

Inverse Relationships

SOL 3.2

The student will recognize and use the inverse relationships between addition/subtraction and multiplication/division to complete basic fact sentences. The student will use these relationships to solve problems.

Suggested Practice for SOL 3.2

Students need additional practice identifying all the number sentences that can be completed by using a given basic fact.

1. Circle each number sentence that can be completed by using the basic fact sentence $2 \times 8 = 16$.

$8 \div \underline{\quad} = 2$

$16 \div 2 = \underline{\quad}$

$2 \times 16 = \underline{\quad}$

$16 = \underline{\quad} \times 2$

$16 - \underline{\quad} = 2$

$2 + \underline{\quad} = 16$

$\underline{\quad} \div 2 = 16$

$8 = 16 \div \underline{\quad}$

2. Write four different number sentences that are related to the basic fact sentence $3 + 9 = 12$.

Possible student responses include:

$9 + 3 = 12; 12 = 9 + 3; 12 = 3 + 9;$

$12 - 9 = 3; 12 - 3 = 9; 3 = 12 - 9; 9 = 12 - 3$

Naming and Comparing Fractions

SOL 3.3

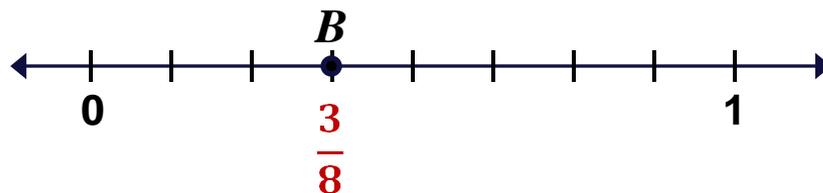
The student will

- a) name and write fractions (including mixed numbers) represented by a model;
- b) model fractions (including mixed numbers) and write the fractions' names; and
- c) compare fractions having like and unlike denominators, using words and symbols ($>$, $<$, or $=$).

Suggested Practice for SOL 3.3a

Students need additional practice naming fractions modeled on a number line.

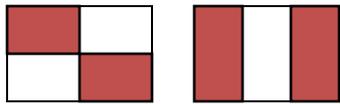
What fraction is represented by point B on this number line?



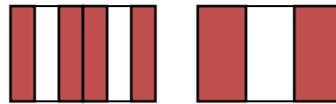
Suggested Practice for SOL 3.3c

Students need additional practice comparing fractions with unlike denominators.

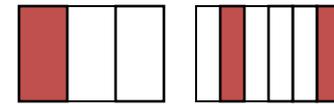
Select each number sentence that correctly compares the fractions represented by the shaded regions of each figure. All figures are the same size.



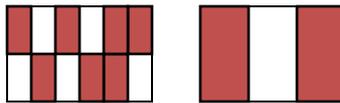
$$\frac{1}{2} > \frac{2}{3}$$



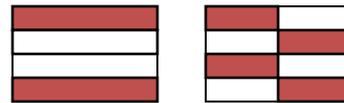
$$\frac{4}{6} = \frac{2}{3}$$



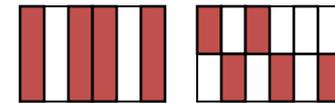
$$\frac{1}{3} < \frac{2}{6}$$



$$\frac{7}{12} < \frac{2}{3}$$



$$\frac{2}{4} < \frac{4}{8}$$



$$\frac{4}{6} > \frac{5}{12}$$

Solving Subtraction Problems With Whole Numbers

SOL 3.4

The student will estimate solutions to and **solve single-step and multistep problems involving the sum or difference of two whole numbers**, each 9,999 or less, **with** or without regrouping.

Suggested Practice for SOL 3.4

Students need additional practice solving single-step subtraction problems with whole numbers.

Solve:

1. $8,002 - 5,684 = \underline{2,318}$

2. $2,073 - 886 = \underline{1,187}$

3. $7,146 - 1,397 = \underline{5,749}$

Suggested Practice for SOL 3.4

Students need additional practice using information in a table to solve multistep practical problems involving the subtraction of whole numbers.

The numbers of chairs in three different rooms at Maple Elementary School are shown in the table.

Room	Ms. Smith's Classroom	Mr. Taylor's Classroom	School Library
Number of Chairs	24	23	72

What is the difference between the number of chairs in the school library and the total number of chairs in Ms. Smith's and Mr. Taylor's classrooms?

$$24 + 23 = 47$$

$$72 - 47 = 25 \text{ chairs}$$

Multiplying Whole Numbers

SOL 3.6

The student will represent multiplication and division, using area, set, and number line models, and create and **solve problems that involve multiplication of two whole numbers, one factor 99 or less and the second factor 5 or less.**

Suggested Practice for SOL 3.6

Students need additional practice solving multiplication problems with whole numbers.

Solve:

1. $57 \times 3 = \underline{171}$

2. $4 \times 83 = \underline{332}$

3. Luisa is making bracelets. She uses 5 beads for each bracelet. What is the total number of beads she will need to make 28 of these bracelets? **140 beads**

Subtracting Fractions

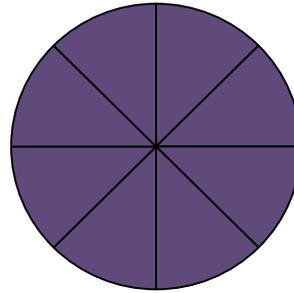
SOL 3.7

The student will add and subtract proper fractions having like denominators of 12 or less.

Suggested Practice for SOL 3.7

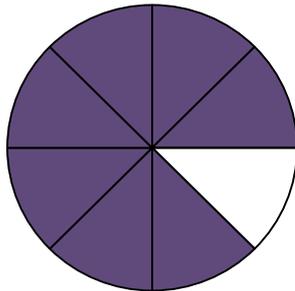
Students need additional practice finding the difference of fractions with like denominators.

This model is shaded to represent one whole.

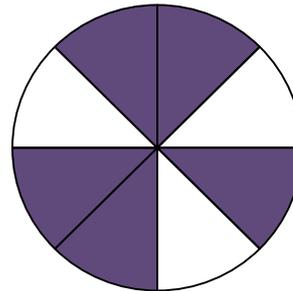


These two models are each shaded to represent a fraction.

Model 1



Model 2



What is the difference between these two fractions?

$$1\frac{4}{8}$$

$$\frac{2}{8}$$

$$\frac{12}{16}$$

$$\frac{2}{16}$$

Making Change

SOL 3.8

The student will determine, by counting, the value of a collection of bills and coins whose total value is \$5.00 or less, compare the value of the bills and coins, and **make change**.

Suggested Practice for SOL 3.8

Students need additional practice determining which collection of money represents the correct amount of change.

Juana's lunch cost exactly \$2.73. She paid with a five-dollar bill. Which set of money shows the amount of change she should receive?

Most common error



Estimating Length

SOL 3.9

The student will estimate and use U.S. Customary and metric units to measure

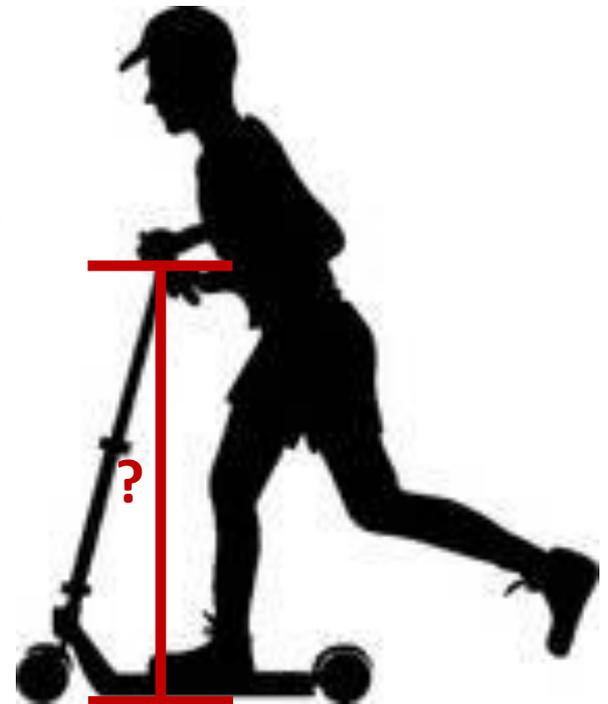
- a) length to the nearest $\frac{1}{2}$ inch, inch, foot, yard, centimeter, and meter;
- b) liquid volume in cups, pints, quarts, gallons, and liters;
- c) weight/mass in ounces, pounds, grams, and kilograms; and
- d) area and perimeter.

Suggested Practice for SOL 3.9a

Students need additional practice choosing the best estimate for the length of an object.

David has a scooter like the one shown in the picture. Which is the most reasonable estimate for the height of this scooter, measured from the ground to the handlebar?

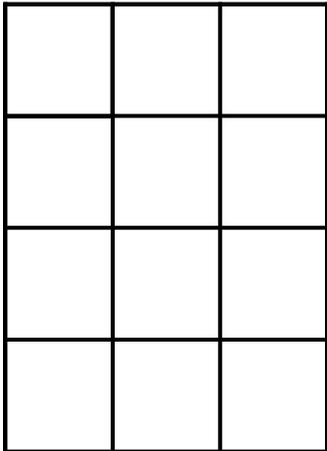
- A 1 foot **Most common error**
- B 3 centimeters
- C **1 yard**
- D 3 meters



Suggested Practice for SOL 3.9d

Students need additional practice estimating to determine the area and perimeter of a given figure.

Which are closest to the area and perimeter of this figure?



- A Area = 10 square inches and perimeter = 7 inches
- B Area = 7 square inches and perimeter = 10 inches
- C Area = 12 square inches and perimeter = 14 inches**
- D Area = 14 square inches and perimeter = 12 inches



Most common error

Key:  = 1 square inch

Measuring to Find Perimeter

SOL 3.10

The student will

- a) **measure the distance around a polygon in order to determine perimeter; and**
- b) **count the number of square units needed to cover a given surface in order to determine area.**

Suggested Practice for SOL 3.10a

Students need additional practice measuring the distance around a polygon to determine its perimeter.

Use your inch ruler to help you answer this question.



Which is closest to the perimeter of this figure?

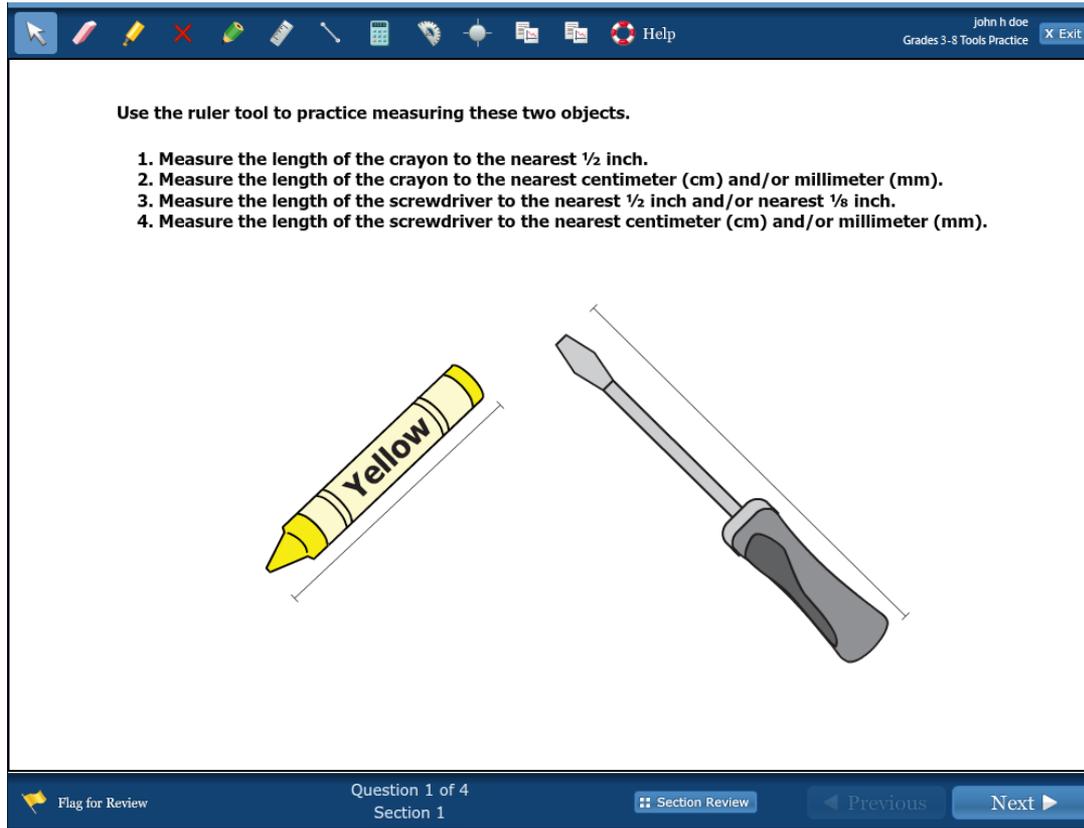
A 8 inches **Most common error**

C 12 inches

B 10 inches

D 14 inches

Suggested Practice for SOL 3.10a



The screenshot shows a digital practice tool interface. At the top, there is a toolbar with various icons for drawing and editing, including a ruler, pencil, eraser, and selection tools. The user's name "John H. Doe" and the page title "Grades 3-8 Tools Practice" are visible in the top right corner. The main content area contains the following text:

Use the ruler tool to practice measuring these two objects.

1. Measure the length of the crayon to the nearest $\frac{1}{2}$ inch.
2. Measure the length of the crayon to the nearest centimeter (cm) and/or millimeter (mm).
3. Measure the length of the screwdriver to the nearest $\frac{1}{2}$ inch and/or nearest $\frac{1}{8}$ inch.
4. Measure the length of the screwdriver to the nearest centimeter (cm) and/or millimeter (mm).

Below the text, there are two objects: a yellow crayon labeled "Yellow" and a screwdriver. Both objects have white dimension lines drawn over them, indicating they are ready to be measured.

At the bottom of the interface, there is a navigation bar with the following elements: "Flag for Review", "Question 1 of 4 Section 1", "Section Review", "Previous", and "Next".

Question 1 in the [Grades 3-8 Tools Practice](#) available on the Virginia Department of Education website provides practice using the ruler tools.

http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml

Suggested Practice for SOL 3.10a

The screenshot shows a digital practice tool interface. At the top, there is a toolbar with various icons for drawing and editing, including a ruler, eraser, and selection tools. The user's name "john h doe" and the page title "Grades 3-8 Tools Practice" are visible in the top right corner. The main instruction reads: "Use the ruler tool to practice measuring each figure." Below this, two tasks are listed: "1. Find the perimeter of figure A to the nearest 1/2 inch." and "2. Find the perimeter of figure B to the nearest centimeter (cm)." The workspace contains two figures: "Figure A", a pentagon, and "Figure B", a trapezoid. A ruler is positioned diagonally across the workspace, with its 0-inch mark aligned with the bottom-left corner of Figure A. The ruler is marked in inches from 0 to 9. At the bottom of the interface, there is a navigation bar with a "Flag for Review" button, the text "Question 2 of 4 Section 1", a "Section Review" button, and "Previous" and "Next" navigation buttons.

Question 2 in the [Grades 3-8 Tools Practice](#) accessible on the Virginia Department of Education website is like the questions that students found most difficult, which required them to measure one figure to determine its perimeter.

http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml

Telling Time Using Analog Clocks

SOL 3.11

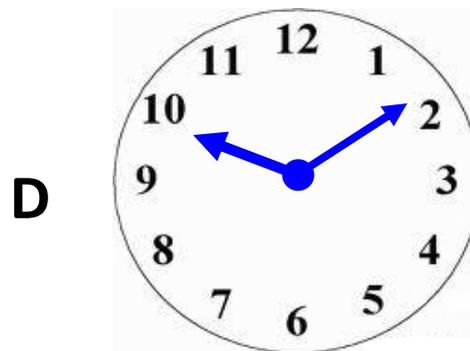
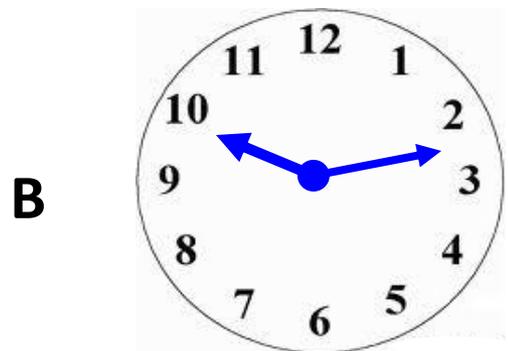
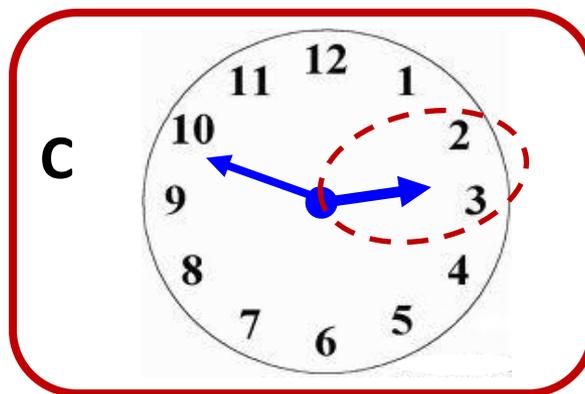
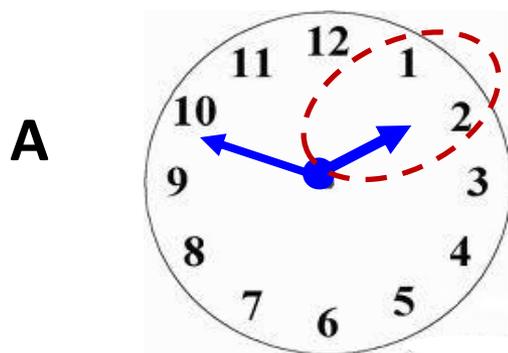
The student will

- a) tell time to the nearest minute, using analog and digital clocks; and
- b) determine elapsed time in one-hour increments over a 12-hour period.

Suggested Practice for SOL 3.11a

Students need additional practice telling time to the nearest minute using analog clocks.

Which clock best shows 2:48?



Line Plots, Bar Graphs, and Picture Graphs

SOL 3.17

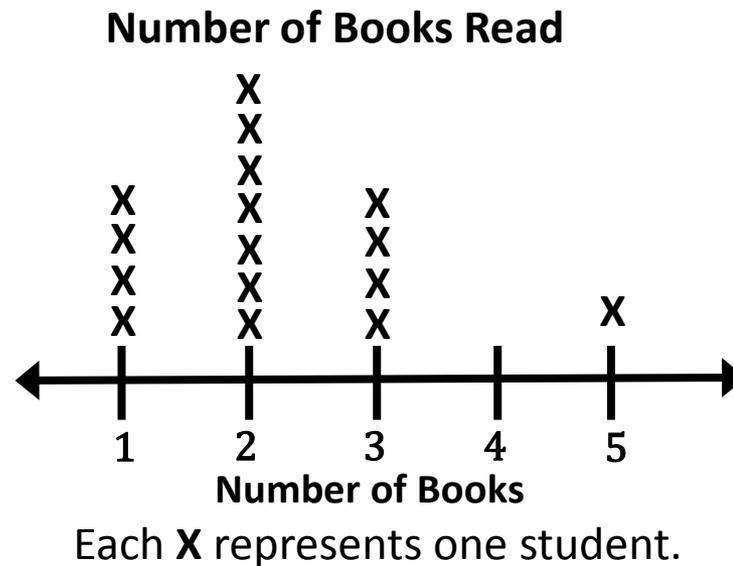
The student will

- a) collect and organize data, using observations, measurements, surveys, or experiments;
- b) **construct a line plot**, a picture graph, or a bar graph to represent the data; and
- c) **read and interpret the data represented in line plots, bar graphs, and picture graphs** and write a sentence analyzing the data.

Suggested Practice for SOL 3.17b

Students need additional practice constructing line plots.

Mrs. Smith is making this line plot to show the number of books read by each of her 22 students.



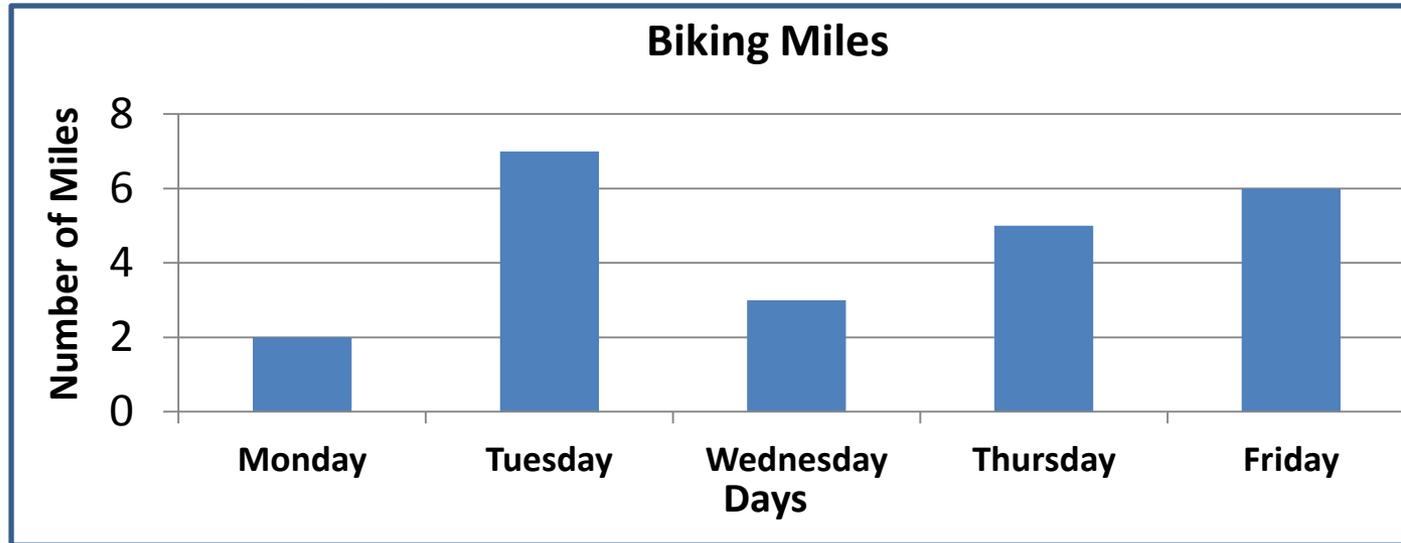
Mrs. Smith has not recorded all the data for her students. For exactly how many students does she still need to record the number of books read?

- A 4 ← Most common error B 5 **C 6** D 7

Suggested Practice for SOL 3.17c

Students need additional practice interpreting bar graphs.

Tricia made this graph to show the number of miles she biked for five days.



Based on this graph, Tricia biked--

- A a total of 13 miles on these five days
 - B a total of 4 miles on Monday and Friday
 - C 2 fewer miles on Thursday than on Wednesday
 - D 2 more miles on Tuesday than on Thursday**
- Most common error**

Suggested Practice for SOL 3.17c

Students need additional practice interpreting pictographs.

The manager at a snack bar made a graph to show the number of cones used on four different days.

Cones Used at the Snack Bar

Day	Number of Cones
Thursday	▼
Friday	▼ ▼ ▼ ▼
Saturday	▼ ▼ ▼ ▼ ▼ ▼ ▼
Sunday	▼ ▼ ▼ ▼
Key: ▼ = 2 Cones	

Exactly three more cones were used on Friday than on Thursday.

Exactly six fewer cones were used on Sunday than on Saturday.

The number of cones used on Saturday was twice the number of cones used on Friday.

The number of cones used on Thursday was half the number of cones used on Friday.

Circle the statement about the graph that is true.

Probability

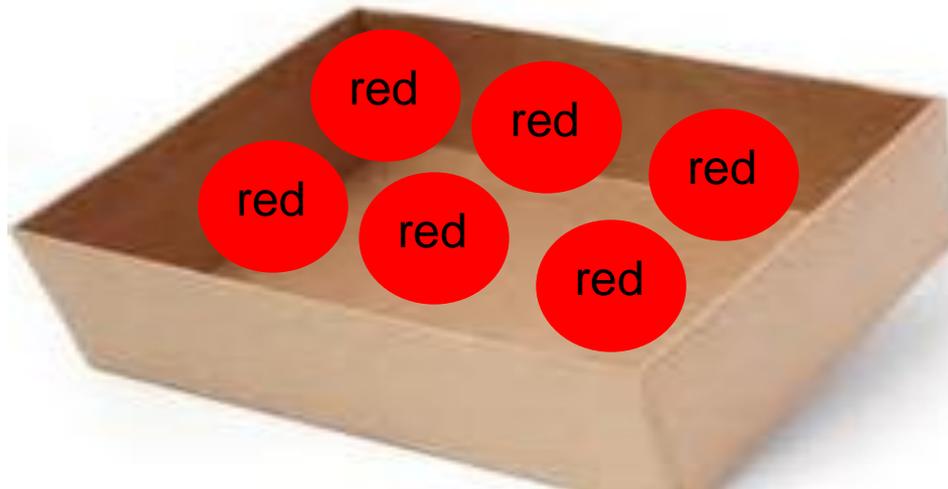
SOL 3.18

The student will investigate and describe the concept of probability as chance and list possible results of a given situation.

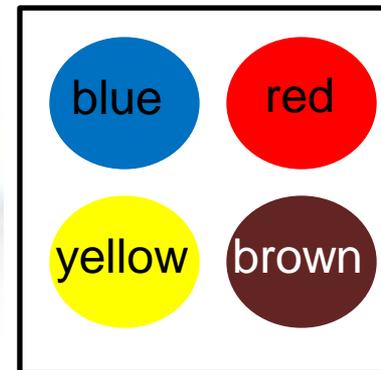
Suggested Practice for SOL 3.18

Students need additional practice describing the probability of a situation as the chance that an event will happen.

A box contains 6 candies that are the same size and shape. Julia will pick one candy from this box without looking. Place 6 candies in the box so that the probability of Julia selecting a red candy is certain.



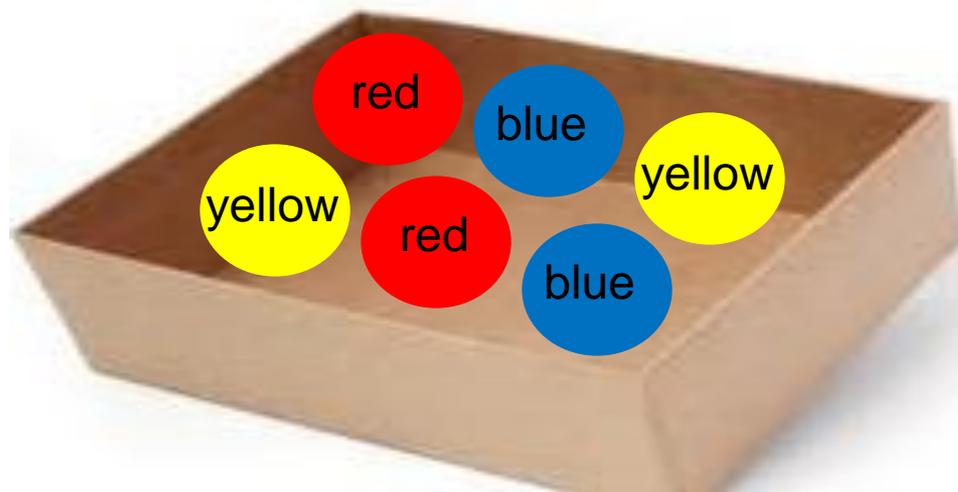
Candies



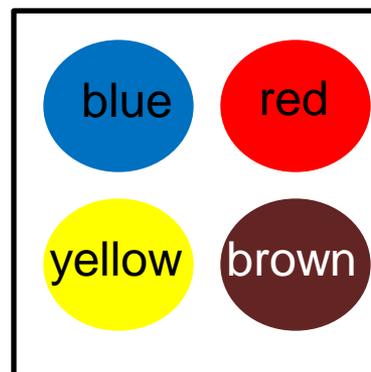
Suggested Practice for SOL 3.18

Students need additional practice describing the probability of a situation as the chance that an event will happen.

A box contains 6 candies that are the same size and shape. Julia will pick one candy from this box without looking. Place 6 candies in the box so that the probability of Julia selecting a brown candy is impossible.



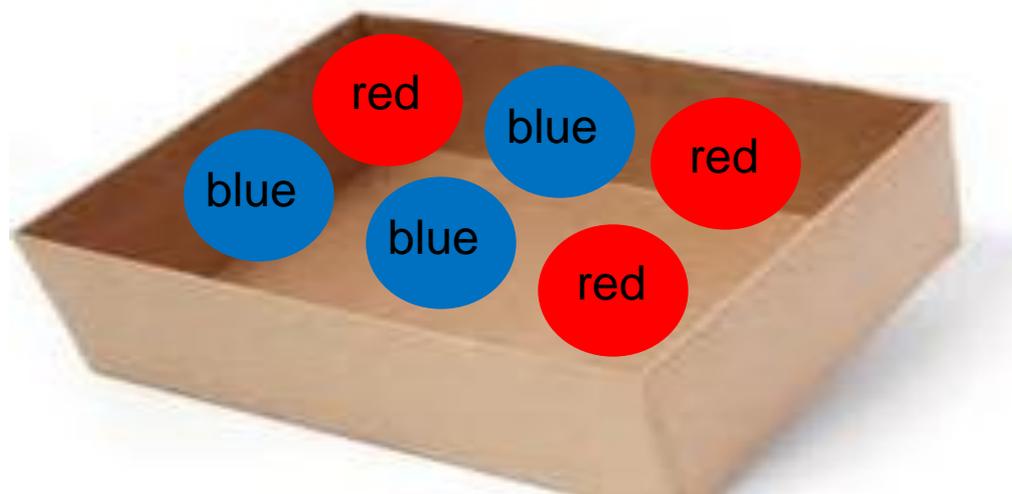
Candies



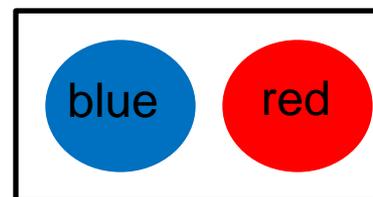
Suggested Practice for SOL 3.18

Students need additional practice describing the probability of a situation as the chance that an event will happen.

A box contains 6 candies that are the same size and shape. Julia will pick one candy from this box without looking. Place 6 candies in the box so that the probability of Julia selecting a blue candy is equally likely as selecting a red candy.



Candies

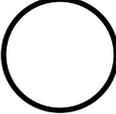


Suggested Practice for SOL 3.18

Students need additional practice listing the possible results of a given situation.

The chart shows the color and shape choices for balloons at a store.

Balloon Choices

Color	Shape
Blue	  
Red	

Which shows all the possible color and shape choices for one balloon?

- A    **Most common error**
- B    
- C**      
- D      

Patterns

SOL 3.19

The student will **recognize and describe** a variety of **patterns formed using numbers**, tables, and pictures, and extend the patterns, using the same or different forms.

Suggested Practice for SOL 3.19

Students need additional practice recognizing a number pattern and extending that pattern.

What is the missing number in this pattern?

10, 25, 40, 55, ____, 85, 100

A 60

B 65

C 70

D 75

Properties

SOL 3.20

The student will

- a) investigate the identity and the commutative properties for addition and multiplication; and
- b) identify examples of the identity and commutative properties for addition and multiplication.

Suggested Practice for SOL 3.20

Students need additional practice identifying examples of the commutative and associative properties of addition and multiplication.

Select an equation to match each property. You will not use two of the equations.

Property Name	Equation
Identity Property of Addition	$0 + 27 = 27$
Commutative Property of Addition	$18 + 2 = 2 + 18$
Identity Property of Multiplication	$9 = 9 \times 1$
Commutative Property of Multiplication	$6 \times 7 = 7 \times 6$

$$18 + 2 = 2 + 18$$

$$0 + 27 = 27$$

$$15 + 1 = 15 + 1$$

$$9 = 9 \times 1$$

$$6 \times 7 = 7 \times 6$$

$$4 \times 2 = 4 \times 2$$



Practice Items

This concludes the student performance information for the spring 2014 Grade 3 Mathematics SOL test.

Additionally, test preparation practice items for Grade 3 Mathematics can be found on the Virginia Department of Education Web site at:

http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#math

Contact Information

For questions regarding assessment, please contact
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