations | SA730      | SMMA_LO_01339 | Number Sense  | Solve Ratios/Proportion Problems Involving Time/Cost    | Convert light years to kilometers and kilometers to light years.                   |
| 7     | Number Sense and Operations | AD790      | SMMA_LO_00120 | Number Theory | Compare Expressions Using the Additive Inverse Property | Compare two expressions using the additive inverse property.                       |
| 7     | Number Sense and Operations | NC770      | SMMA_LO_01110 | Number Theory | Determine Greatest Common Factor                        | Find the greatest common factor for two to three numbers.                          |
| 7     | Number Sense and Operations | NC740      | SMMA_LO_01107 | Number Theory | Factors   | Determine three factors of a given number.   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept       | Topic  | Description   |
|-------|-----------------------------|------------|---------------|---------------|--|---|
| 7     | Number Sense and Operations | AD730      | SMMA_LO_00114 | Number Theory | Identify Equivalent Integer Expressions Using the Commutative Property of Addition | Identify an equivalent expression of commutativity for addition of integers.                  |
| 7     | Number Sense and Operations | FR745      | SMMA_LO_00493 | Number Theory | Least Common Denominator   | Determine the least common denominator of two fractions.                                      |
| 7     | Number Sense and Operations | FR750      | SMMA_LO_00494 | Number Theory | Least Common Denominator   | Determine the equivalent fractions using the least common denominator of two given fractions. |
| 7     | Number Sense and Operations | FR755      | SMMA_LO_00495 | Number Theory | Least Common Denominator   | Compare fractions (unlike denominators).  |
| 7     | Number Sense and Operations | FR760      | SMMA_LO_00496 | Number Theory | Least Common Denominator   | Find the least common denominator of three fractions.   |
| 7     | Number Sense and Operations | NC750      | SMMA_LO_01108 | Number Theory | Least Common Multiples   | Given the prime factorization of two numbers, find the common multiple.                       |
| 7     | Number Sense and Operations | NC790      | SMMA_LO_01112 | Number Theory | Least Common Multiples   | Find the least common multiple of two or three numbers.                                       |
| 7     | Number Sense and Operations | NC710      | SMMA_LO_01104 | Number Theory | Prime Factorization  | Multiply or divide two numbers with exponents (same base, exponents less than 18).            |
| 7     | Number Sense and Operations | NC780      | SMMA_LO_01111 | Number Theory | Prime Factorization  | Find the missing exponent in a multiplication or division number sentence.                    |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                      | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 7     | Number Sense and Operations | NC720      | SMMA_LO_01105 | Number Theory           | Prime and Composite Numbers                | Identify prime and composite numbers (one- or two-digit).   |
| 7     | Number Sense and Operations | AD700      | SMMA_LO_00111 | Operations with Numbers | Add Integers                               | Add three integers (sum -10 to 10).   |
| 7     | Number Sense and Operations | AD720      | SMMA_LO_00113 | Operations with Numbers | Add Integers                               | Add integers in an associative expression $((a + b) + c)$ , three addends -10 to 10).                       |
| 7     | Number Sense and Operations | AD780      | SMMA_LO_00119 | Operations with Numbers | Add Integers                               | Find the sum of four integers when two are additive inverses (a, b, c, and d have absolute values 1 to 20). |
| 7     | Number Sense and Operations | FR700      | SMMA_LO_00484 | Operations with Numbers | Add Mixed Numbers with Like Denominators   | Add mixed numbers; simplify if necessary (like denominators).   |
| 7     | Number Sense and Operations | FR775      | SMMA_LO_00499 | Operations with Numbers | Add Mixed Numbers with Unlike Denominators | Add mixed numbers; simplify if necessary (unlike denominators).   |
| 7     | Number Sense and Operations | DC740      | SMMA_LO_00263 | Operations with Numbers | Divide Decimals                            | Divide a decimal by 0.1, 0.01, or 0.001.  |
| 7     | Number Sense and Operations | DC780      | SMMA_LO_00267 | Operations with Numbers | Divide Decimals                            | Divide a decimal by 0.1, 0.01, or 0.001 (dividends 0.001 to 0.999).   |
| 7     | Number Sense and Operations | FR715      | SMMA_LO_00487 | Operations with Numbers | Divide Decimals                            | Divide fractions; simplify if necessary.  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic                                   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 7     | Number Sense and Operations | FR735      | SMMA_LO_00491 | Operations with Numbers | Divide Fractions by Mixed Numbers       | Divide a fraction by a mixed number; simplify if necessary.                        |
| 7     | Number Sense and Operations | FR725      | SMMA_LO_00489 | Operations with Numbers | Divide Fractions by Whole Numbers       | Divide a fraction by a whole number; simplify if necessary.                        |
| 7     | Number Sense and Operations | FR790      | SMMA_LO_00502 | Operations with Numbers | Divide Mixed Numbers by Whole Numbers   | Divide a mixed number by a whole number; simplify if necessary.                    |
| 7     | Number Sense and Operations | FR740      | SMMA_LO_00492 | Operations with Numbers | Divide Whole Numbers by Fractions       | Divide a whole number by a fraction.   |
| 7     | Number Sense and Operations | SU730      | SMMA_LO_01518 | Operations with Numbers | Evaluate Integer Expressions            | Evaluate the expression $-(-a)$ , where $a$ has values 1 to 99.                    |
| 7     | Number Sense and Operations | WP720      | SMMA_LO_01627 | Operations with Numbers | Express Probabilities as Fractions      | Find the amount of an ingredient needed to make two, three or four times a recipe. |
| 7     | Number Sense and Operations | AD760      | SMMA_LO_00117 | Operations with Numbers | Identify Equivalent Integer Expressions | Identify an equivalent expression with integers (four one-digit addends).          |
| 7     | Number Sense and Operations | SU700      | SMMA_LO_01515 | Operations with Numbers | Identify Equivalent Integer Expressions | Identify $-a - b$ as equivalent to $-a + (-b)$ (minuends -20 to -1).               |
| 7     | Number Sense and Operations | SU720      | SMMA_LO_01517 | Operations with Numbers | Identify Equivalent Integer Expressions | Identify $a - (-b)$ as equivalent to $a + b$ (minuends 1 to 10).                   |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 7     | Number Sense and Operations | SU760      | SMMA_LO_01521 | Operations with Numbers | Identify Equivalent Integer Expressions   | Identify $-a - (-b)$ as equivalent to $-a + b$ (minuends and subtrahends -9 to 9). |
| 7     | Number Sense and Operations | AD740      | SMMA_LO_00115 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(a + b)$ as equivalent to $-a + (-b)$ , where $a$ and $b$ are 1 to 9.   |
| 7     | Number Sense and Operations | AD750      | SMMA_LO_00116 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(a + b)$ as equivalent to $-a - b$ , where $a$ and $b$ are 1 to 9.      |
| 7     | Number Sense and Operations | AD770      | SMMA_LO_00118 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(a + b)$ as equivalent to $-a - b$ , where $a$ and $b$ are 1 to 9.      |
| 7     | Number Sense and Operations | SU780      | SMMA_LO_01523 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(a - b)$ as equivalent to $-a + b$ ( $a$ and $b$ from 1 to 9).          |
| 7     | Number Sense and Operations | SU790      | SMMA_LO_01524 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(-a - b)$ as equivalent to $a + b$ ( $a$ and $b$ from 1 to 9).          |
| 7     | Number Sense and Operations | FR710      | SMMA_LO_00486 | Operations with Numbers | Identify Reciprocals  | Identify the reciprocal of a proper fraction.                                      |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 7     | Number Sense and Operations | FR720      | SMMA_LO_00488 | Operations with Numbers | Identify Reciprocals                            | Identify the reciprocal of a whole number.  |
| 7     | Number Sense and Operations | FR730      | SMMA_LO_00490 | Operations with Numbers | Identify Reciprocals                            | Identify the reciprocal of a mixed number.  |
| 7     | Number Sense and Operations | MU740      | SMMA_LO_00908 | Operations with Numbers | Multiply Five-Digit by Two-Digit Numbers        | Multiply by a multiple of 10 (student choice, $10,000 \times 20$ to $99,999 \times 90$ ).   |
| 7     | Number Sense and Operations | MU780      | SMMA_LO_00910 | Operations with Numbers | Multiply Five-Digit by Two-Digit Numbers        | Multiply whole numbers (student choice, $10,000 \times 21$ to $99,999 \times 99$ ).         |
| 7     | Number Sense and Operations | MU700      | SMMA_LO_00906 | Operations with Numbers | Multiply Four-Digit by Two-Digit Numbers        | Multiply (student choice, products $1000 \times 20$ to $9999 \times 90$ , multiples of 10). |
| 7     | Number Sense and Operations | MU760      | SMMA_LO_00909 | Operations with Numbers | Multiply Four-Digit by Two-Digit Numbers        | Multiply whole numbers (student choice, products $1000 \times 21$ to $9999 \times 99$ ).    |
| 7     | Number Sense and Operations | FR770      | SMMA_LO_00498 | Operations with Numbers | Multiply Fractions                              | Find a fractional part of a fraction.   |
| 7     | Number Sense and Operations | FR785      | SMMA_LO_00501 | Operations with Numbers | Multiply Mixed Numbers                          | Multiply mixed numbers; simplify if necessary.  |
| 7     | Number Sense and Operations | ME715      | SMMA_LO_00835 | Operations with Numbers | Multiply Mixed Numbers and Fractions            | Find the fractional part of a recipe (multiply a fraction and a mixed number).              |
| 7     | Number Sense and Operations | MU720      | SMMA_LO_00907 | Operations with Numbers | Multiply Three-Digit by Two-Digit Whole Numbers | Multiply whole numbers (student choice, products $101 \times 21$ to $999 \times 99$ ).      |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|---|--|
| 7     | Number Sense and Operations | WP780      | SMMA_LO_01630 | Operations with Numbers | Multiply and Divide Decimals in Context                             | Find the total money earned, given the number of hours worked and the hourly rate. |
| 7     | Number Sense and Operations | DV780      | SMMA_LO_00310 | Operations with Numbers | Multiply/Divide Whole Numbers to Determine Missing Dividend/Divisor | Finding the missing dividend or divisor (combinations 6 x 13 to 9 x 19).           |
| 7     | Number Sense and Operations | FR795      | SMMA_LO_00503 | Operations with Numbers | Order Fractions   | Identify the fraction that is between two fractions.                               |
| 7     | Number Sense and Operations | SU710      | SMMA_LO_01516 | Operations with Numbers | Subtract Integers   | Subtract integers (minuends -20 to 20, subtrahends 0 to -20).                      |
| 7     | Number Sense and Operations | SU740      | SMMA_LO_01519 | Operations with Numbers | Subtract Integers   | Subtract an integer from 0 (subtrahends -20 to 20).                                |
| 7     | Number Sense and Operations | SU750      | SMMA_LO_01520 | Operations with Numbers | Subtract Integers   | Subtract integers (minuends 0 to 20, subtrahends -10 to -1).                       |
| 7     | Number Sense and Operations | SU770      | SMMA_LO_01522 | Operations with Numbers | Subtract Integers   | Subtract integers (minuends -10 to 0, subtrahends -10 to -1).                      |
| 7     | Number Sense and Operations | FR705      | SMMA_LO_00485 | Operations with Numbers | Subtract Mixed Numbers with Like Denominators                       | Subtract mixed numbers; simplify if necessary (like denominators).                 |
| 7     | Number Sense and Operations | FR780      | SMMA_LO_00500 | Operations with Numbers | Subtract Mixed Numbers with Unlike Denominators                     | Subtract mixed numbers; simplify if necessary (unlike denominators).               |
| 7     | Number Sense and Operations | NC730      | SMMA_LO_01106 | Place Value             | Round to Nearest Thousand   | Round four- to five-digit numbers in context (to the nearest thousand).            |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|----------------------------------|------------|---------------|-------------------------|---|---|
| 7     | Patterns, Algebra, and Functions | EQ770      | SMMA_LO_01842 | Expressions             | Evaluate Expressions                          | Evaluate an algebraic expression (integers -10 to 10).  |
| 7     | Patterns, Algebra, and Functions | EQ780      | SMMA_LO_01843 | Expressions             | Evaluate Expressions                          | Evaluate an algebraic expression with three variables (-5.9 to 5.9).  |
| 7     | Patterns, Algebra, and Functions | EQ775      | SMMA_LO_01818 | Expressions             | Evaluate Expressions with Exponents           | Evaluate an algebraic expression with exponents (integers -10 to 10).   |
| 7     | Patterns, Algebra, and Functions | AP730      | SMMA_LO_01811 | Functions and Relations | Distinguish between a Function and a Relation | Given a list of ordered pairs of a relation, identify two ordered pairs that show the relation is not a function. |
| 7     | Patterns, Algebra, and Functions | AP735      | SMMA_LO_01812 | Functions and Relations | Distinguish between a Function and a Relation | Given a graph of a relation, identify two ordered pairs on the graph that show the relation is not a function.    |
| 7     | Patterns, Algebra, and Functions | PS710      | SMMA_LO_01806 | Functions and Relations | Generate a Table Given a Rule                 | Complete an input/output table and identify the algebraic equation that describes the one-step rule.              |
| 7     | Patterns, Algebra, and Functions | PS720      | SMMA_LO_01807 | Functions and Relations | Generate a Table Given a Rule                 | Complete an input/output table and identify the algebraic equation that describes the two-step rule.              |
| 7     | Patterns, Algebra, and Functions | AP714      | SMMA_LO_01808 | Functions and Relations | Graph on the Coordinate Plane                 | Graph a set of ordered pairs from a table on a coordinate plane (Quadrant I).                                     |
| 7     | Patterns, Algebra, and Functions | AP715      | SMMA_LO_01809 | Functions and Relations | Graph on the Coordinate Plane                 | Graph a set of ordered pairs from a table on a coordinate plane (Quadrant I).                                     |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|----------------------------------|------------|---------------|-------------------------|---|--|
| 7     | Patterns, Algebra, and Functions | AP720      | SMMA_LO_01810 | Functions and Relations | Graph on the Coordinate Plane                     | Graph a set of ordered pairs from a table on a coordinate plane.   |
| 7     | Patterns, Algebra, and Functions | AP750      | SMMA_LO_01835 | Functions and Relations | Identify Graphs That Represent Functions          | Given a set of graphs of relations, identify which graphs represent functions.                             |
| 7     | Patterns, Algebra, and Functions | GE730      | SMMA_LO_00669 | Logical Reasoning       | Determine if a Conclusion Is Correct              | Determine if a chain of reasoning is correct.  |
| 7     | Patterns, Algebra, and Functions | EQ795      | SMMA_LO_00379 | One-Step Equations      | Complete the Steps to Solve the One-Step Equation | Complete the steps to solve for $a$ in $a + b = c$ or $a - b = c$ in steps (sums and differences 2 to 20). |
| 7     | Patterns, Algebra, and Functions | EQ765      | SMMA_LO_01798 | One-Step Equations      | Solve One-Step Equations                          | Solve for $a$ , $b$ , or $c$ in $a \times b/c = d/e$ (combinations to $12 \times 12$ ).                    |
| 7     | Patterns, Algebra, and Functions | EQ790      | SMMA_LO_00378 | One-Step Equations      | Solve One-Step Equations Involving Decimals       | Solve for $a$ or $b$ in $a \div b = c$ (combinations from 0.01 to 0.02 to $0.05 \times 0.05$ ).            |
| 7     | Patterns, Algebra, and Functions | EQ729      | SMMA_LO_01849 | One-Step Equations      | Solve One-Step Equations Involving Decimals       | Solve a one-step equation (decimals, multiplication and division).   |
| 7     | Patterns, Algebra, and Functions | EQ730      | SMMA_LO_00376 | One-Step Equations      | Solve One-Step Equations Involving Fractions      | Solve for $a$ or $b$ in $a \times b = c$ (products from $0.02 \times 0.13$ to $0.09 \times 0.19$ ).        |
| 7     | Patterns, Algebra, and Functions | EQ720      | SMMA_LO_01795 | One-Step Equations      | Solve One-Step Equations Involving Fractions      | Solve one-step equations (multiplication, fractions).  |
| 7     | Patterns, Algebra, and Functions | EQ715      | SMMA_LO_01796 | One-Step Equations      | Solve One-Step Equations Involving Fractions      | Solve one-step equations (addition and subtraction, fractions).  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic   | Description  |
|-------|----------------------------------|------------|---------------|--------------------|---|--|
| 7     | Patterns, Algebra, and Functions | EQ717      | SMMA_LO_01797 | One-Step Equations | Solve One-Step Equations Involving Fractions              | Solve a one-step equation (multiplication, decimals).                          |
| 7     | Patterns, Algebra, and Functions | EQ727      | SMMA_LO_01847 | One-Step Equations | Solve One-Step Equations Involving Fractions              | Solve a one-step equation (fractions, multiplication and division).            |
| 7     | Patterns, Algebra, and Functions | EQ726      | SMMA_LO_01848 | One-Step Equations | Solve One-Step Equations Involving Fractions              | Solve a one-step equation (fractions, addition and subtraction).               |
| 7     | Patterns, Algebra, and Functions | EQ724      | SMMA_LO_01800 | One-Step Equations | Solve One-Step Equations Involving Integers               | Solve a one-step equation (multiplication and division, integers).             |
| 7     | Patterns, Algebra, and Functions | EQ705      | SMMA_LO_01801 | One-Step Equations | Solve One-Step Equations Involving Integers               | Solve a one-step equation (addition and subtraction, one-digit integers).      |
| 7     | Patterns, Algebra, and Functions | EQ710      | SMMA_LO_01844 | One-Step Equations | Solve One-Step Equations Involving Integers               | Solve a one-step equation (two-digit integers, addition and subtraction).      |
| 7     | Patterns, Algebra, and Functions | EQ725      | SMMA_LO_01845 | One-Step Equations | Solve One-Step Equations Involving Integers               | Solve a one-step equation (integers, multiplication and division).             |
| 7     | Patterns, Algebra, and Functions | SA750      | SMMA_LO_01799 | One-Step Equations | Solve One-Step Equations in Context                       | Solve a one-step equation with decimals in context (addition and subtraction). |
| 7     | Patterns, Algebra, and Functions | DV760      | SMMA_LO_00309 | Open Sentences     | Find the Missing Dividend or Divisor in a Number Sentence | Find the missing dividend or divisor (combinations 2 x 13 to 5 x 19).          |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic   | Description  |
|-------|----------------------------------|------------|---------------|--------------------|---|--|
| 7     | Patterns, Algebra, and Functions | WP750      | SMMA_LO_01805 | Open Sentences     | Solve for a Variable  | Solve for a variable in the formula for simple interest (whole numbers and decimals).                    |
| 7     | Patterns, Algebra, and Functions | AP755      | SMMA_LO_01817 | Open Sentences     | Solve for a Variable  | Solve for a variable in the formula for volume of a rectangular prism (whole numbers and mixed numbers). |
| 7     | Patterns, Algebra, and Functions | AP710      | SMMA_LO_01802 | Patterns           | Extend a Recursive Pattern  | Extend a recursive pattern for three more terms.   |
| 7     | Patterns, Algebra, and Functions | AP705      | SMMA_LO_01803 | Patterns           | Extend a Recursive Pattern  | Extend an arithmetic sequence for three more terms.  |
| 7     | Patterns, Algebra, and Functions | AP713      | SMMA_LO_01840 | Patterns           | Extend an Iterative Pattern                                       | Identify the rule for an iterative pattern.  |
| 7     | Patterns, Algebra, and Functions | EQ700      | SMMA_LO_00375 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                      | Solve for a, b, or c in $a/b \div c = d/e$ (combinations to $12 \times 12$ ).                            |
| 7     | Patterns, Algebra, and Functions | EQ760      | SMMA_LO_00377 | Two-Step Equations | Solve Two-Step Equations Involving Fractions                      | Solve for a, b, c, or d in $a/b \div c/d = e/f$ .  |
| 7     | Patterns, Algebra, and Functions | AP790      | SMMA_LO_01813 | Written Equations  | Identify the Equation That Is a Translation of the Written Phrase | Identify the one-step equation that is a translation of the written phrase within a context.             |
| 7     | Patterns, Algebra, and Functions | AP792      | SMMA_LO_01814 | Written Equations  | Identify the Equation That Is a Translation of the Written Phrase | Identify the two-step equation that is a translation of the written phrase within a context.             |

| Grade | Strand                               | MCS* Level | LO ID         | Concept             | Topic  | Description   |
|-------|--------------------------------------|------------|---------------|---------------------|--|---|
| 7     | Patterns, Algebra, and Functions     | AP796      | SMMA_LO_01816 | Written Expressions | Create an Expression That Is a Translation of a Written Phrase   | Translate an expression into a written phrase (two-step).   |
| 7     | Patterns, Algebra, and Functions     | AP794      | SMMA_LO_01815 | Written Expressions | Identify the Expression That Is a Translation of the Written Phrase  | Identify the written phrase that is a translation of an expression or inequality.   |
| 7     | Probability and Discrete Mathematics | PR760      | SMMA_LO_01211 | Probability         | Determine the Probability of Complementary Events  | In the context of randomly selecting a card that has one of two pictures on it, compute the probability of each picture being selected from a set of cards (total of 4 to 7 cards).   |
| 7     | Probability and Discrete Mathematics | PR770      | SMMA_LO_01212 | Probability         | Determine the Probability of Events or Paired Events as Certain, Impossible, More, Less, or Equally Likely | Given a graphical representation of a spinner partitioned into sectors of different sizes, each containing one of several possible pictures, label events as certain or impossible or pairs of events as more, less, or equally likely. |
| 7     | Probability and Discrete Mathematics | PR740      | SMMA_LO_01209 | Probability         | Determine the Sample Space for an Event (Spinner)  | Given a graphical representation of a spinner, count the number of possible outcomes and complete a list of all the outcomes.   |

\* Math Concepts and Skills

## Grade 8

| Grade | Strand   | MCS* Level | LO ID         | Concept                 | Topic                             | Description   |
|-------|----------|------------|---------------|-------------------------|-----------------------------------|---|
| 8     | Fluency  | SG840      | SMMA_SG_00840 | Operations with Numbers | Divide Using Basic Math Facts     | Practice division using basic facts; dividend, divisor less than or equal to 100.       |
| 8     | Fluency  | SG880      | SMMA_SG_00880 | Operations with Numbers | Divide Using Basic Math Facts     | Practice division using basic facts; dividend, divisor less than or equal to 100.       |
| 8     | Fluency  | SG830      | SMMA_SG_00830 | Operations with Numbers | Multiply Using Basic Math Facts   | Practice multiplication using basic facts; products less than or equal to 144.          |
| 8     | Fluency  | SG860      | SMMA_SG_00860 | Operations with Numbers | Multiply Using Basic Math Facts   | Practice multiplication using basic facts; products less than or equal to 144.          |
| 8     | Fluency  | SG870      | SMMA_SG_00870 | Operations with Numbers | Multiply Using Basic Math Facts   | Practice multiplication using basic facts; products less than or equal to 144.          |
| 8     | Fluency  | SG890      | SMMA_SG_00890 | Operations with Numbers | Multiply Using Basic Math Facts   | Practice multiplication using basic facts; products less than or equal to 144.          |
| 8     | Fluency  | SG850      | SMMA_SG_00850 | Operations with Numbers | Subtract Using Basic Math Facts   | Practice subtraction using basic facts; minuends, subtrahends less than or equal to 12. |
| 8     | Geometry | GE800      | SMMA_LO_00676 | Angle Relationships     | Determine the Measure of an Angle | Find the missing angle measure of two congruent triangles.                              |
| 8     | Geometry | GE860      | SMMA_LO_00682 | Angle Relationships     | Determine the Measure of an Angle | Measure an angle of an inscribed quadrilateral and find the sum of its opposite pair.   |



| Grade | Strand   | MCS* Level | LO ID         | Concept                                 | Topic  | Description   |
|-------|----------|------------|---------------|---|--|---|
| 8     | Geometry | GE810      | SMMA_LO_00677 | Angle Relationships                     | Solve a Problem Involving Equal Angles                               | Solve a problem involving equal angle measures.                                       |
| 8     | Geometry | GE820      | SMMA_LO_00678 | Attributes of Three-Dimensional Figures | Identify Geometric Solids  | Identify geometric solids by name (prisms and pyramids).                              |
| 8     | Geometry | GE880      | SMMA_LO_00684 | Attributes of Three-Dimensional Figures | Identify Symmetry in Three-Dimensional Figures                       | Determine whether a given plane is a plane of symmetry for a three-dimensional shape. |
| 8     | Geometry | ME870      | SMMA_LO_00850 | Attributes of Three-Dimensional Figures | Identify the Relationship between Area and Perimeter                 | Identify examples of relationships between area and perimeter.                        |
| 8     | Geometry | GE870      | SMMA_LO_00683 | Attributes of Three-Dimensional Figures | Identify the Top, Front, or Side View of Three-Dimensional Figures   | Identify the top, front, or side view of a three-dimensional figure.                  |
| 8     | Geometry | GE830      | SMMA_LO_00679 | Circle Geometry                         | Identify Tangents to a Circle  | Identify the line(s) tangent to a circle.   |
| 8     | Geometry | ME860      | SMMA_LO_00849 | Lines, Line Segments, and Rays          | Identify Line Segments That Are the Same Length                      | Given a perimeter, mark equilateral polygons with the same side measures.             |
| 8     | Geometry | GE805      | SMMA_LO_01854 | Pythagorean Theorem                     | Find the Measurement of the Hypotenuse Using the Pythagorean Theorem | Find the measurement of the hypotenuse using the Pythagorean theorem.                 |
| 8     | Geometry | GE840      | SMMA_LO_00680 | Similarity and Congruence               | Identify Corresponding Parts of Congruent Figures                    | Identify the correspondence between two congruent triangles.                          |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                                  | Topic  | Description   |
|-------|-----------------------------|------------|---------------|--|--|---|
| 8     | Geometry                    | ME840      | SMMA_LO_00847 | Similarity and Congruence                | Identify Similar Two-Dimensional Figures                           | Identify similar triangles or rectangles on a grid.                                   |
| 8     | Geometry                    | FR890      | SMMA_LO_00513 | Similarity and Congruence                | Identify the Scale Factor in Similar Figures                       | Identify the scale factor in similar shapes to find the missing corresponding sides.  |
| 8     | Measurement                 | GE855      | SMMA_LO_01856 | Circle Measurement                       | Measure the Diameter of a Circle, Then Determine the Circumference | Given the diameter, find the circumference of a circle within context.                |
| 8     | Measurement                 | GE850      | SMMA_LO_01855 | Circle Measurement                       | Measure the Radius of a Circle, Then Determine the Circumference   | Given the radius, find the circumference of a circle within context.                  |
| 8     | Measurement                 | ME810      | SMMA_LO_00844 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Cone or Sphere                           | Use a formula to find the volume of a cone or a sphere.                               |
| 8     | Measurement                 | ME850      | SMMA_LO_00848 | Measurement of Three-Dimensional Figures | Calculate the Volume of a Rectangular Prism                        | Choose the best estimate for the volume of a rectangular prism.                       |
| 8     | Measurement                 | AP820      | SMMA_LO_00176 | Measurement of Two-Dimensional Figures   | Find the Area of a Triangle  | Find the area of a triangle (2 to 72 square inches).                                  |
| 8     | Measurement                 | ME800      | SMMA_LO_00843 | Temperature                              | Convert Fahrenheit into Celsius                                    | Convert temperature units (degrees Fahrenheit to Celsius).                            |
| 8     | Measurement                 | AP800      | SMMA_LO_00175 | Time                                     | Determine Elapsed Time on an Analog Clock                          | Find the time one to twelve hours and ten to fifty-five minutes from a starting time. |
| 8     | Number Sense and Operations | AP840      | SMMA_LO_00177 | Estimation                               | Estimate Fractional Amounts  | Estimate one to nine million dollar amounts as a mixed number.                        |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic   | Description   |
|-------|-----------------------------|------------|---------------|--------------|---|---|
| 8     | Number Sense and Operations | NC890      | SMMA_LO_01123 | Estimation   | Estimate Products/Quotients Using Compatible Numbers                          | Identify the best estimate for a quotient or a product using compatible numbers (factors less than 10 with two to four decimal places, divisors less than 10 with two to three decimal places). |
| 8     | Number Sense and Operations | NC800      | SMMA_LO_01114 | Number Sense | Compare Fractions, Decimals, and Percents                                     | Identify equivalent representations of numbers.   |
| 8     | Number Sense and Operations | NC820      | SMMA_LO_01116 | Number Sense | Compare Fractions, Decimals, and Percents                                     | Identify a number not equivalent to four others.  |
| 8     | Number Sense and Operations | SU830      | SMMA_LO_01528 | Number Sense | Compare Sums/Difference of Integers   | Compare sums and difference of positive and negative integers (-5 to 5).  |
| 8     | Number Sense and Operations | FR870      | SMMA_LO_00511 | Number Sense | Determine Equivalent Expressions  | Identify the equivalent expression for a fraction, whole number, or a mixed numbers being divided by a fraction, a whole number, or a mixed number.   |
| 8     | Number Sense and Operations | AD880      | SMMA_LO_00129 | Number Sense | Identify Equivalent Expressions Using Distributive Property of Multiplication | Identify an equivalent expression for $a \times (b + c)$ with variables.  |
| 8     | Number Sense and Operations | AD890      | SMMA_LO_00130 | Number Sense | Identify Equivalent Expressions Using Distributive Property of Multiplication | Identify $a \times (b - c)$ as equivalent to $(a \times b) - (a \times c)$ .  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept      | Topic  | Description   |
|-------|-----------------------------|------------|---------------|--------------|--|---|
| 8     | Number Sense and Operations | NC850      | SMMA_LO_01119 | Number Sense | Prime and Composite Numbers  | Identify sets of prime and composite numbers.   |
| 8     | Number Sense and Operations | WP840      | SMMA_LO_01635 | Number Sense | Ratios and Proportions   | Solve a problem in context using proportions.   |
| 8     | Number Sense and Operations | NC870      | SMMA_LO_01121 | Number Sense | Scientific Notation  | Given the scientific notation, determine the standard notation of a number (the power of 10 has an exponent of 1 to 6). |
| 8     | Number Sense and Operations | NC880      | SMMA_LO_01122 | Number Sense | Scientific Notation  | Find the missing exponent for a number written in scientific notation (the exponent is 1 to 6).                         |
| 8     | Number Sense and Operations | WP880      | SMMA_LO_01639 | Number Sense | Sequence Numbers   | Find three consecutive integers when given their sum.   |
| 8     | Number Sense and Operations | ME830      | SMMA_LO_00846 | Number Sense | Solve Ratios/Proportions in Measurement Context                                | Interpret scale drawings (metric and customary units of length).  |
| 8     | Number Sense and Operations | NC860      | SMMA_LO_01120 | Number Sense | Squares and Square Roots   | Find the square root of a number using a calculator (numbers to 4000).  |
| 8     | Number Sense and Operations | SU880      | SMMA_LO_01533 | Number Sense | Use Distributive Property of Multiplication to Identify Equivalent Expressions | Identify $a \times (b - c)$ as equivalent to $(a \times b) - (a \times c)$ with variables.                              |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|--|---|
| 8     | Number Sense and Operations | SU890      | SMMA_LO_01534 | Number Sense            | Use Distributive Property of Multiplication to Identify Equivalent Expressions | Identify $a \times (b - c)$ as equivalent to $(a \times b) - (a \times c)$ .        |
| 8     | Number Sense and Operations | AD800      | SMMA_LO_00121 | Operations with Numbers | Add Integers   | Add two integers (-20 to 20).   |
| 8     | Number Sense and Operations | FR800      | SMMA_LO_00504 | Operations with Numbers | Add Mixed Numbers with Unlike Denominators                                     | Add mixed numbers; simplify if necessary (unlike denominators).                     |
| 8     | Number Sense and Operations | FR850      | SMMA_LO_00509 | Operations with Numbers | Add Mixed Numbers with Unlike Denominators                                     | Add mixed numbers within a context; simplify if necessary (unlike denominators).    |
| 8     | Number Sense and Operations | AD810      | SMMA_LO_00122 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend                              | Find the missing addend in a number sentence (sums -20 to 20).                      |
| 8     | Number Sense and Operations | AD820      | SMMA_LO_00123 | Operations with Numbers | Add/Subtract Integers to Determine Missing Addend                              | Find the missing addend in a number sentence (three addends, -10 to 10).            |
| 8     | Number Sense and Operations | NC840      | SMMA_LO_01118 | Operations with Numbers | Compare Decimals   | Find a decimal number that is either greater than or less than two decimal numbers. |
| 8     | Number Sense and Operations | DC800      | SMMA_LO_00269 | Operations with Numbers | Convert between Percents, Fractions, and Decimals                              | Express a percent as a fraction and simplify.                                       |
| 8     | Number Sense and Operations | DC820      | SMMA_LO_00271 | Operations with Numbers | Convert between Percents, Fractions, and Decimals                              | Convert a percent expressed as a mixed number to a decimal equivalent.              |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 8     | Number Sense and Operations | DC850      | SMMA_LO_00274 | Operations with Numbers | Convert between Percents, Fractions, and Decimals | Express an improper fraction as a percent.  |
| 8     | Number Sense and Operations | DV830      | SMMA_LO_00314 | Operations with Numbers | Determine Estimate for Long Division Problem      | Estimate the quotient to the nearest ten (three-digit dividends, one-digit divisors).             |
| 8     | Number Sense and Operations | DV840      | SMMA_LO_00315 | Operations with Numbers | Determine Estimate for Long Division Problem      | Choose the best estimate for a long division problem (three-digit dividends, two-digit divisors). |
| 8     | Number Sense and Operations | DC890      | SMMA_LO_00278 | Operations with Numbers | Determine Percent                                 | Find the percent of increase.   |
| 8     | Number Sense and Operations | WP850      | SMMA_LO_01636 | Operations with Numbers | Determine Percent                                 | Find the number of grams that represents a percentage of the total weight (whole numbers).        |
| 8     | Number Sense and Operations | MU850      | SMMA_LO_00916 | Operations with Numbers | Determine Signs of Integer Products               | Determine the sign of the products of two integers (one and two-digit integers).                  |
| 8     | Number Sense and Operations | MU880      | SMMA_LO_00919 | Operations with Numbers | Determine Signs of Integer Products               | Determine the sign of the product of four factors.  |
| 8     | Number Sense and Operations | FR880      | SMMA_LO_00512 | Operations with Numbers | Divide Fractions                                  | Divide fractions; simplify.   |
| 8     | Number Sense and Operations | DV810      | SMMA_LO_00312 | Operations with Numbers | Divide Integers                                   | Find the quotient of b divided by a (combinations 6 x 13 to 9 x 19).                              |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 8     | Number Sense and Operations | DV850      | SMMA_LO_00316 | Operations with Numbers | Divide Integers  | Divide integers (combinations 6 x 10 to -9 x12, dividend or divisor is negative).                      |
| 8     | Number Sense and Operations | DV860      | SMMA_LO_00317 | Operations with Numbers | Divide Integers  | Divide integers (combinations 4 x 6 to 12 x 12).   |
| 8     | Number Sense and Operations | DV880      | SMMA_LO_00319 | Operations with Numbers | Divide Integers  | Divide integers (combinations 6 x 13 to 9 x 19, all signs).  |
| 8     | Number Sense and Operations | MU820      | SMMA_LO_00913 | Operations with Numbers | Estimate Missing Factors   | Estimate the missing factor in a number sentence (round to the nearest ten, products 2,010 to 81,090). |
| 8     | Number Sense and Operations | MU810      | SMMA_LO_00912 | Operations with Numbers | Estimate Products  | Estimate the product of two numbers (factors 101 to 949).  |
| 8     | Number Sense and Operations | SU820      | SMMA_LO_01527 | Operations with Numbers | Evaluate Integer Expressions   | Evaluate a numerical expression $(a) + (b) - (c)$ , where a, b, and c have values from -9 to 9.        |
| 8     | Number Sense and Operations | SU860      | SMMA_LO_01531 | Operations with Numbers | Evaluate Integer Expressions   | Evaluate the expression $-(a - b)$ , where a and b have values from 1 to 9.                            |
| 8     | Number Sense and Operations | SU870      | SMMA_LO_01532 | Operations with Numbers | Evaluate Integer Expressions   | Evaluate the expression $-(-a - b)$ , where a and b have values from 1 to 9.                           |
| 8     | Number Sense and Operations | AD860      | SMMA_LO_00127 | Operations with Numbers | Evaluate Integer Expressions Using Distributive Property of Multiplication | Evaluate $-a(a + b)$ , where $9 < a < 19$ , $1 < b < 9$ .  |

| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|-----------------------------|------------|---------------|-------------------------|---|---|
| 8     | Number Sense and Operations | AD870      | SMMA_LO_00128 | Operations with Numbers | Evaluate Integer Expressions Using Distributive Property of Multiplication            | Evaluate $-(-a + b)$ , where $1 < a, b < 9$ .   |
| 8     | Number Sense and Operations | AD830      | SMMA_LO_00124 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify an equivalent variable expression $-(-a + b) = -a + (-b)$ .                                |
| 8     | Number Sense and Operations | SU840      | SMMA_LO_01529 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(a - b)$ as equivalent to $-a + b$ with variables.                                       |
| 8     | Number Sense and Operations | SU850      | SMMA_LO_01530 | Operations with Numbers | Identify Equivalent Integer Expressions Using Distributive Property of Multiplication | Identify $-(-a - b)$ as equivalent to $a + b$ with variables.                                       |
| 8     | Number Sense and Operations | FR820      | SMMA_LO_00506 | Operations with Numbers | Multiply Fractions and Simplify   | Multiply three fractions; simplify if necessary.  |
| 8     | Number Sense and Operations | MU830      | SMMA_LO_00914 | Operations with Numbers | Multiply Integers   | Multiply a negative integer by a positive integer (products -144 to -4).                            |
| 8     | Number Sense and Operations | MU860      | SMMA_LO_00917 | Operations with Numbers | Multiply Integers   | Multiply a negative integer by a positive integer (products $-(20 \times 2)$ to $-(90 \times 9)$ ). |
| 8     | Number Sense and Operations | MU890      | SMMA_LO_00920 | Operations with Numbers | Multiply Integers   | Multiply three integers (one-digit factors with absolute values 2 to 10).                           |



| Grade | Strand                      | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|-----------------------------|------------|---------------|-------------------------|--|--|
| 8     | Number Sense and Operations | FR840      | SMMA_LO_00508 | Operations with Numbers | Multiply Mixed Numbers   | Multiply mixed numbers to determine the area of a rectangle or triangle; simplify if necessary.                                    |
| 8     | Number Sense and Operations | MU840      | SMMA_LO_00915 | Operations with Numbers | Multiply Negative Integers                                     | Multiply two negative integers (products 4 to 144).  |
| 8     | Number Sense and Operations | DV890      | SMMA_LO_00320 | Operations with Numbers | Multiply/Divide Integers to Determine Missing Dividend/Divisor | Find the missing dividend or divisor in a number sentence (combinations $7 \times 13$ to $9 \times 19$ , all signs).               |
| 8     | Number Sense and Operations | MU870      | SMMA_LO_00918 | Operations with Numbers | Multiply/Divide Integers to Determine Missing Dividend/Divisor | Find the missing positive or negative factor in a number sentence.   |
| 8     | Number Sense and Operations | AP860      | SMMA_LO_00178 | Operations with Numbers | Solve Percent Problems Involving Money                         | Find the total cost, given an amount and the sales tax percentage.   |
| 8     | Number Sense and Operations | DC810      | SMMA_LO_00270 | Operations with Numbers | Solve Percent Problems Involving Money                         | Find a percent of a money amount (\$0.80 to \$10.80).  |
| 8     | Number Sense and Operations | ME820      | SMMA_LO_00845 | Operations with Numbers | Solve Percent Problems Involving Money                         | Identify a correct expression to solve a problem about sales tax.  |
| 8     | Number Sense and Operations | WP860      | SMMA_LO_01637 | Operations with Numbers | Solve Percent Problems Involving Money                         | Find total earnings for two to four weeks given the weekly salary, commission percentage, and total sales (whole number percents). |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic   | Description   |
|-------|----------------------------------|------------|---------------|-------------------------|---|---|
| 8     | Number Sense and Operations      | DC860      | SMMA_LO_00275 | Operations with Numbers | Solve Percent Problems Using Part-Whole Relationships | Find a percent of a number (the percent is greater than or equal to 100).             |
| 8     | Number Sense and Operations      | DC870      | SMMA_LO_00276 | Operations with Numbers | Solve Percent Problems Using Part-Whole Relationships | Find the percent given the whole and the part.  |
| 8     | Number Sense and Operations      | DC880      | SMMA_LO_00277 | Operations with Numbers | Solve Percent Problems Using Part-Whole Relationships | Find the whole given the percent and the part.  |
| 8     | Number Sense and Operations      | WP830      | SMMA_LO_01634 | Operations with Numbers | Subtract Fractions                                    | Subtract two fractions from a whole within a context.                                 |
| 8     | Number Sense and Operations      | SU800      | SMMA_LO_01525 | Operations with Numbers | Subtract Integers                                     | Subtract integers (minuends -10 to 10, subtrahends -10 to 10).                        |
| 8     | Number Sense and Operations      | SU810      | SMMA_LO_01526 | Operations with Numbers | Subtract Integers                                     | Subtract integers (minuends -20 to 20, subtrahends -20 to 20).                        |
| 8     | Number Sense and Operations      | FR810      | SMMA_LO_00505 | Operations with Numbers | Subtract Mixed Numbers with Unlike Denominators       | Subtract mixed numbers; simplify if necessary (unlike denominators).                  |
| 8     | Number Sense and Operations      | FR860      | SMMA_LO_00510 | Operations with Numbers | Subtract Mixed Numbers with Unlike Denominators       | Subtract mixed numbers within a context; simplify if necessary (unlike denominators). |
| 8     | Patterns, Algebra, and Functions | EQ842      | SMMA_LO_01828 | Functions and Relations | Distinguish between Linear and Nonlinear Functions    | Identify if an equation is a linear or exponential function.                          |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic  | Description  |
|-------|----------------------------------|------------|---------------|-------------------------|--|--|
| 8     | Patterns, Algebra, and Functions | EQ844      | SMMA_LO_01829 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Identify if an equation is a linear or quadratic function.                             |
| 8     | Patterns, Algebra, and Functions | AP810      | SMMA_LO_01830 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Identify whether graphs are linear or exponential.                                     |
| 8     | Patterns, Algebra, and Functions | AP825      | SMMA_LO_01831 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Identify whether graphs are linear or quadratic.                                       |
| 8     | Patterns, Algebra, and Functions | AP850      | SMMA_LO_01832 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Identify whether graphs are linear or nonlinear.                                       |
| 8     | Patterns, Algebra, and Functions | EQ872      | SMMA_LO_01833 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Identify if an equation is a linear or nonlinear function.                             |
| 8     | Patterns, Algebra, and Functions | AP865      | SMMA_LO_01834 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Determine if a table values represents a linear or nonlinear function.                 |
| 8     | Patterns, Algebra, and Functions | AP830      | SMMA_LO_01881 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Determine if a table values represents a linear or exponential function.               |
| 8     | Patterns, Algebra, and Functions | AP845      | SMMA_LO_01882 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Determine if a table values represents a linear or quadratic function.                 |
| 8     | Patterns, Algebra, and Functions | AP855      | SMMA_LO_01883 | Functions and Relations | Distinguish between Linear and Nonlinear Functions | Identify the function that is represented by a table of values (linear and nonlinear). |
| 8     | Patterns, Algebra, and Functions | AP870      | SMMA_LO_01836 | Functions and Relations | Generate a Table for an Equation and Graph         | Complete a table of values and graph the equation of a quadratic function.             |

| Grade | Strand                           | MCS* Level | LO ID         | Concept                 | Topic   | Description  |
|-------|----------------------------------|------------|---------------|-------------------------|---|--|
| 8     | Patterns, Algebra, and Functions | AP880      | SMMA_LO_01837 | Functions and Relations | Generate a Table for an Equation and Graph        | Complete a table of values and graph the equation of a linear function.                              |
| 8     | Patterns, Algebra, and Functions | GE890      | SMMA_LO_00685 | Logical Reasoning       | Identify the True Statements                      | Identify logically equivalent statements.  |
| 8     | Patterns, Algebra, and Functions | EQ800      | SMMA_LO_00380 | One-Step Equations      | Complete the Steps to Solve the One-Step Equation | Solve for $x$ in $ax = c$ in steps (products $4 \times 4$ to $9 \times 10$ ).                        |
| 8     | Patterns, Algebra, and Functions | EQ805      | SMMA_LO_00381 | One-Step Equations      | Complete the Steps to Solve the One-Step Equation | Complete the steps to solve for $a$ in $a \div b = c$ (combinations $4 \times 4$ to $9 \times 10$ ). |
| 8     | Patterns, Algebra, and Functions | EQ810      | SMMA_LO_00382 | One-Step Equations      | Complete the Steps to Solve the One-Step Equation | Complete the steps to solve for $x$ in $ax \div b = c$ in steps.                                     |
| 8     | Patterns, Algebra, and Functions | EQ880      | SMMA_LO_00396 | One-Step Equations      | Solve One-Step Equations                          | Complete the steps to solve for $x$ in $a - x = b$ .   |
| 8     | Patterns, Algebra, and Functions | EQ835      | SMMA_LO_01868 | One-Step Equations      | Solve One-Step Equations Involving Fractions      | Solve a one-step equations (fractions, addition and subtraction).                                    |
| 8     | Patterns, Algebra, and Functions | EQ840      | SMMA_LO_00388 | One-Step Equations      | Solve One-Step Equations Involving Integers       | Solve for $a$ in $a + b = c$ ( $a$ is from $-20$ to $-1$ ).  |
| 8     | Patterns, Algebra, and Functions | EQ845      | SMMA_LO_00389 | One-Step Equations      | Solve One-Step Equations Involving Integers       | Solve for $a$ in $a - b = c$ (differences from $-19$ to $11$ ).                                      |
| 8     | Patterns, Algebra, and Functions | EQ850      | SMMA_LO_00390 | One-Step Equations      | Solve One-Step Equations Involving Integers       | Solve for $x$ in $ax = b$ (products from $-(4 \times 4)$ to $-(9 \times 9)$ ).                       |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic   | Description   |
|-------|----------------------------------|------------|---------------|--------------------|---|---|
| 8     | Patterns, Algebra, and Functions | EQ855      | SMMA_LO_00391 | One-Step Equations | Solve One-Step Equations Involving Integers         | Solve for a in $a/b = c$ (products from $-(4 \times 4)$ to $-(9 \times 9)$ ).             |
| 8     | Patterns, Algebra, and Functions | EQ875      | SMMA_LO_00395 | One-Step Equations | Solve One-Step Equations Involving Integers         | Solve for x in $-x = a$ (numbers from -99 to 99).   |
| 8     | Patterns, Algebra, and Functions | WP810      | SMMA_LO_01632 | Open Sentences     | Construct Equations from Context                    | Find the final temperature given the initial temperature and the temperature increase.    |
| 8     | Patterns, Algebra, and Functions | AP815      | SMMA_LO_01838 | Patterns           | Extend a Recursive Pattern                          | Extend a recursive pattern.   |
| 8     | Patterns, Algebra, and Functions | AP816      | SMMA_LO_01839 | Patterns           | Extend a Recursive Pattern                          | Extend a recursive pattern.   |
| 8     | Patterns, Algebra, and Functions | NC830      | SMMA_LO_01117 | Patterns           | Identify the Missing Number in a Geometric Sequence | Find a missing number in a geometric sequence (first number 1 to 5, factors 2 to 5).      |
| 8     | Patterns, Algebra, and Functions | NC810      | SMMA_LO_01115 | Patterns           | Identify the Missing Number in a Pattern            | Find a missing number in an arithmetic sequence (-200 to 200, intervals 3 to 8).          |
| 8     | Patterns, Algebra, and Functions | EQ815      | SMMA_LO_00383 | Two-Step Equations | Complete the Steps to Solve the Two-Step Equation   | Complete the steps to solve for x in $ax + b = c$ .                                       |
| 8     | Patterns, Algebra, and Functions | EQ885      | SMMA_LO_00397 | Two-Step Equations | Determine if the Given Values Solve the Equation    | Determine whether a given value for x is a solution for $ax + b = c$ (x is from -9 to 9). |

| Grade | Strand                           | MCS* Level | LO ID         | Concept            | Topic  | Description  |
|-------|----------------------------------|------------|---------------|--------------------|--|--|
| 8     | Patterns, Algebra, and Functions | EQ890      | SMMA_LO_00398 | Two-Step Equations | Determine if the Given Values Solve the Equation | Determine whether the given values for $x$ and $y$ satisfy $y = ax + b$ .    |
| 8     | Patterns, Algebra, and Functions | EQ895      | SMMA_LO_00399 | Two-Step Equations | Determine if the Given Values Solve the Equation | Given a table of values for $x$ and $y$ , identify a true equation.          |
| 8     | Patterns, Algebra, and Functions | EQ888      | SMMA_LO_01851 | Two-Step Equations | Solve Two-Step Equations Involving Decimals      | Solve a two-step equation (decimals).  |
| 8     | Patterns, Algebra, and Functions | WP890      | SMMA_LO_01640 | Two-Step Equations | Solve Two-Step Equations Involving Fractions     | Add two fractional parts of whole numbers in context.                        |
| 8     | Patterns, Algebra, and Functions | EQ882      | SMMA_LO_01850 | Two-Step Equations | Solve Two-Step Equations Involving Fractions     | Solve a two-step equation (fractions, multiplication).                       |
| 8     | Patterns, Algebra, and Functions | EQ860      | SMMA_LO_00392 | Two-Step Equations | Solve Two-Step Equations Involving Integers      | Complete the steps to solve for $x$ in $ax + b = c$ ( $x$ is from -9 to -1). |
| 8     | Patterns, Algebra, and Functions | EQ865      | SMMA_LO_00393 | Two-Step Equations | Solve Two-Step Equations Involving Integers      | Complete the steps to solve for $x$ in $ax - b = c$ ( $x$ is from -9 to 2).  |
| 8     | Patterns, Algebra, and Functions | EQ870      | SMMA_LO_00394 | Two-Step Equations | Solve Two-Step Equations Involving Integers      | Complete the steps to solve for $x$ in $ax - b = c$ ( $x$ is from -9 to 9).  |
| 8     | Patterns, Algebra, and Functions | EQ876      | SMMA_LO_01846 | Two-Step Equations | Solve Two-Step Equations Involving Integers      | Solve a two-step equation (integers).  |
| 8     | Patterns, Algebra, and Functions | EQ820      | SMMA_LO_00384 | Two-Step Equations | Solve Two-Step Equations Involving Whole Numbers | Solve for $x$ in $ax + b = c$ .  |

| Grade | Strand                           | MCS* Level | LO ID         | Concept              | Topic   | Description   |
|-------|----------------------------------|------------|---------------|----------------------|---|---|
| 8     | Patterns, Algebra, and Functions | WP800      | SMMA_LO_01631 | Two-Step Equations   | Solve a Two-Step Problem in Context                                 | Solve a two-step addition problem to find a person's age in 5 to 20 years from now. |
| 8     | Patterns, Algebra, and Functions | WP820      | SMMA_LO_01633 | Two-Step Equations   | Solve a Two-Step Problem in Context                                 | Solve a two-step multiplication and addition problem in context.                    |
| 8     | Patterns, Algebra, and Functions | WP870      | SMMA_LO_01638 | Two-Step Equations   | Solve a Two-Step Problem in Context                                 | Solve for a two-step equation in context.   |
| 8     | Patterns, Algebra, and Functions | EQ825      | SMMA_LO_00385 | Written Equations    | Identify the Equation That Is a Translation of the Written Phrase   | Identify the equation that translates the written phrase ( $ax + b = c$ ).          |
| 8     | Patterns, Algebra, and Functions | EQ830      | SMMA_LO_00386 | Written Equations    | Identify the Equation That Is a Translation of the Written Phrase   | Identify the equation that translates the written phrase ( $a + bx = c$ ).          |
| 8     | Patterns, Algebra, and Functions | EQ874      | SMMA_LO_01852 | Written Equations    | Identify the Equation That Is a Translation of the Written Phrase   | Identify the equation translated from a written phrase.                             |
| 8     | Patterns, Algebra, and Functions | AP890      | SMMA_LO_01853 | Written Inequalities | Identify the Inequality That Is a Translation of the Written Phrase | Identify the inequality translated from a written phrase.                           |
| 8     | Patterns, Algebra, and Functions | AP892      | SMMA_LO_01869 | Written Inequalities | Identify the Written Phrase That Is a Translation of the Inequality | Identify the written phrase translated from an inequality.                          |

| Grade | Strand                               | MCS* Level | LO ID         | Concept              | Topic   | Description  |
|-------|--------------------------------------|------------|---------------|----------------------|---|--|
| 8     | Patterns, Algebra, and Functions     | AP895      | SMMA_LO_01870 | Written Inequalities | Identify the Written Phrase That Is a Translation of the Inequality | Identify the written phrase translated from an inequality.   |
| 8     | Probability and Discrete Mathematics | PR810      | SMMA_LO_01216 | Probability          | Determine the Highest Probability                                   | Given a graphical representation of two spinners, select the spinner for which a given event has the highest probability of occurring.   |
| 8     | Probability and Discrete Mathematics | PR815      | SMMA_LO_01217 | Probability          | Determine the Highest Probability                                   | Given the probabilities of winning different contests, select the contest having the highest probability of winning.   |
| 8     | Probability and Discrete Mathematics | PR890      | SMMA_LO_01226 | Probability          | Determine the Probability of Dependent Events                       | Given information about a situation in which items are selected from a container without replacement, label the probabilities of given outcomes in a first and second selection. |
| 8     | Probability and Discrete Mathematics | PR800      | SMMA_LO_01215 | Probability          | Determine the Probability of Independent Events                     | In the context of randomly selecting a card that has a certain name on it, compute the probability of each name being selected from a set of cards.                              |



| Grade | Strand                               | MCS* Level | LO ID         | Concept     | Topic  | Description  |
|-------|--------------------------------------|------------|---------------|-------------|--|--|
| 8     | Probability and Discrete Mathematics | PR870      | SMMA_LO_01224 | Probability | Determine the Probability of Simultaneously-Occurring Independent Events | Identify the probability of two independent outcomes, and then determine the probability of the combination of the two outcomes occurring simultaneously.              |
| 8     | Probability and Discrete Mathematics | PR820      | SMMA_LO_01218 | Probability | Determine the Sample Space for an Event (Dice)                           | Given a coordinate grid to represent outcomes of tossing a pair of number cubes, identify the point that represents a given pair of outcomes.                          |
| 8     | Probability and Discrete Mathematics | PR825      | SMMA_LO_01219 | Probability | Determine the Sample Space for an Event (Dice)                           | Given a coordinate grid to represent outcomes of tossing a pair of number cubes, identify all points that represent the sum given for a pair of outcomes.              |
| 8     | Probability and Discrete Mathematics | PR830      | SMMA_LO_01220 | Probability | Determine the Theoretical Probability of Independent Events              | Given a coordinate grid to represent outcomes of tossing a pair of number cubes, compute theoretical probability of an event defined by the sum of a pair of outcomes. |
| 8     | Probability and Discrete Mathematics | PR880      | SMMA_LO_01225 | Probability | Identify Events as Dependent or Independent                              | In the context of repeatedly selecting from a bowl containing colored marbles, label a pair of events as independent or dependent.                                     |

\* Math Concepts and Skills



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