Spring 2013 Student Performance Analysis

Grade 6 Mathematics Standards of Learning

Presentation may be paused and resumed using the arrow keys or the mouse.

Using Ratios to Describe and Compare Data

SOL 6.1

The student will describe and compare data, using ratios, and will use appropriate notations, such as $\frac{a}{b}$, a to b, and a:b.

Suggested Practice for SOL 6.1

Students need additional practice identifying a practical situation that corresponds to a given ratio.

A box contains red marbles and blue marbles. The ratio of red marbles to blue marbles in the box is 8 to 3. Select each statement that could represent the number of red marbles and blue marbles in this box.

There are exactly 3 red marbles and 8 blue marbles in the box.

There are exactly 64 red marbles and 24 blue marbles in the box.

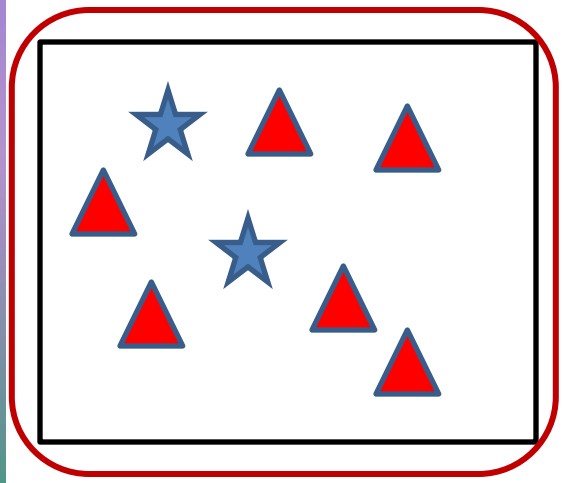
There are exactly 18 red marbles and 13 blue marbles in the box.

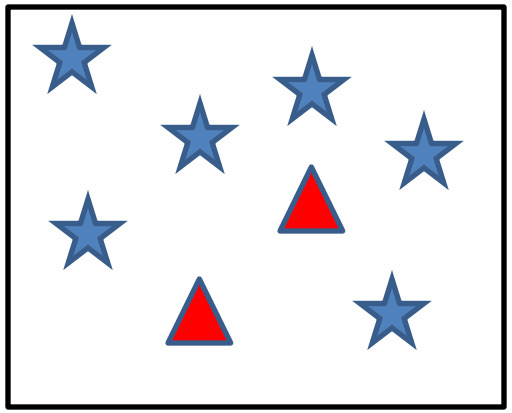
There are exactly 48 red marbles and 18 blue marbles in the box.

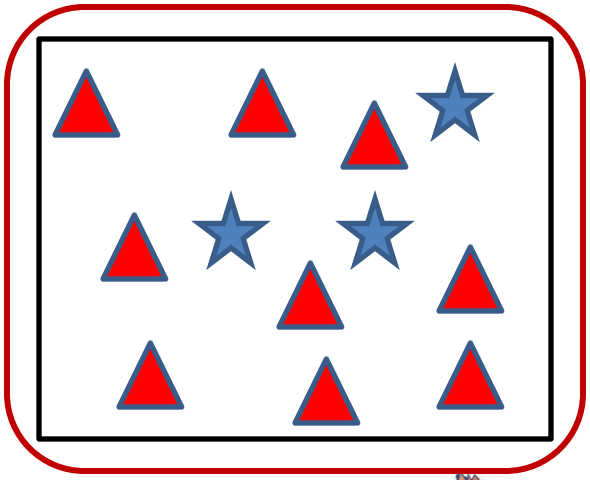
Suggested Practice for SOL 6.1

Students need additional practice identifying a practical situation that corresponds to a given ratio.

A board contains stars and triangles. The ratio of triangles to stars is 3 to 1. Select each picture that could represent the number of stars and triangles on this board.







Demonstrating Equivalent Relationships Among Fractions, Decimals, and Percents

SOL 6.2

The student will

a) **investigate and describe fractions, decimals and percents as ratios;**

b) **identify a given fraction, decimal or percent from a representation;**

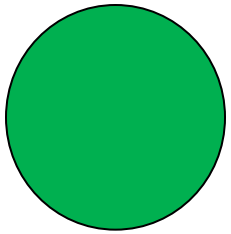
c) **demonstrate equivalent relationships among fractions, decimals, and percents; and**

d) **compare and order fractions, decimals, and percents.**

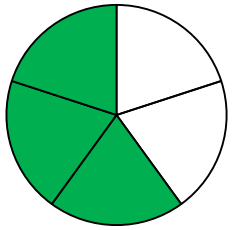
Suggested Practice for SOL 6.2b

Students need additional practice identifying fractions, decimals, and percents from representations.

This model is shaded to represent one whole.

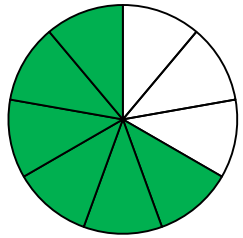


Write a fraction, decimal, and percent to represent the shaded part of each model.



Possible answers:

$\frac{3}{5}, 0.6, 60\%$



Possible answers:

$\frac{2}{3}, 0.666\ldots, 66\frac{2}{3}\%$

Suggested Practice for SOL 6.2c

Students need additional practice demonstrating equivalent relationships among fractions, decimals, and percents.

Identify each statement that is true.

$\frac{5}{20} = 0.25\%$ $\quad$ $0.25\% = 2.5$ $\quad$ $2.5 = 250\%$

$2.5 = \frac{5}{2}$ $\quad$ $25\% = 0.25$

Solving Practical Problems Involving Fractions

SOL 6.6

The student will

a) **multiply and divide fractions and mixed numbers; and**

b) **estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions.**

Suggested Practice for SOL 6.6b

Students need additional practice solving single-step and multistep practical problems involving fractions.

Jill had 3 full pans of brownies.

- **Each pan was the same size.**
- **She gave $\frac{3}{8}$ of the original amount of brownies to her friends.**
- **She gave $\frac{1}{4}$ of the original amount of brownies to her teacher.**

Exactly how many pans of brownies does Jill have left over?

$1\frac{1}{8}$ **pans**

Suggested Practice for SOL 6.6b

Students need additional practice adding and subtracting fractions with regrouping.

Kendra recorded the amount of water she used in one week for four activities.

Activity	Amount of Water (in gallons)
Bathing	$50\frac{2}{3}$
Doing Laundry	$33\frac{1}{4}$
Washing Car	$8\frac{3}{8}$
Cooking	$10\frac{3}{4}$

1. **What is the total amount of water, in gallons, recorded for these activities?** $103\frac{1}{24}$ **gallons**

2. **How much more water was used doing laundry than cooking?** $22\frac{1}{2}$ **gallons**

Solving Problems Involving Perimeter, Circumference, Area, Surface Area, and Volume

SOL 6.10

The student will

a) **define pi as the ratio of the circumference of a circle to its diameter;**

b) **solve practical problems involving circumference and area of a circle, given the diameter or radius;**

c) **solve practical problems involving area and perimeter; and**

d) **describe and determine the volume and surface area of a rectangular prism.**

Suggested Practice for SOL 6.10b

Students need additional practice solving practical problems involving circumference and area, particularly when a figure is not provided.

Leo is designing a circular table top with a diameter of 10 feet.

1. **Which is closest to the circumference of this table top?**

a) 314.2 feet
b) 78.5 square feet
c) 31.4 feet
d) 15.7 square feet

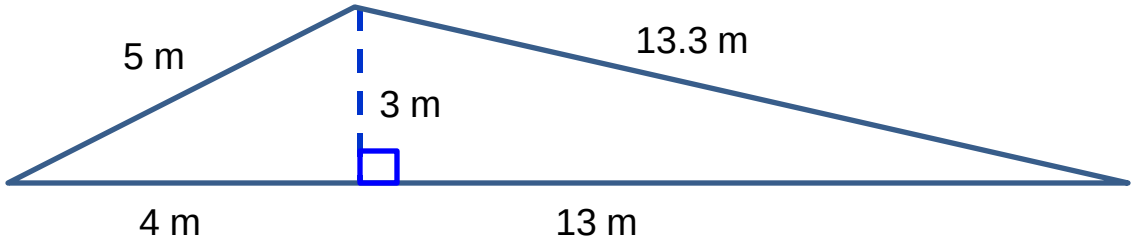
2. **Which is closest to the area of this table top?**

a) 314.2 feet
b) 78.5 square feet
c) 31.4 feet
d) 15.7 square feet

Suggested Practice for SOL 6.10c

Students need additional practice solving practical problems involving area and perimeter.

This triangle represents a section of a garden. (Figure is not drawn to scale.)



What are the area and perimeter of the garden?

Area = 25.5 m²

Perimeter = 35.3 m

Solving Problems Involving Circle Graphs

SOL 6.14

The student will

a) **construct circle graphs;**

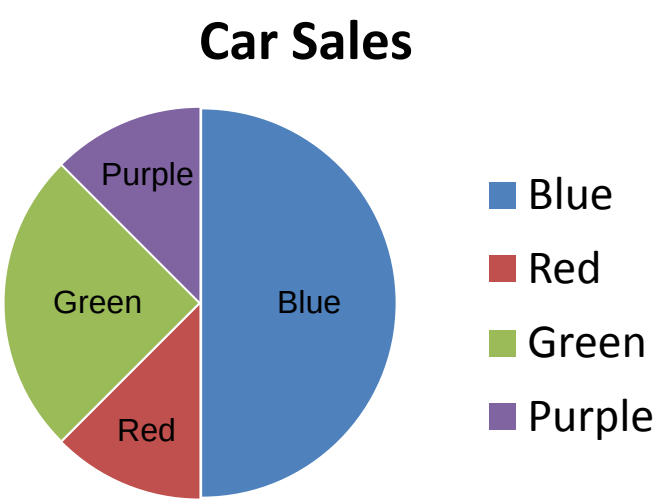
b) **draw conclusions and make predictions, using circle graphs; and**

c) **compare and contrast graphs that present information from the same data set.**

Suggested Practice for SOL 6.14b

Students need additional practice solving problems involving circle graphs.

A car salesman sold 40 cars last month. The circle graph shows the results of his sales by car color.



1. **Identify the car color that most likely represents exactly 10 cars.**

   Green

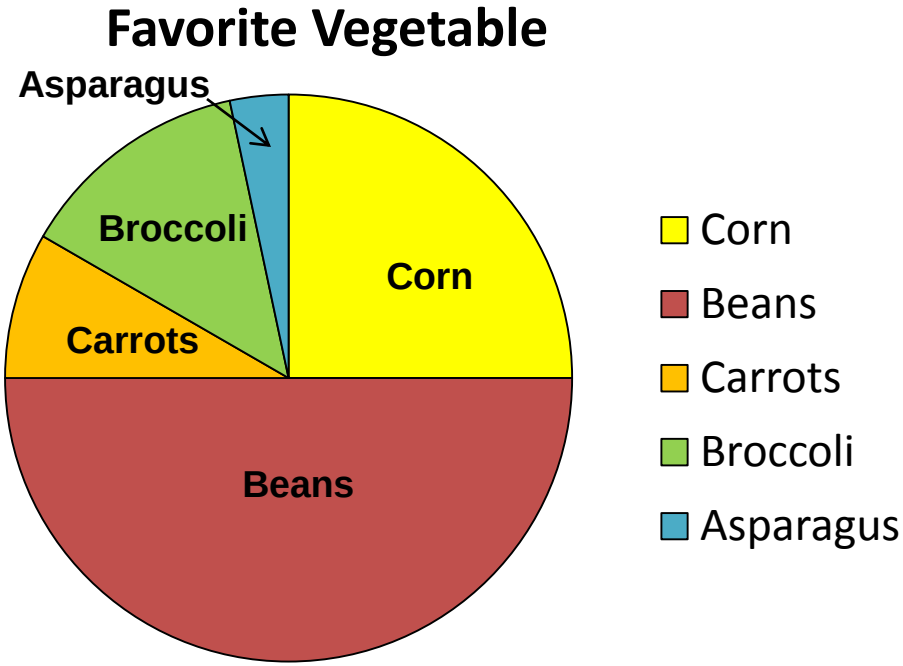
2. **Identify two car colors that most likely represent a combined total of 25 cars.**

   Blue and Purple OR
   Blue and Red

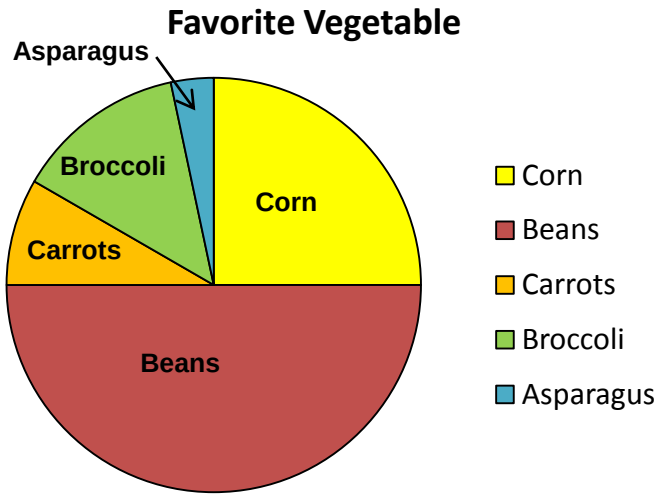
Suggested Practice for SOL 6.14c

Students need additional practice comparing data in circle graphs with data in other graphs.

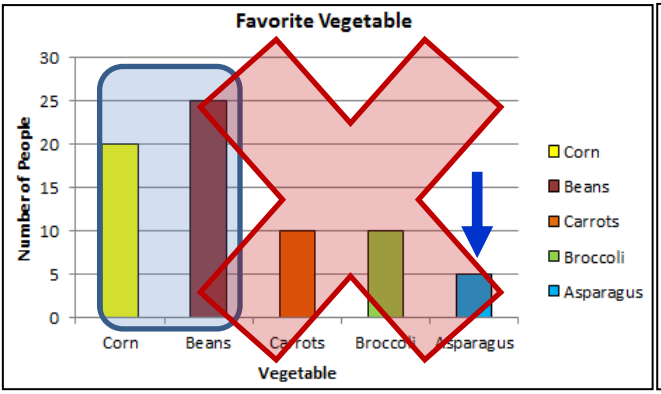
Bob asked a group of people to identify their favorite vegetable. The circle graph shows the results. Which graph on the next slide could represent the same data?

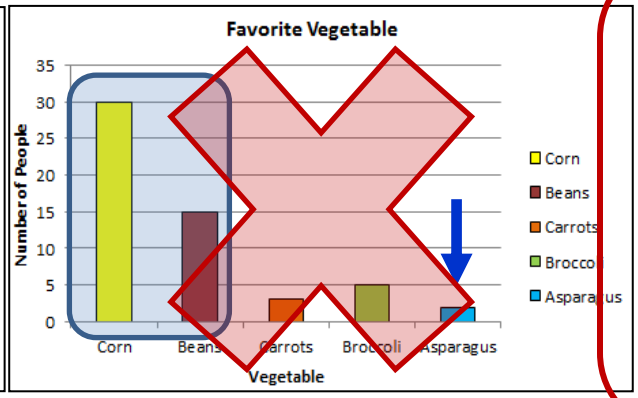


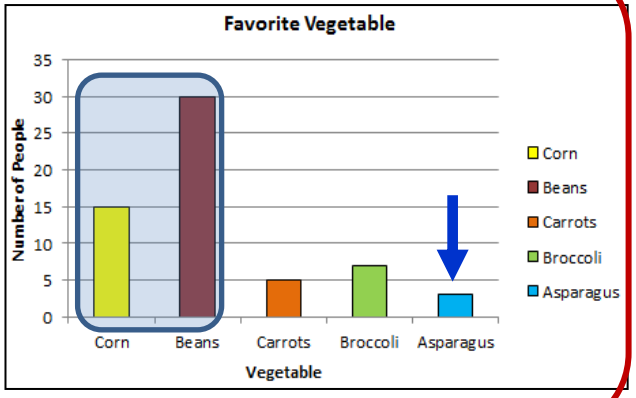
Suggested Practice for SOL 6.14c



Which bar graph could represent the same data?







Determining and Using Measures of Center

SOL 6.15

The student will

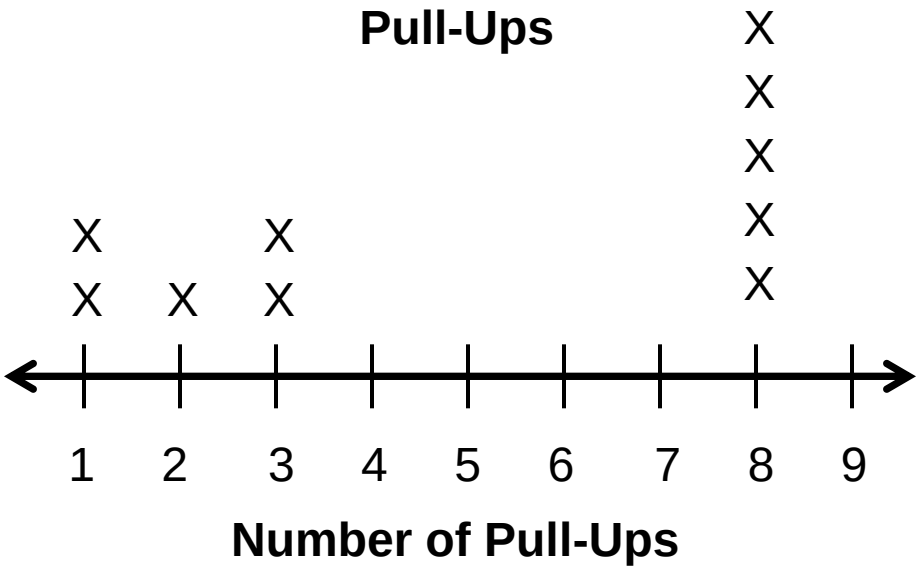
a) describe mean as balance point; and

b) decide which measure of center is appropriate for a given purpose.

Suggested Practice for SOL 6.15a

Students need additional practice finding the balance point of a set of data represented on a line plot.

Jill recorded the number of pull-ups each of ten students did on this line plot. What is the balance point for this data?



Each X represents 1 student.

The balance point for this data is 5.

Suggested Practice for SOL 6.15b

Students need additional practice determining the best measure of center for a given situation.

Andy surveyed his friends to determine the number of books each of them read in February. These are the results of the survey.

3, 2, 3, 19, 2, 1, 2, 2, 2, 2

1. **What is the mean for this data set?** **3.8 books**
2. **What is the median for this data set?** **2 books**
3. **Is the mean or median a more appropriate measure of center to use for this data? Why?**
   Sample answer:
   Since one friend read significantly more books (19), the median provides a more accurate measure. The friend who read 19 books caused the mean to be higher than the number of books read by nine of the ten friends.

Identifying and Extending Sequences

SOL 6.17

The student will identify and extend geometric and arithmetic sequences.

Suggested Practice for SOL 6.17

Students need additional practice identifying the common ratio or common difference for a sequence.

1. **What is the common ratio of this sequence?**

   5, 25, 125, 625, 3125, . . . 5

2. **What is the common ratio of this sequence?**

   3125, 625, 125, 25, 5, . . . $\frac{1}{5}$

3. **What is the common difference of this sequence?**

   55, 58, 61, 64, 67, . . . 3

4. **What is the common difference of this sequence?**

   67, 64, 61, 58, 55, . . . -3

Solving One-Step Equations and Identifying Parts of an Expression

SOL 6.18

The student will solve one-step linear equations in one variable involving whole number coefficients and positive rational solutions.

Suggested Practice for SOL 6.18

Students need additional practice solving one-step equations when answer options are NOT presented in multiple-choice format and when the solutions contain a decimal or fraction.

Solve each equation.

1. $2x = 4.8$ $x = 2.4$

2. $\frac{m}{2} = 4.8$ $m = 9.6$

3. $c + 5\frac{5}{6} = 8\frac{1}{4}$ $c = 2\frac{5}{12}$

4. $\frac{c}{6} = 0.6$ $c = 3.6$

5. $c - 6 = 0.6$ $c = 6.6$

6. $x - 2\frac{4}{5} = 1\frac{7}{8}$ $x = 4\frac{27}{40}$

Practice Items

This concludes the student performance information for the spring 2013 Grade 6 Mathematics SOL test.

Additionally, test preparation practice items for Grade 6 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
Student_assessment@doe.virginia.gov

For questions regarding instruction, please contact
Michael.Bolling@doe.virginia.gov