

Warm-Up

Find each quotient.

$640 \div 100$

$640 \div 50$

$640 \div 25$

$64 \div 25$

Practice

Each table represents a proportional relationship. For each table, find the constant of proportionality and write an equation that represents the relationship.

1.1

| s | P |
|-----|-----|
| 2 | 8 |
| 3 | 12 |
| 5 | 20 |
| 10 | 40 |

Constant of proportionality:

Equation: $P =$

1.2

| d | C |
|-----|------|
| 2 | 6.28 |
| 3 | 9.42 |
| 5 | 15.7 |
| 10 | 31.4 |

Constant of proportionality:

Equation: $C =$

A plane flew at a constant speed between Denver and Chicago. It took the plane 1.5 hours to fly 915 miles.

2.1 Complete the table.

2.2 How far does the plane fly in one hour?

2.3 How far would the plane fly in t hours at this speed?

2.4 If d represents the distance that the plane flies at this speed for t hours, write an equation that relates d and t .

2.5 How far would the plane fly in 10 hours at this speed? Explain or show your reasoning.

| Time (hours) | Distance (miles) |
|--------------|------------------|
| 1 | |
| 1.5 | 915 |
| 2 | |
| 2.5 | |
| t | |

Nathan is planning to ride his bike for 24 minutes.

- 3.1 If he rides at a rate of 3 miles per hour, how far will he travel?
- 3.2 If he rides at a rate of 5 miles per hour, how far will he travel?
- 3.3 Write an equation that Nathan can use to find d , the distance he will travel in 24 minutes, if his rate in miles per hour is represented by r .

Explore

Here are eight columns. Pair up the columns such that each pair creates a table that represents a proportional relationship. Fill in any blanks.

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| a | b | c | d | e | f | g | h |
| 0 | | 4 | 1 | 1 | 0 | | |
| 1 | 9 | 8 | 2 | 2 | 1 | 7 | |
| 2 | 27 | 12 | | | 3 | 14 | |
| | 45 | 16 | 6 | 4 | | 21 | |
| 4 | 90 | | 8 | 5 | 10 | 28 | |

Use the table below to show your solution and the constant of proportionality for each pair.

| Pair | | Constant of Proportionality |
|------|--|-----------------------------|
| | | |
| | | |
| | | |
| | | |

Reflect

- Circle the question you are most proud of completing.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Here are the second and fourth figures in a pattern. Draw Figures 1 and 3.

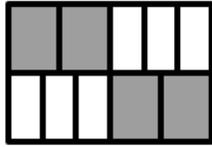


Figure 2

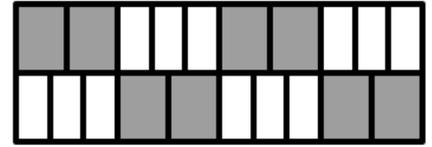


Figure 4

Figure 1

Figure 3

Practice

A performer expects to sell 5 000 tickets for an upcoming concert. They plan to make a total of \$311 000 in sales from these tickets.

- 1.1 Assume that all tickets have the same price. What is the price for one ticket?

- 1.2 How much money will they make if they sell 7 000 tickets?

- 1.3 Write an equation to represent the relationship between the number of tickets sold, x , and the total amount of money (in dollars) that they make, y .

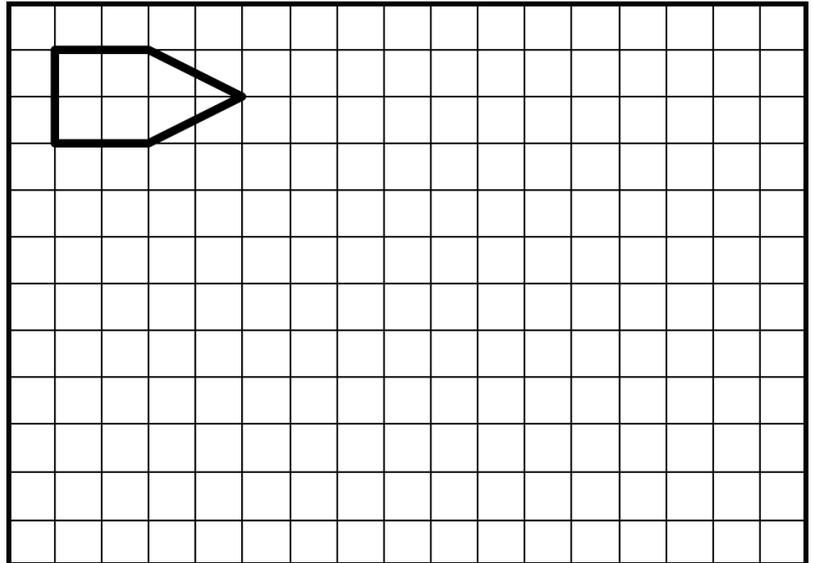
- 1.4 If they make \$379 420, how many tickets have they sold?

- 1.5 How many tickets will they have to sell to make \$5 000 000 ?

Here is a polygon on a grid.

- 2.1 Draw a scaled copy of the polygon using a scale factor of 3. Label the copy *A*.
- 2.2 Draw a scaled copy of the polygon with a scale factor $\frac{1}{2}$. Label it *B*.
- 2.3 Is polygon *A* a scaled copy of polygon *B*?

If so, what is the scale factor that takes *B* to *A*?



Explore

Here are some facts:

- A cheetah ran 100 meters in 6 seconds.
- A sloth took 15 seconds to move 1 meter.
- A mosquito flew about 5 meters every 9 seconds.
- Usain Bolt ran 6.5 meters per second when he broke the 100-meter dash world record.

Complete the table.

| | Speed (meters per second) | Pace (seconds per meter) |
|------------|------------------------------|-----------------------------|
| Cheetah | | |
| Sloth | | |
| Mosquito | | |
| Usain Bolt | | |

Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Find each of the following percentages:

50% of 40

25% of 40

5% of 40

5% of 80

Practice

The relationship between a distance in yards, y , and the same distance in miles, m , is described by the equation $y = 1760m$.

- 1.1 Find some measurements in yards and miles by completing the table.
- 1.2 Is the relationship between a measurement in yards and a measurement in miles for the same distance proportional?

Explain why or why not.

| Distance (mi.) | Distance (yd.) |
|----------------|----------------|
| 1 | |
| 5 | |
| | 3 520 |
| | 17 600 |

2. Select **all** of the equations that represent a proportional relationship.
 - The remaining length, L , of a 120 -inch rope after x inches have been cut off: $120 - x = L$.
 - The total cost, t , after an 8% sales tax is added to an item's price, p : $1.08p = t$.
 - The number of marbles each sister gets, x , when m marbles are shared equally among four sisters: $x = \frac{m}{4}$.
 - The volume, V , of a rectangular prism whose height is 12 cm and base is a square with side lengths s cm: $V = 12s^2$.

3. Use the equation $y = \frac{5}{2}x$ to complete the table.

Is y proportional to x ?

| x | y |
|-----|-----|
| 2 | |
| 3 | |
| 6 | |

4. Use the equation $s = 3.2r + 5$ to complete the table.

Is s proportional to r ?

| r | s |
|-----|-----|
| 1 | |
| 2 | |
| 4 | |

Unit 7.2, Lesson 7: Practice Problems

5. Quadrilateral A has side lengths 3 cm, 4 cm, 5 cm, and 6 cm.

Quadrilateral B is a scaled copy of quadrilateral A with a scale factor of 2.

Select **all** of the possible side lengths of quadrilateral B .

5 cm

6 cm

7 cm

8 cm

9 cm

Explore

Liam and Sadia are running a 60-meter race.

Each of their distances can be represented by an equation, where y is distance in meters and x is time in seconds.

Use this information to complete the table:

- Liam’s distance is represented with the equation $y = 6x$.
- At 8 seconds, Liam is 16 meters ahead of Sadia.

| Time (sec.) | Liam’s Distance (m) | Sadia’s Distance (m) |
|-------------|---------------------|----------------------|
| 0 | | |
| 2 | | |
| 4 | | |
| 6 | | |
| 8 | | |

What is an equation for Sadia’s distance?

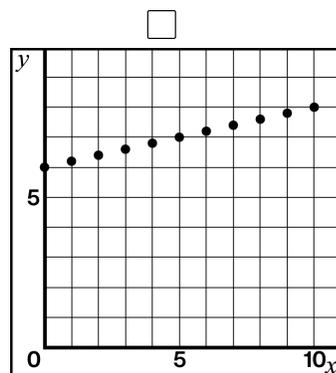
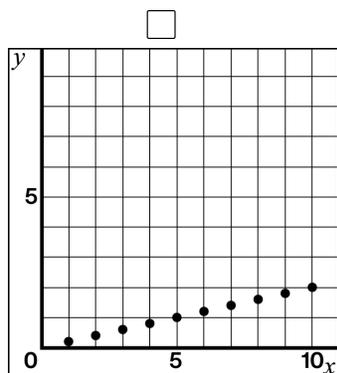
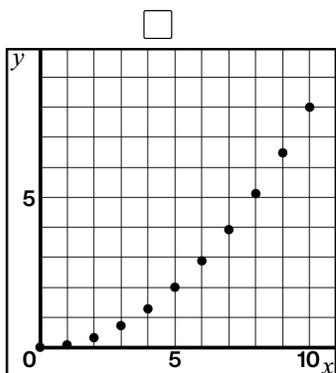
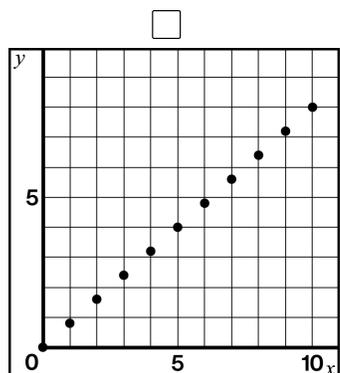
How many meters has Sadia run when Liam finishes the race?

Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the graphs that could represent a proportional relationship.



Practice

A lemonade recipe calls for $\frac{1}{4}$ cup of lemon juice for every 1 cup of water. Use the table to answer each question.

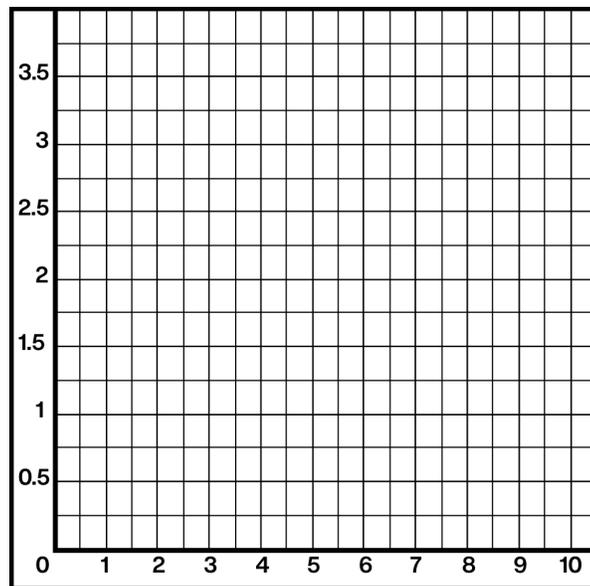
1.1 What does x represent?

1.2 What does y represent?

1.3 Is there a proportional relationship between x and y ?

| x | y |
|-----|----------------|
| 1 | $\frac{1}{4}$ |
| 2 | $\frac{1}{2}$ |
| 3 | $\frac{3}{4}$ |
| 4 | 1 |
| 5 | $1\frac{1}{4}$ |
| 6 | $1\frac{1}{2}$ |

1.4 Use the coordinate plane below to plot the pairs in the table.



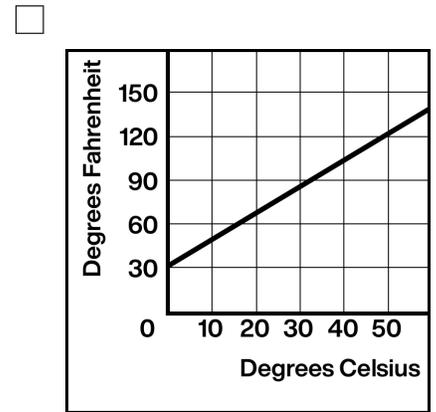
2. Arturo earns \$33.00 for babysitting 4 hours. At this rate, how much will he earn if he babysits for 7 hours?

Explain your reasoning.

3. Select **all** of the proportional relationships.

- The length and width of scaled copies of a rectangle. $y = 3x$

| x | y |
|-----|-----|
| 0 | 1 |
| 1 | 2 |
| 2 | 3 |
| 5 | 6 |



Explore

For each problem, fill in the blanks to create a proportional relationship. Use the digits 0–9 no more than once in each problem. Use the coordinate plane if it helps you with your thinking.

Problem 1

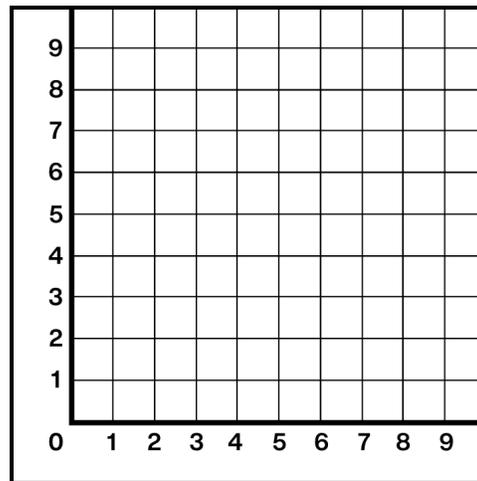
(\square, \square) and (\square, \square)

Problem 2

$(\square, \square), (\square, \square)$ and (\square, \square)

Problem 3

$(\square, \frac{\square}{\square})$ and (\square, \square)



Reflect

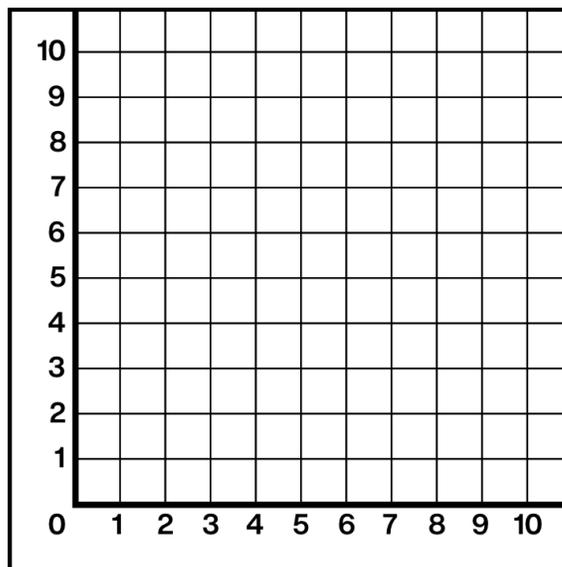
- Circle the question you feel most confident about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Plot the following points on the coordinate plane:

$(0, 10)$, $(1, 8)$, $(2, 6)$, $(3, 4)$, $(4, 2)$

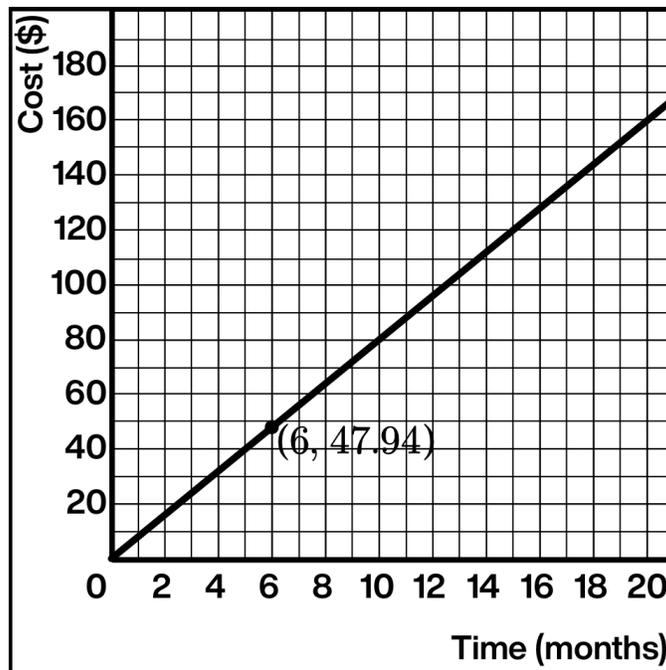
Is this a proportional relationship?



Practice

There is a proportional relationship between the number of months a person has had a streaming service subscription and the total amount of money they have paid for the subscription. After 6 months, a user has paid \$47.94. The point $(6, 47.94)$ is shown in the graph.

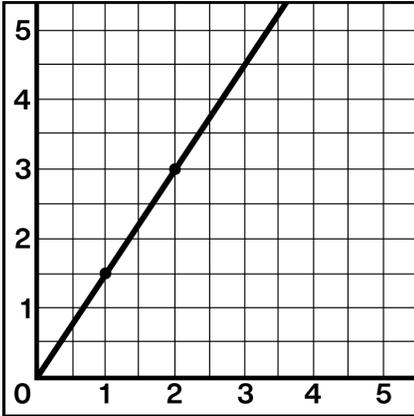
- 1.1 What is the constant of proportionality in this relationship?
- 1.2 What does the constant of proportionality mean in this situation?
- 1.3 Label the point $(1, k)$ on the graph. Determine the value of k .
- 1.4 Determine the coordinates of three more points on this line and label them on the graph.
- 1.5 Write an equation that represents the relationship between C , the total cost of the subscription, and m , the number of months.



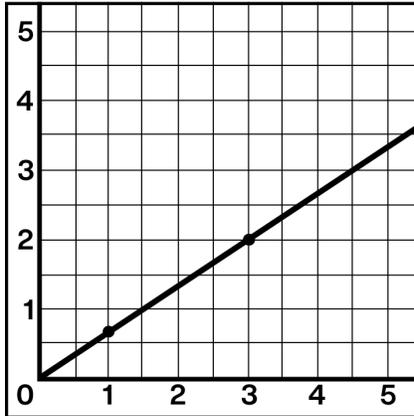
Write an equation for each graph. Choose from the equations listed below.

$y = \frac{2}{3}x$
 $y = \frac{4}{3}x$
 $y = \frac{3}{2}x$

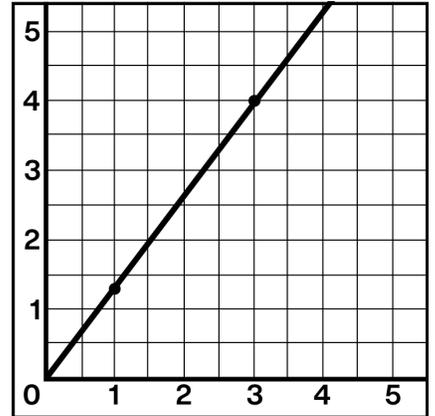
2.1 Equation: _____



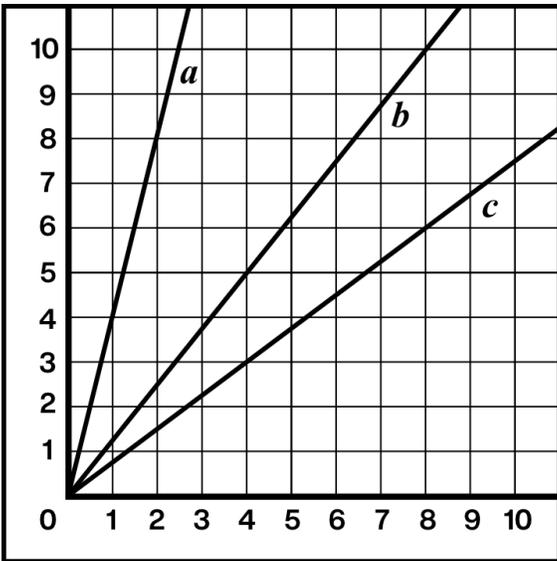
2.2 Equation: _____



2.3 Equation: _____



Explore



Lines a , b , and c represent three different proportional relationships.

Plot and label two points on each line.

State the constant of proportionality for each proportional relationship in the table below.

| Line | Constant of Proportionality |
|------|-----------------------------|
| a | |
| b | |
| c | |

Reflect

1. Circle the question you enjoyed doing the most.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the equations that are true.

$\frac{3}{2} \cdot 16 = 3 \cdot 8$

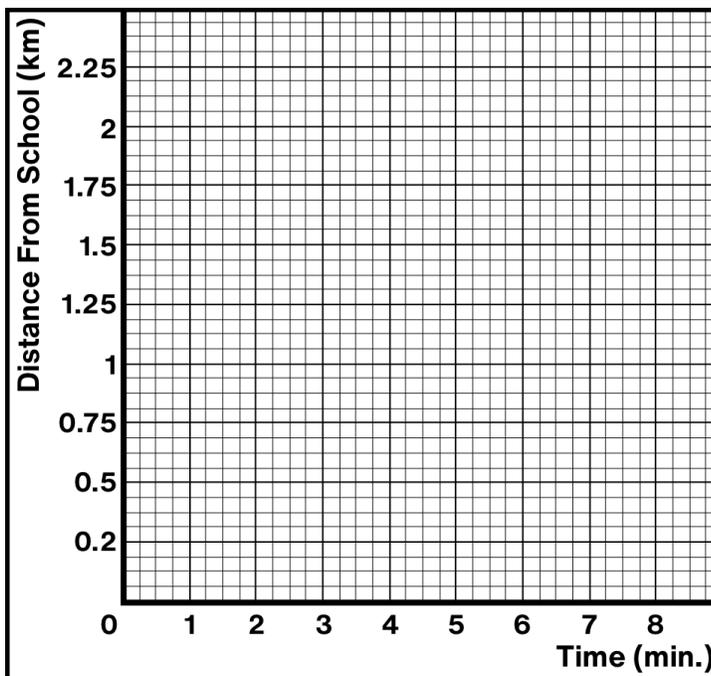
$\frac{3}{4} \div \frac{1}{2} = \frac{6}{4} \div \frac{1}{4}$

$2.8 \cdot 13 = 0.7 \cdot 52$

Practice

Mia and Jamal bike home from school at a steady pace. Mia bikes 1.25 kilometers and it takes her 4 minutes. Jamal bikes 1.75 kilometers and it takes him 7 minutes.

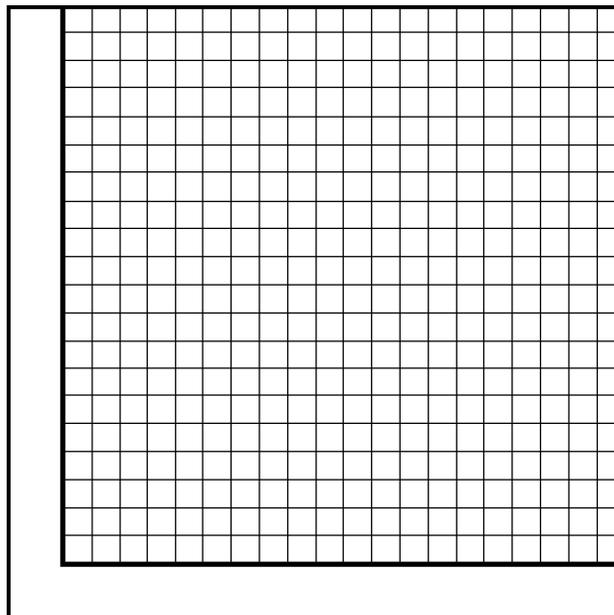
- 1.1 Graph two lines that represent Jamal's and Mia's bike rides.
- 1.2 For each line, plot and label the point $(1, k)$. Then find each value of k .
- 1.3 Who bikes faster?



At a supermarket, you can fill your own honey container and pay by the ounce.

A customer buys 12 ounces of honey for \$5.40.

- 2.1 How much does the honey cost per ounce?
- 2.2 How much honey can you buy per dollar?
- 2.3 Write two different equations that represent this situation. Use h for ounces of honey and c for cost in dollars.



Unit 7.2, Lesson 10: Practice Problems

2.4 Choose one of your equations, and sketch its graph. Be sure to label the axes.

3. The point $(3, \frac{6}{5})$ lies on a graph representing a proportional relationship. Select **all** of the points that also lie on the same graph.

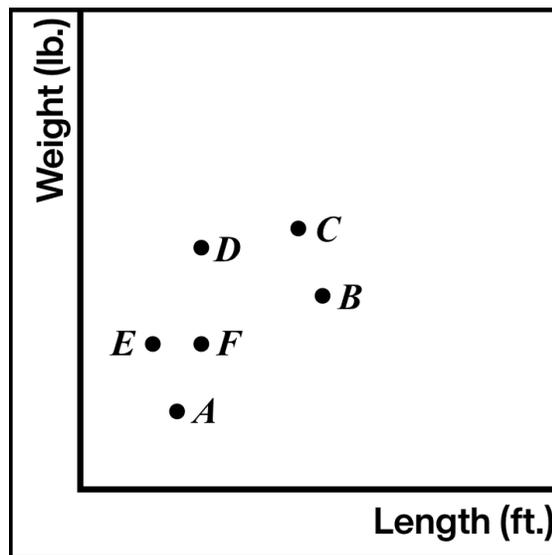
- $(1, 0.4)$
 $(1.5, \frac{6}{10})$
 $(\frac{6}{5}, 3)$
 $(4, \frac{11}{5})$
 $(15, 6)$

Explore

A company makes three thicknesses of rope: thin, medium, and thick. Rope can be purchased in any amount. Each point represents one purchase.

For each point, identify whether it represents a purchase of **thin**, **medium**, or **thick** rope.

| Point | Thickness |
|----------|-----------|
| <i>A</i> | |
| <i>B</i> | |
| <i>C</i> | |
| <i>D</i> | |
| <i>E</i> | |
| <i>F</i> | |



Reflect

- Circle the question you feel most confident about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the coordinate pairs that could be part of a proportional relationship with a constant of proportionality of 4.

(3, 12)

(4, 8)

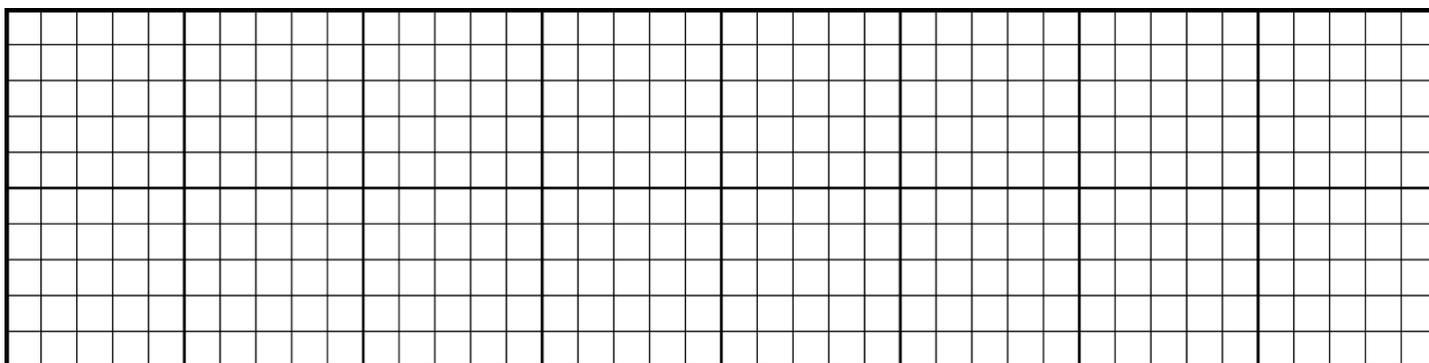
(3.5, 14)

(6, 10)

($\frac{1}{2}$, 2)

Practice

Draw several squares of different sizes. Then, explain whether each relationship below is proportional or not. Use measurement tools if they help you with your thinking.



1.1 **Side length of a square vs. area**

Is this relationship proportional? _____

Explain your thinking.

1.2 **Side length of a square vs. perimeter**

Is this relationship proportional? _____

Explain your thinking.

1.3 **Side length of a square vs. diagonal**

Is this relationship proportional? _____

1.4 **Diagonal of a square vs. area**

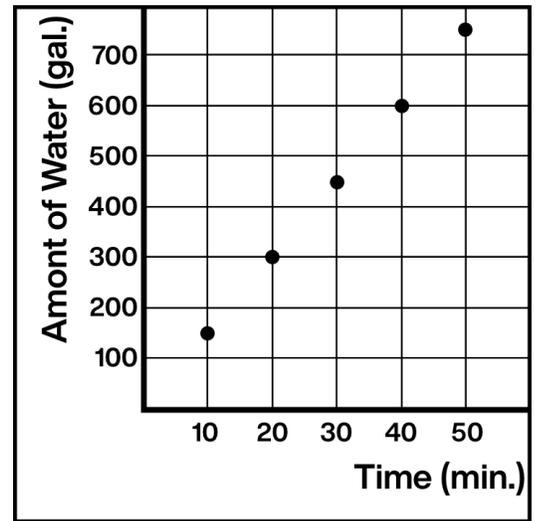
Is this relationship proportional? _____

Unit 7.3, Lesson 1: Practice Problems

This graph shows the amount of water in a swimming pool as it is being filled.

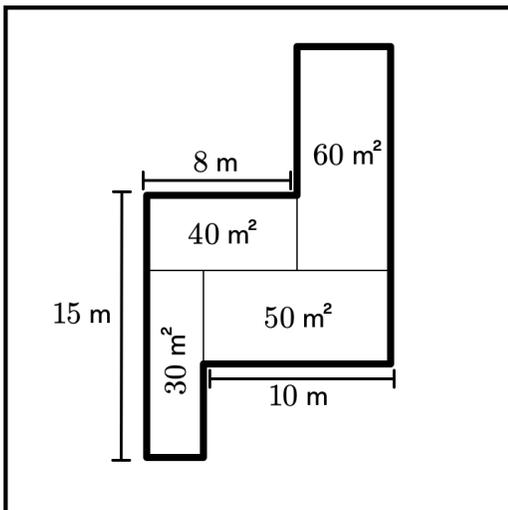
2.1 Explain how you know that the relationship between time and amount of water is proportional.

2.2 Estimate a constant of proportionality for this relationship. What does this number mean?



2.3 This pool is safe to swim in when it contains 9 000 gallons of water. Estimate how long it will take to fill the pool to this level.

Explore



This shape is made up of four rectangles.

Determine the total perimeter of the shape.

Reflect

1. Circle the question that was most challenging for you.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

$\frac{2}{3}$ of a cup of pancake mix makes 6 pancakes. How many pancakes can you make with . . .

. . . 2 cups of pancake mix? . . . 1 cup of pancake mix? . . . $3\frac{1}{3}$ cups of pancake mix?

Practice

- Eliza measured the diameter and circumference of several circular objects and recorded his measurements in a table.

For which object do you think the measurements are the least accurate? Explain your thinking.

| Object | Diameter (cm) | Circumference (cm) |
|------------------|---------------|--------------------|
| Half dollar coin | 3 | 10 |
| Flying disc | 23 | 50 |
| Jar lid | 8 | 25 |
| Flower pot | 15 | 48 |

- Complete the table to determine the missing measurements of each object.

| Object | Radius | Diameter | Circumference |
|------------------|--------|----------|---------------|
| Hula hoop | | 36 in. | |
| Circular pond | | | 556 ft. |
| Magnifying glass | | 5.2 cm | |
| Car tire | | | 71.6 in. |

Unit 7.3, Lesson 3: Practice Problems

Decide if the measurement described in each statement is the diameter, radius, or circumference of the object. Then, calculate the other two measurements for the circle.

3.1 The distance across the average circular dinner plate is 11 inches.

3.2 The tires on a mining truck are 14 feet tall.

3.3 The distance from the tip of a slice of pizza to the crust is 6 inches.

3.4 The length of the metal rim around a glass lens is 190 millimeters.

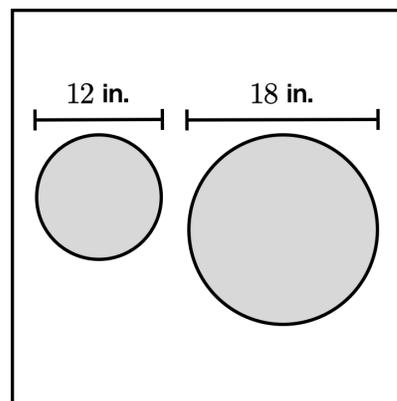
Explore

Patty's π -zza shop is offering a special: two 12-inch pizzas for the same price as one 18-inch pizza.

Eliza thinks the crust is the best part of the pizza.

Should Eliza buy two 12-inch pizzas or one 18-inch pizza?

Explain your thinking.



Reflect

1. Draw a star next to a question where you revised your thinking.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Here are several mixtures for different shades of purple paint.

How many cups of red paint per cup of blue paint does each mixture use?

| Mixture A | Mixture B | Mixture C | Mixture D |
|--------------------------------------|--------------------------------------|--|---|
| 4 cups of red 12 cups of blue | 4 cups of red 6 cups of blue | 3 cups of red $\frac{1}{2}$ cup of blue | $\frac{3}{4}$ cup of red $\frac{1}{2}$ cup of blue |
| _____ cups of red per cup of blue | _____ cups of red per cup of blue | _____ cups of red per cup of blue | _____ cups of red per cup of blue |

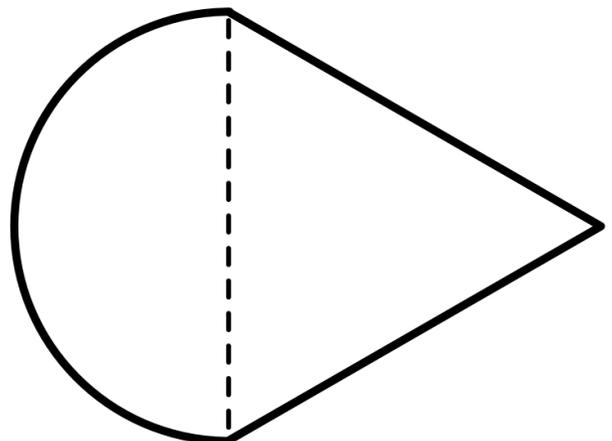
Practice

1.1 A circle with a 12-inch diameter is folded in half and then folded in half again to create a quarter circle. Draw a picture of this shape. Label any important measurements.

1.2 What is the perimeter of this shape?

2. A half circle is joined to an equilateral triangle whose sides are each 10 units long.

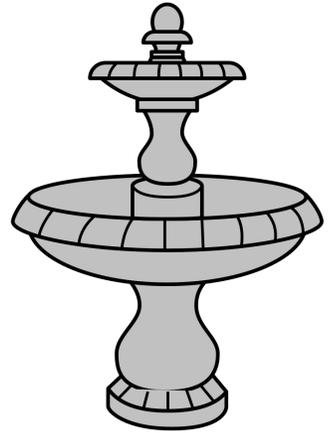
What is the perimeter of this shape?



Unit 7.3, Lesson 4: Practice Problems

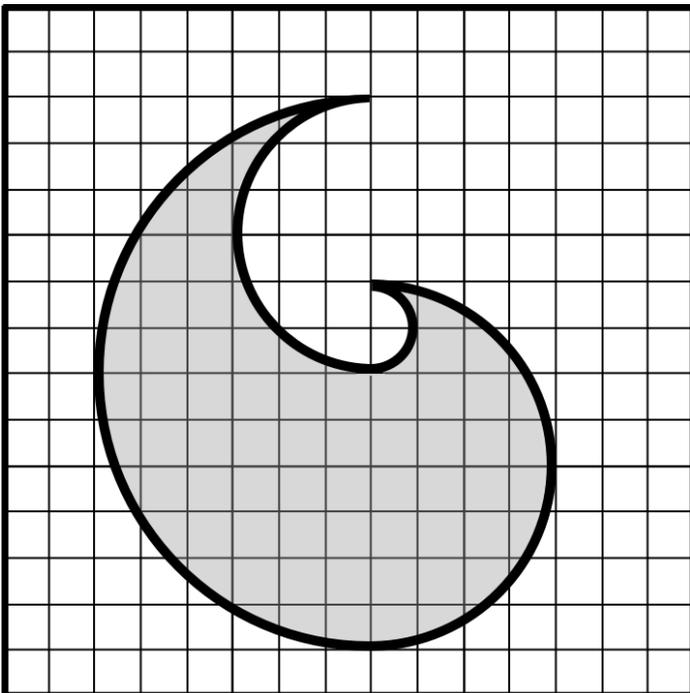
3. The distance around a water fountain is 150 inches.

What is the distance from the edge of the fountain to the center?



Explore

This shape is made from parts of circles. Determine its perimeter.



Reflect

1. Circle the question you are most proud of completing.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

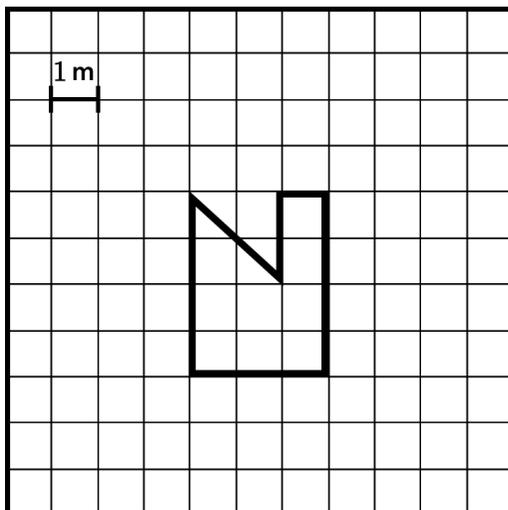
Select **all** of the expressions that are equivalent to 48.

- $3 \cdot 4^2$
 $6 + 6 \cdot 4$
 50% of 96
 $(3 \cdot 4)^2$
 $4(6 + 6)$

Practice

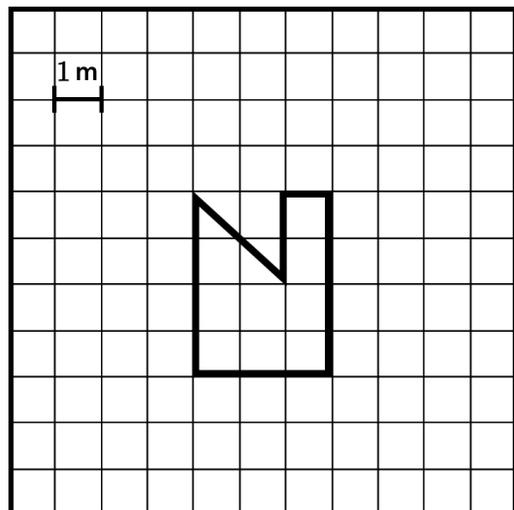
1.1 What is the area of this figure?

Draw to help to show your thinking.



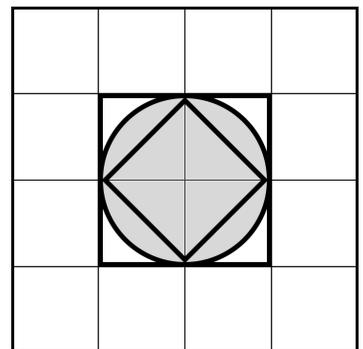
1.2 Describe another way to determine the area of this figure.

Draw to help show your thinking.



2. Here is a picture of two squares and a circle.

Use the picture to explain why the area of the circle is more than 2 square units but less than 4 square units.



Unit 7.3, Lesson 5: Practice Problems

Circle A has a circumference of 25 centimeters.

Circle B 's diameter is 3 times as long as circle A 's diameter.

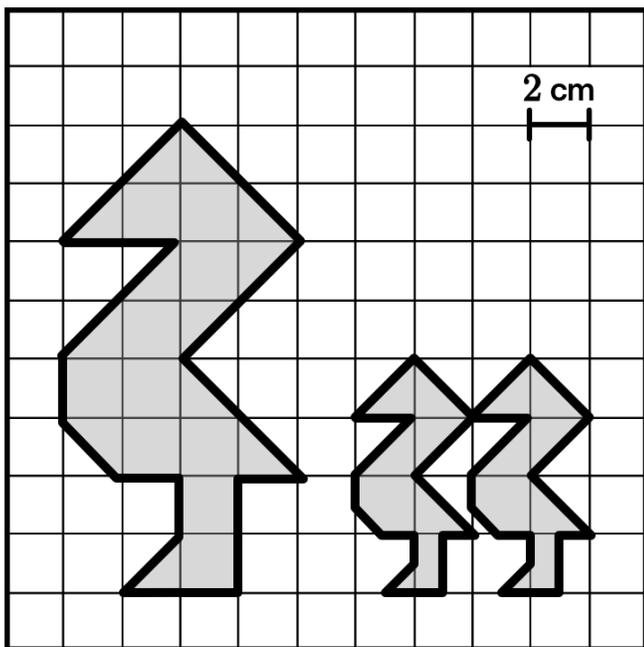
3.1 What is the circumference of circle B ?

3.2 Do you think the area of circle B will be 3 times as large as the area of circle A ?

Explain your thinking.

Explore

Find the total shaded area.



Reflect

1. Put a smiley face next to the question you spent most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Match each fraction expression to an equivalent percent expression.

- | | |
|----------------------|---------------------------------|
| A. 50% of a number | _____ $\frac{1}{8}$ of a number |
| B. 40% of a number | _____ $\frac{1}{4}$ of a number |
| C. 25% of a number | _____ $\frac{1}{2}$ of a number |
| D. 12.5% of a number | _____ $\frac{2}{5}$ of a number |

Practice

For each problem, decide whether the circumference of the circle or the area of the circle is more useful for finding a solution. Then answer the question.

- 1.1 Jada paints a circular table that is 30 inches across. How much paint does she need?

Circumference or area? _____

Answer the question.

- 1.2 The radius of Earth is approximately 6 400 kilometers. The equator is the circle around Earth that divides it into the northern and southern hemisphere. What is the length of the equator?

Circumference or area? _____

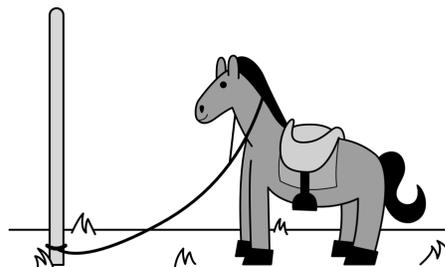
Answer the question.

- 1.3 A horse is tied with a 10-foot-long rope to a pole on a grassy field.

How much grass does the horse have access to?

Circumference or area? _____

Answer the question.



Unit 7.3, Lesson 6: Practice Problems

2. Here are the diameters of four coins.

Select two coins. Calculate the amount of metal (the area) on one side of each coin.

Coin #1: _____

Area of one side: _____

Coin #2: _____

Area of one side: _____

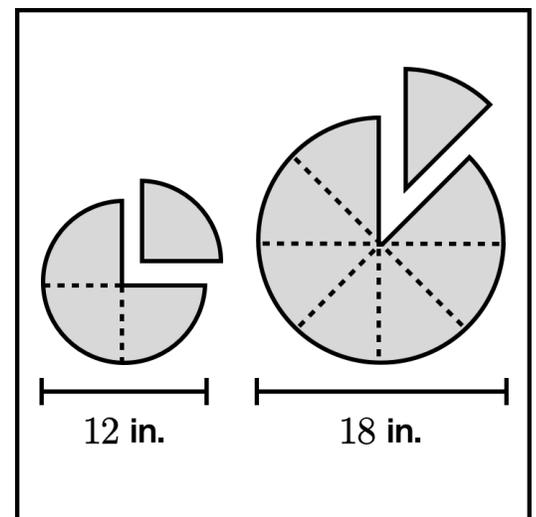
| Coin | Diameter (cm) |
|---------|---------------|
| Penny | 1.9 |
| Nickel | 2.1 |
| Dime | 1.8 |
| Quarter | 2.4 |

Explore

Here are two slices of pizza from different-size pizzas.

Answer each question and explain your thinking.

- Which slice is bigger?
- Would you get more pizza if you buy two 12-inch pizzas or one 18-inch pizza?



Reflect

1. Put a star next to the question you thought was the most important.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

The area of a circle is 60 square units. What is the area of . . .

. . . 50% of the circle?

. . . 25% of the circle?

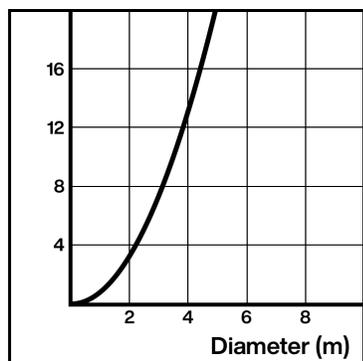
. . . 20% of the circle?

Practice

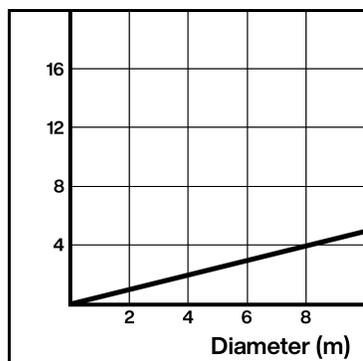
Match each graph to the relationship it could represent. Explain your thinking.

Relationships:

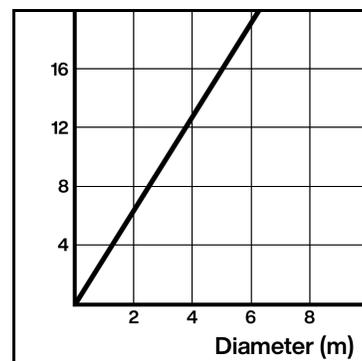
- A. Radius of a circle vs. its diameter
- B. Circumference of a circle vs. its diameter
- C. Area of a circle vs. its diameter



1.1 Which relationship? _____
Explain your thinking.



1.2 Which relationship? _____
Explain your thinking.



1.3 Which relationship? _____
Explain your thinking.

1.4 For each proportional relationship, what is the constant of proportionality?

1.5 What is the area of a circle with a diameter of 6 meters?

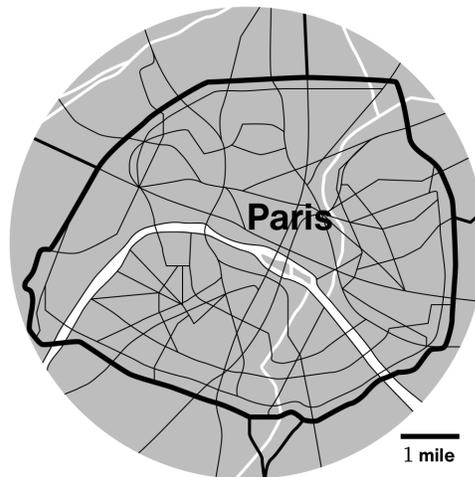
Unit 7.3, Lesson 7: Practice Problems

The city of Paris, France, is surrounded by an almost circular road called the Périphérique.

Use the map and the scale to estimate . . .

2.1 . . . the length of the road.

2.2 . . . the total area enclosed by the road.

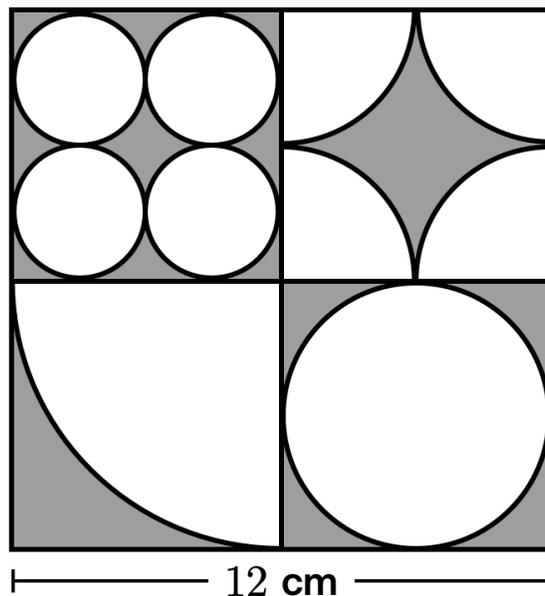


Explore

This square contains circles and parts of circles.

Determine the shaded area of the 12 cm square.

Express your answer in terms of π .



Reflect

1. Circle the question that you are least confident about on this practice worksheet.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

The area of a circle is 80 square units. What is the area of . . .

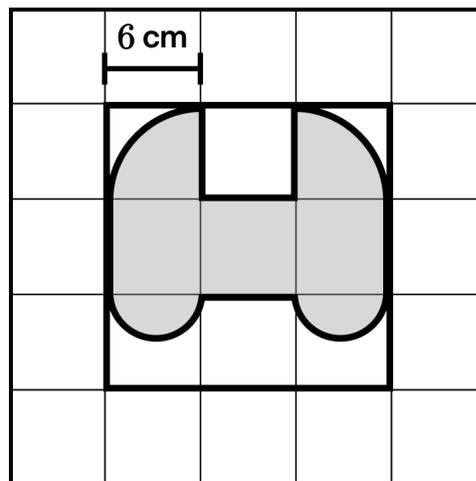
. . . 10% of the circle?

. . . 5% of the circle?

. . . 15% of the circle?

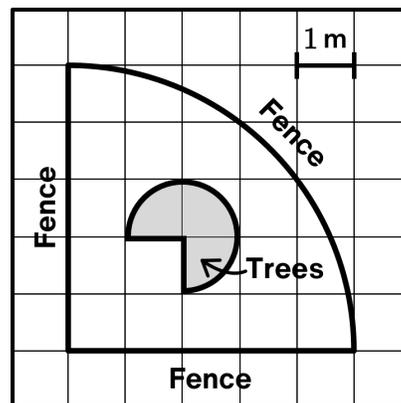
Practice

- Calculate the area of this figure.



This is the architectural plan for a fenced-in garden. The shaded region represents an area for trees.

- How long is the fence around the edge of the garden?
(Do not include the edge around the tree region.)



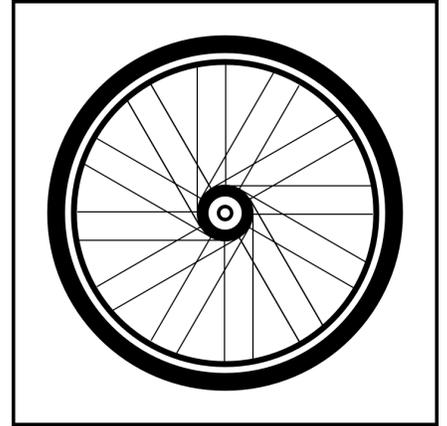
- What is the area of the tree region?

- If the rest of the garden is planted with flowers, how much area is covered with flowers?

Unit 7.3, Lesson 8: Practice Problems

3.1 The diameter of Pilar's bike wheel is 24 inches.

How far does Pilar's bike travel when the wheel makes 10 complete rotations?

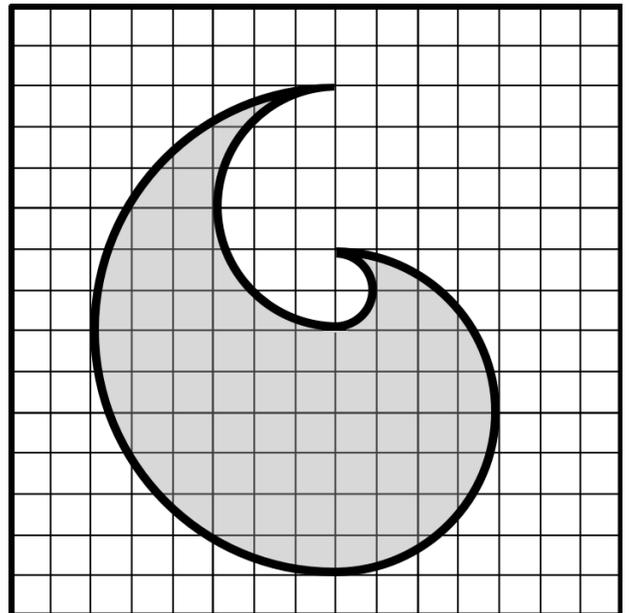


3.2 Is the relationship between the number of rotations of the wheel and the distance it travels proportional?

Explain your thinking.

Explore

Determine the area of this shape.
Express your answer in terms of π .



Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Shade in $\frac{3}{4}$ of the rectangle below.



Shade in $\frac{3}{5}$ of the rectangle below.

**Practice**

1. Here are 24 stars. Circle 25% of these stars.



2. Evan made 40 muffins. 25% of the muffins are chocolate. How many muffins are chocolate?

3. Which is greater: 75% of 12 or 25% of 32?
Show how you know.



Unit 6.3, Lesson 8: Practice Problems

Complete each statement. Make a tape diagram if it helps you with your thinking.

4.1 25% of 20 is _____.

4.2 25% of 60 is _____.

4.3 25% of 200 is _____.

5. The length of an olympic pool is 50 meters. What is its length in yards?
(11 meters is about 12 yards.)

A. 51

B. 45.8

C. 54.5

D. 58.2

6. At Florida A&M University, the ratio of students from Florida to students **not** from Florida is about 3 : 1 . How many of its 12 000 students are from Florida?

Explore

Which is greater: 50% of 25 or 25% of 50 ?

Explain your reasoning.

Reflect

1. Put a smiley face next to a question you were stuck on and then figured out.
2. Use the space below to ask one question you have or to share something you are proud of.

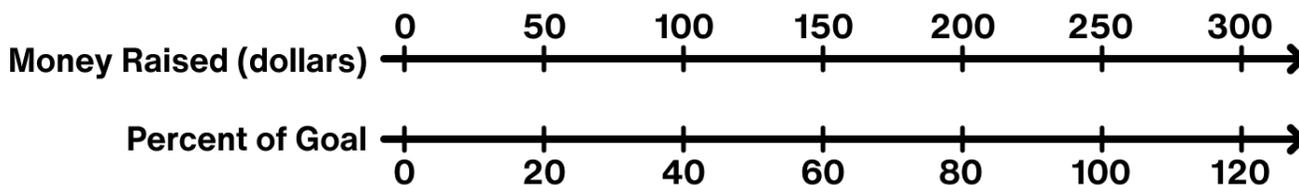
Warm-Up

What percent of each figure is shaded?



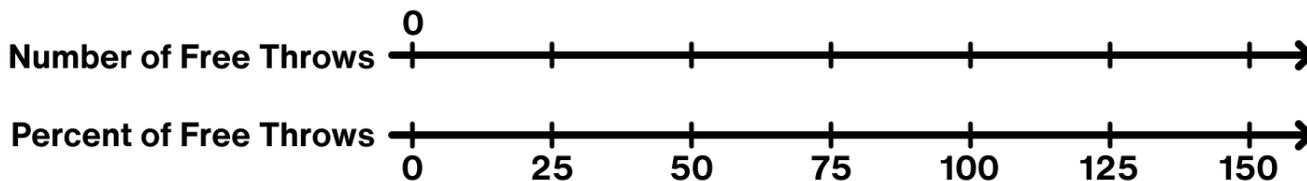
Practice

Here is a double number line that Deja made to measure her fundraising goal progress.



- 1.1 How much was Deja's fundraising goal?
- 1.2 A local store donated \$100. What percent of the goal amount is that?
- 1.3 One person donated 10% of the goal. How much money did that person donate?
- 1.4 Deja ended up raising 140% of her goal. How much money did she raise?

- 2. During basketball practice, Martina attempted 40 free throws. 25% of those attempts went into the basket. How many of her free throws went into the basket? Use the double number line diagram if it helps with your thinking.



Unit 6.3, Lesson 9: Practice Problems

Leonardo works as a server in a restaurant. He gets a 20% tip on the food cost for every order.

3.1 What tip will he get when the food costs \$60 ?

3.2 What tip will he get when food costs \$82 ?

3.3 Leonardo got an \$18 tip. What was the cost of the food for this order?

Light travels about 180 000 000 kilometers in 10 minutes. This could also be written as:

4.1 _____ kilometers **per minute**

4.2 _____ kilometers **per second**

4.3 How far can light travel in 7 minutes?

Explore

Which is greater?

50% of 20% of 200 or 20% of 50% of 200

Explain your reasoning.

Reflect

1. Circle a question you are still curious about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Calculate the following values.

50% of 70

10% of 70

1% of 70

2% of 70

Practice

1. A store is having a 30% off sale. The regular price for headphones is \$150. How much would a customer save with the sale?

2. Order the following expressions from least to greatest.

55% of 180

300% of 26

12% of 700

Least

Greatest

3. To find 40% of 75, Jamal calculates $\frac{2}{5} \cdot 75$. Does his calculation give the correct value for 40% of 75? Explain or show how you know.

4. Emika has a monthly budget for her cell phone bill. Last month she spent 120% of her budget, and the bill was \$60. What is Emika's monthly budget?

Unit 6.3, Lesson 11: Practice Problems

5. Two stores sell identical sandwich rolls in different-size packages. Store A sells a six-pack for \$5.28 . Store B sells a four-pack for \$3.40 . Which store offers the better per-roll price? Explain your reasoning.

On a field trip, there are 3 chaperones for every 20 students. There are 92 total people on the trip.

- 6.1 How many chaperones are there? 6.2 How many children are there?

Explore

Using the digits 0–5 without repeating, fill in each blank such that the left expression is greater than the right expression.

Left **Right**

□□ % of 50 50% of □□

Are you ready for more?

Is it possible to make the left and right expressions have the same value? Explain your thinking.

Reflect

1. Put a heart next to the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Calculate the following values:

10% of 27

1% of 27

6% of 27

16% of 27

Practice

1. Select **all** of the expressions that will correctly calculate what percent 19 is of 20.

$\frac{19}{20} \cdot 100$

$\frac{19}{20} \div 100$

$\frac{20}{19} \cdot 100$

$\frac{19 \cdot 100}{20}$

2. A bathtub can hold 80 gallons of water. The faucet flows at a rate of 4 gallons per minute. What percent of the tub will be filled after 6 minutes? Explain your thinking.

A 6th grade class did a weekend fitness challenge. Each student set a goal of 75 minutes of fitness.

- 3.1 Luca exercised for 54 minutes. What percent of the goal did he achieve?

- 3.2 Brandon did 64% of the recommendation. How many minutes did he exercise for?

- 3.3 Amanda exercised for 78 minutes. What percent of the goal did she achieve?



Unit 6.3, Lesson 12: Practice Problems

Complete each statement.

- 4.1 20% of 60 is _____. 4.2 ____% of 50 is 41. 4.3 75 is ____% of 250.

5. Demetrius needs 48 hot dogs. He can buy them in six-packs for \$2.10 per pack, or eight-packs for \$3.12 per pack. What's the cheapest way for him to buy 48 hot dogs? Explain your reasoning.

Explore

The numbers 5 and 20 have a special relationship:

$$\frac{1}{5} \text{ is equivalent to } 20\%. \quad \frac{1}{20} \text{ is equivalent to } 5\%.$$

Are there any other numbers that have a relationship like this? Why does this relationship happen?

Reflect

1. Put a star next to the question you understood best.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Fill in each blank.

14 is 100% of _____. 14 is 50% of _____. 14 is 10% of _____. 14 is 40% of _____.

Practice

The sale price of every item in a store is 85% of its regular price.

1.1 The regular price of a backpack is \$30 . What is its sale price?

1.2 The sale price of a soccer ball is \$15.30 . What is its regular price?

1.3 The sale price of a jacket is \$21.08 . What is its regular price?

Last Sunday, an amusement park had 1 575 visitors.

2.1 56% of the visitors were adults. How many adults visited the park?

2.2 16% of the visitors were teenagers. How many teenagers visited the park?

2.3 28% of the visitors were children ages 12 and under. How many children visited the park?

Unit 6.3, Lesson 13: Practice Problems

3. A school has 1 140 students. On the last day of school, 1 092 students attended. What percent of students were at school that day?

Complete each statement.

- 4.1 5% of 70 is _____.
- 4.2 25% of _____ is 6.
- 4.3 12% of 700 is _____.

Calculate the price for 11 cans of dog food at each store. Show or explain your reasoning.

- 5.1 The cost of 5 cans of dog food at Store A is \$4.35.
- 5.2 The cost of 20 cans of dog food at Store B is \$18.40.

Explore

Fill in the boxes to make a true sentence. First, use the digits 0–9 as many times as you want. Then try again without repeating any digits.

is 50% of
and 25% of

What do you notice about all the solutions?

Reflect

- Put a star next to a question you are still curious about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

What number is 40% of 160?

What number is 160% of 40?

Practice

A cyclist bikes 3.75 miles in 0.3 hours.

- 1.1 How fast was she biking in miles per hour?
- 1.2 At that rate, how long will it take her to bike 4.5 miles?
2. A recipe calls for $\frac{1}{2}$ cup of sugar and 1 cup of flour. Complete the table to show how much sugar and flour is needed for different batches of the recipe.

| Sugar (cups) | Flour (cups) |
|---------------|----------------|
| $\frac{1}{2}$ | 1 |
| $\frac{3}{4}$ | |
| | $1\frac{3}{4}$ |
| 1 | |
| | $2\frac{1}{2}$ |

A punch recipe calls for $1\frac{1}{2}$ quarts of sparkling water and $\frac{3}{4}$ of a quart of grape juice.

- 3.1 How much sparkling water would you need to mix with 9 quarts of grape juice?
- 3.2 How much grape juice would you need to mix with $3\frac{3}{4}$ quarts of sparkling water?
- 3.3 How much of each ingredient would you need to make 75 quarts of punch?



Unit 7.4, Lesson 2: Practice Problems

4. Circle **all** of the ratios that are equivalent to $4 : 5$.
- A. $2 : 2.5$ B. $3 : 4$ C. $3 : 3.75$ D. $8 : 10$ E. $14 : 27.5$

Crater Lake in Oregon is shaped like a circle with a diameter of about 5.5 miles.

5.1 How far is it around the outside of Crater Lake?

5.2 What is the area of Crater Lake's surface?

A certain type of car has room for 4 passengers.

6.1 Write an equation relating the number of cars, n , to the number of passengers, p .

6.2 How many passengers could fit in 78 cars?

6.3 How many cars would be needed to fit 78 passengers?

Explore

A school sends out a survey to all of its students. 93.6% of the students complete the survey.

What are some possibilities for the exact number of students that attend the school?

Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

It takes an ant farm 3 days to consume $\frac{1}{2}$ of an apple. At that rate, how many days will it take the ant farm to consume 3 apples?

Practice

A snail is moving away from a rock. The equation $d = 3t$ represents the relationship between the distance, d , in inches that the snail is from the rock and time, t , in minutes.

- 1.1 What does the number 3 represent in the equation?
- 1.2 How many minutes does it take for the snail to reach a distance of 9 inches from the rock?
- 1.3 How far will the snail be from the rock after 9 minutes?

At a deli counter, someone buys:

- $1\frac{3}{4}$ pounds of ham for \$14.50.
- $2\frac{1}{2}$ pounds of turkey for \$26.25.
- $\frac{3}{8}$ of a pound of roast beef for \$5.50.

2.1 Which deli meat is the **least** expensive per pound?

2.2 Which deli meat is the **most** expensive per pound?

3. Angel checks out 12 library books and Inola checks out $\frac{1}{3}$ less than that. How many books does Inola check out?

Unit 7.4, Lesson 3: Practice Problems

4. To make a shade of paint called Jasper Green, mix 4 quarts of green paint with $\frac{2}{3}$ of a cup of black paint.

How much green paint should be mixed with 4 cups of black paint to make Jasper Green?

5. Could a circle have both a diameter of 7.2 inches and a circumference of 28 inches? Explain why or why not.

Explore

Fill in the blanks using the digits 0 to 9 no more than once each.

Use the space below to record any of your thinking as you experiment.

$$\frac{\square}{\square} \text{ of } \square = \frac{\square}{\square} \text{ of } \square$$

Reflect

1. Put a smiley face next to the question you spent most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Solve each equation.

$$\frac{5}{2} \cdot x = 1$$

$$x \cdot \frac{7}{3} = 1$$

$$1 \div \frac{11}{2} = x$$

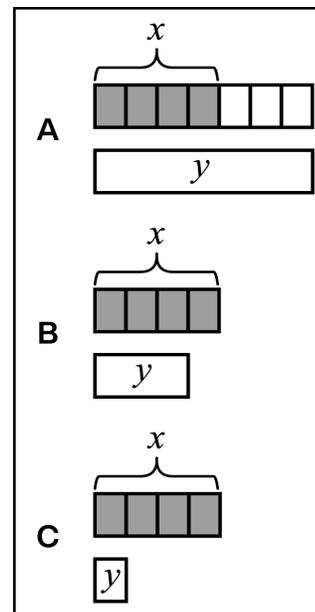
Practice

Match each situation to a diagram.

1.1 Hoang drinks x ounces of juice. Nekeisha drinks $\frac{1}{4}$ less than that.

1.2 Hoang runs x miles. Nekeisha runs $\frac{3}{4}$ more than that.

1.3 Hoang buys x pounds of almonds. Nekeisha buys $\frac{1}{4}$ of that.



Draw diagrams to represent the following situations.

2.1 The amount of flour that the bakery used this month was a 40% increase compared to last month.

2.2 The amount of milk that the bakery used this month was a 75% decrease compared to last month.

3. At the beginning of the month, there were 80 ounces of peanut butter in the pantry. Since then, our family has eaten 30% of the peanut butter. Which expression represents the ounces of peanut butter left in the pantry?

A. $0.7 \cdot 80$

B. $0.3 \cdot 80$

C. $8 - 0.30$

D. $(1 + 0.3) \cdot 80$

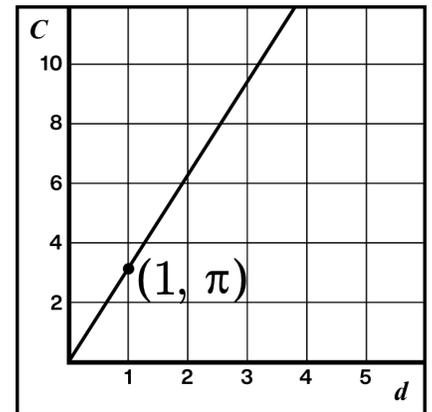
Unit 7.4, Lesson 4: Practice Problems

A grocer can buy strawberries for \$1.38 per pound.

- 4.1 Write an equation relating the cost, c , and the pounds of strawberries, p .
- 4.2 A strawberry order costs \$241.50. How many pounds did the grocer order?

- 5. This graph shows the relationship between the diameter and the circumference of a circle, with the point $(1, \pi)$ shown.

Find and label **three** more points that are on the line.



Explore

Fill in the boxes to make a true sentence. First, use digits 1–9 as many times as you want. Then try again without repeating any digits.

is 50% of
and 75% of

What do you notice about all the solutions?

Reflect

- 1. Circle the problem you are most proud of completing.
- 2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Circle the decimal number that is the best estimate of the fraction $\frac{29}{40}$. Explain your reasoning.

A. 0.5

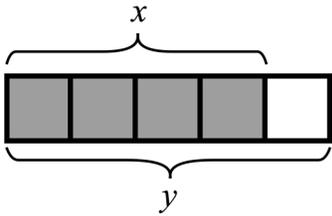
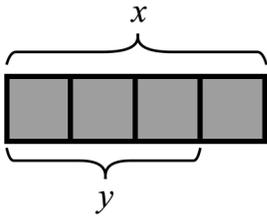
B. 0.6

C. 0.7

D. 0.8

Practice

Write a situation that matches the diagram, or make a diagram that matches the situation.

| Situation | Diagram |
|--|---|
| 1.1 The number of people in a town with high-speed internet access has increased by 50% in the past decade. | |
| 1.2 |  |
| 1.3 The amount of paper that the copy shop used this month decreased by 20% compared to what they used last month. | |
| 1.4 |  |
| 1.5 The number of miles driven this month is 30% less than the number of miles driven last month. | |

Unit 7.4, Lesson 5: Practice Problems

A pair of designer sneakers was purchased for \$120. Since the purchase, the price of the sneakers has increased by 15%.

2.1 What is the new price?

2.2 If x is the price before the increase and y is the price after the increase, which equations are correct? Circle **all** that apply.

A. $y = 1.15x$

B. $y = x + 0.15$

C. $y = x + 0.15x$

D. $y = x + 15$

E. $y = (1 + 0.15)x$

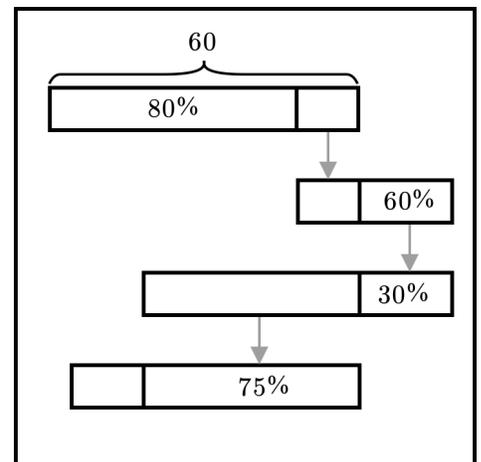
3.1 Write a story that can be represented by the equation $y = x + \frac{1}{5}x$.

3.2 What is the value of y when x is 40? What does that number mean in your story?

Explore

Here are four tape diagrams. Each diagram is split into two pieces that add up to 100%.

The top diagram has a length of 60 units. Determine the length of the bottom diagram.



Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

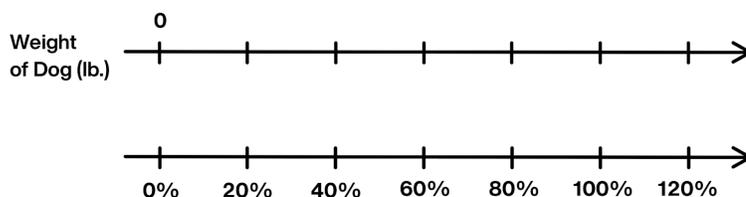
Circle **all** of the expressions that represent an 8% increase compared to x .

- A. $0.08x$ B. $x + 0.08$ C. $1.08x$ D. $x + 0.08x$ E. $(1 + .08)x$

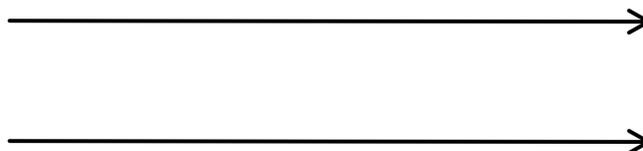
Practice

For each problem, complete the double number diagram if it is helpful. Then answer the question.

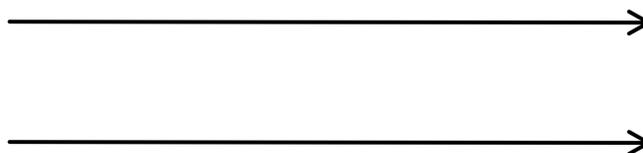
- 1.1 A dog weighs 20% more than it did three months ago. It weighs 36 pounds now. How much did the dog weigh three months ago?



- 1.2 Jessica estimated that her family used 30% more water this month compared to last month. They used 12 000 gallons of water last month. How much water did they use this month?



- 1.3 A bakery used 25% less butter this month than last month. The bakery used 240 kilograms of butter this month. How much did it use last month?



Each week, the price of oranges at the farmer's market increases by 20%.

- 2.1 Circle **all** the equations that represent the relationship between the price of oranges last week, x , and the price of oranges this week, y .

- A. $y = \frac{1}{5}x$ B. $y = \frac{6}{5}x$ C. $y = x + \frac{1}{5}x$ D. $y = x + 2$ E. $y = 1.2x$

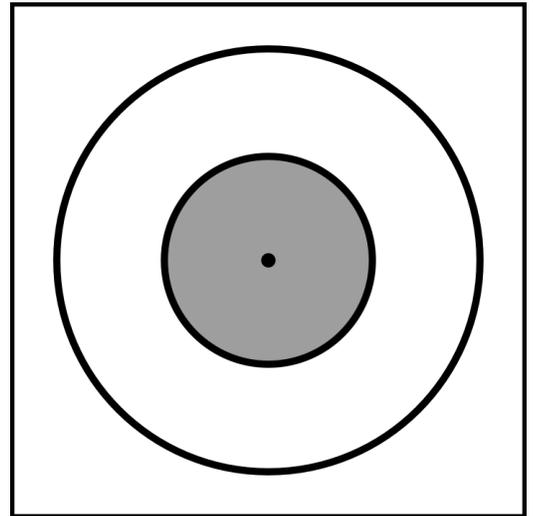
Unit 7.4, Lesson 6: Practice Problems

2.2 The price of oranges this week is \$4.50. What was the price last week?

Here is a circle and a scaled copy of the circle with a scale factor of 2.

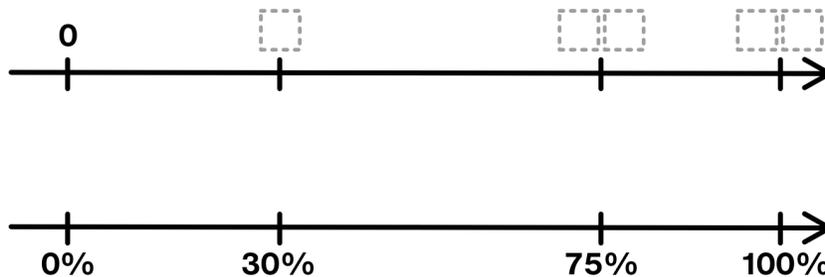
3.1 How does the **circumference** of the scaled copy compare to the circumference of the original circle?

3.2 How does the **area** of the scaled copy compare to the area of the original circle? Explain your thinking.



Explore

Using the digits 0–9 no more than once each, fill in the boxes to create an accurate number line. Use the space below to record any of your thinking as you experiment.



Reflect

1. Put a smiley face next to the question you spent most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

If x represents a positive number, circle **all** of the expressions whose value is greater than x .

A. $\frac{7}{8}x$

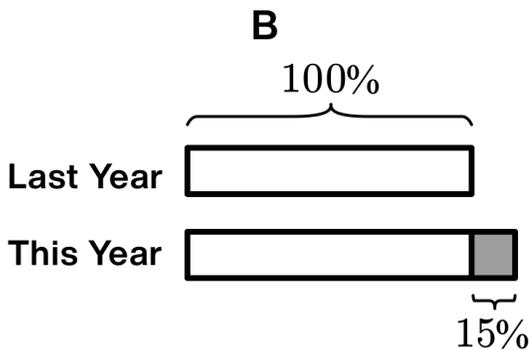
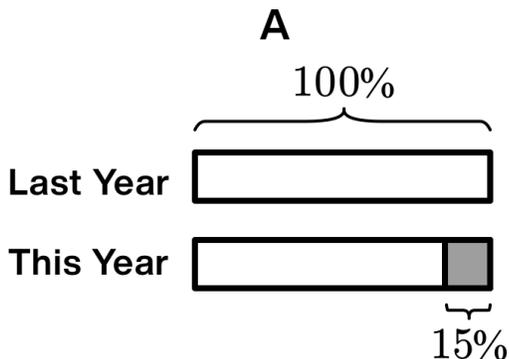
B. $\frac{9}{8}x$

C. $(1 - \frac{1}{4})x$

D. $(1 + \frac{1}{4})x$

Practice

For each situation below, decide whether diagram A or B represents the situation.



- 1.1 The amount of apples this year decreased by 15% compared to last year's amount. _____
 - 1.2 The amount of pears this year is 85% of last year's amount. _____
 - 1.3 The amount of cherries this year increased by 15% compared to last year's amount. _____
 - 1.4 The amount of oranges this year is 115% of last year's amount. _____
2. Mateo's aunt bought a share of stock many years ago. The value of the stock increased by 80%. Its value is now \$270. What was the value of the stock when Mateo's aunt bought it?

Unit 7.4, Lesson 7: Practice Problems

3.1 What is 18% more than 61?

3.2 10% more than a number is 132. What is the number?

3.3 140 is what percent less than 160?

Determine how many feet each member of Lola's family walked.

4.1 Lola's pet turtle walked 10 feet, and then half that length again.

4.2 Lola's baby brother walked 3 feet, and then half that length again.

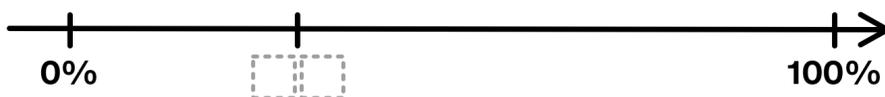
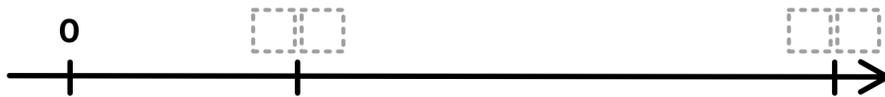
4.3 Lola's hamster walked 6.5 feet, and then half that length again.

4.4 Lola's mom walked x feet, and then half that length again.

Explore

Using the digits 0–9 no more than once each, fill in the boxes to create an accurate number line. How many solutions can you find?

Use the space below to record any of your thinking as you experiment.



Warm-Up

Maia walks 12 miles. Then she walks $\frac{1}{4}$ of that distance.

Circle **all** of the expressions that represent how far she walks altogether.

- A. $12 + 0.25 \cdot 12$ B. $12(1 + 0.25)$ C. $12 \cdot 1.25$ D. $12 \cdot 0.25$ E. $12 + 0.25$

Practice

1. In a city in Ohio, the sales tax rate is 7.25%. Complete the table.

| Item | Price Before Tax (\$) | Sales Tax (\$) | Price Including Tax (\$) |
|-----------|-----------------------|----------------|--------------------------|
| Pillow | 8.00 | | |
| Blanket | 24.00 | | |
| Trash can | | 1.16 | |

A family eats at a restaurant. The bill is \$42. The family leaves a tip and spends \$49.77 total.

- 2.1 How much money does the family tip?
- 2.2 How much is the tip as a percentage of the bill?

A music store buys instruments and then sells them for 30% more than they paid.

- 3.1 If the store buys a guitar for \$45, what will the store sell it for?
- 3.2 If the price tag on a trumpet says \$104, how much did the store pay for it?
- 3.3 During a 20% off sale, the store offers a clarinet for \$93.60. How much did the store pay for the clarinet?

Unit 7.4, Lesson 8: Practice Problems

4.1 The sales tax rate in New Mexico is 5.125%. Circle **all** of the equations that represent the sales tax, t , you would pay in New Mexico for an item of cost c .

A. $t = 5.125c$

B. $t = 0.5125c$

C. $t = 0.05125c$

D. $t = c \div 0.05125$

E. $t = \frac{5.125}{100}c$

4.2 A pair of pants in New Mexico costs \$30 before tax. How much does the pair of pants cost after tax?

Explore

Three different items' price tags have fallen off. Match up the original price, the discount, and the discounted price for each item. Then fill in the missing discounted price.

| | |
|---|---|
| Original Price | Discount |
|  |  |
| Discounted Price | |
|  | |

Use the table to show your solution.

| Original Price | Discount | Discounted Price |
|----------------|----------|------------------|
| | 20% | |
| | 30% | |
| | 40% | |

Reflect

1. Circle a question that you are still unsure of or are wondering about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Circle the expression that represents a 15% tip on a \$20 meal.

Put a check next to the expression that represents the total bill.

$15 \cdot 20$

$20 + 1.5 \cdot 20$

$1.15 \cdot 20$

$\frac{15}{100} \cdot 20$

Practice

Match each situation with one equation.

- | | | | |
|-----|---|-------|-----------------|
| 1.1 | Tay practices piano for x hours. Omar practices for $\frac{2}{5}$ less than that. | _____ | A. $y = 2.3x$ |
| 1.2 | Tay sleeps for x hours. Omar sleeps for $\frac{1}{5}$ less than that. | _____ | B. $y = 1.375x$ |
| 1.3 | Tay drinks x ounces of juice. Omar drinks $\frac{13}{10}$ more than that. | _____ | C. $y = 0.6x$ |
| 1.4 | Tay spends x dollars. Omar spends $\frac{1}{4}$ less than that. | _____ | D. $y = 0.8x$ |
| 1.5 | Tay eats x grams of almonds. Omar eats 40% more than that. | _____ | E. $y = 0.75x$ |
| 1.6 | Tay collects x pounds of recycling. Omar collects $\frac{3}{5}$ less than that. | _____ | F. $y = 1.6x$ |
| 1.7 | Tay walks x kilometers. Omar walks $\frac{3}{8}$ more than that. | _____ | G. $y = 0.4x$ |
| 1.8 | Tay completes x puzzles. Omar completes $\frac{3}{5}$ more than that. | _____ | H. $y = 1.4x$ |

Write each percent increase or decrease as a percentage of the initial amount. Then write an equation for the situation. The first one is done for you.

- 2.1 There was 40% more snow this year than last year.

The amount of snow this year is 140% of the amount of snow last year. $y = 1.4x$

- 2.2 There were 22% fewer sunny days this year than last year.

- 2.3 There was an 8.5% increase in the number of houses sold this month compared to last month.

- 2.4 A runner took 5.4% less time to complete a marathon this year than she did last year.

Unit 7.4, Lesson 9: Practice Problems

- A store has a 30% off sale on shirts. With this discount, the price of one shirt is \$15.40. What was the original price of the shirt?
- Circle A has a circumference of $2\frac{2}{3}$ meters. Circle B has a diameter that is $1\frac{1}{2}$ times as long as circle A 's diameter. What is the circumference of circle B ? Explain your thinking.

Explore

Here are three receipts for meals at the same restaurant. Fill in the missing values on each receipt.

| Receipt #1 | |
|----------------|----------------------|
| Burger | <input type="text"/> |
| Chips | \$ 3.00 |
| | |
| Total | \$12.00 |
| 18% Tip | <input type="text"/> |
| | |
| Total With Tip | <input type="text"/> |

| Receipt #2 | |
|----------------|----------------------|
| Salad | <input type="text"/> |
| Chips | \$ 3.00 |
| | |
| Total | <input type="text"/> |
| 18% Tip | +\$ 1.98 |
| | |
| Total With Tip | <input type="text"/> |

| Receipt #3 | |
|----------------|----------------------|
| Salad | <input type="text"/> |
| Water | <input type="text"/> |
| | |
| Total | <input type="text"/> |
| 18% Tip | <input type="text"/> |
| | |
| Total With Tip | \$ 11.21 |

Reflect

- Circle the question that you are **least** confident about on this practice worksheet.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

A person's resting heart rate is typically between 60 and 100 beats per minute. Rishi looks at his watch and counts 8 heartbeats in 10 seconds. Is his heart rate typical? Explain how you know.

Practice

1. A student estimates that it would take 3 hours to write a book report, but it actually takes her 5 hours. What is the percent error for her estimate?

2. It takes 48 minutes to drive downtown. An app estimated it would be less than that. If the error was 20%, what was the app's estimate?

For each story, write an equation that describes the relationship between the two quantities.

- 3.1 Ahmed collects x kilograms of recycling. Kimaya collects $\frac{2}{5}$ more than that.

- 3.2 Ahmed bikes x kilometers. Kimaya bikes $\frac{3}{10}$ less than that.

- 3.3 Ahmed reads for x minutes. Kimaya reads for $\frac{4}{7}$ of that time.

Unit 7.4, Lesson 11: Practice Problems

- A radar gun measured the speed of a baseball at 92 miles per hour. If the baseball was actually going 90.3 miles per hour, what was the percent error in this measurement?

The reading on a car’s speedometer may have an error up to 6.25%. The speed limit on a road is 65 miles per hour.

- The car is driving 63 miles per hour. Is it possible that the speedometer will show the car driving over the speed limit? Explain your thinking.
- The speedometer shows 67 miles per hour. Is the car definitely going over the speed limit? Explain your thinking.

Explore

A farmer sells eggs at a market. She offers three different sizes. For any size, the weight of each egg can vary by up to 8%. Calculate the missing values in the table.

| Size | Advertised Weight (g) | Lightest Possible Egg (g) | Heaviest Possible Egg (g) |
|-------------|-----------------------|---------------------------|---------------------------|
| Medium | 45 | | |
| Large | | 50.6 | |
| Extra Large | | | 66.96 |

Is it possible for an egg to be both large and extra large? Explain your reasoning.

Reflect

- Put a smiley face next to the question you spent most time on.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Mio bought x grams of flour. Sol bought $\frac{3}{8}$ more than that.

Circle **all** of the equations that represent the relationship between the amount of flour that Mio bought, x , and the amount of flour that Sol bought, y .

A. $y = \frac{3}{8}x$ B. $y = \frac{5}{8}x$ C. $y = x + \frac{3}{8}x$ D. $y = x - \frac{3}{8}x$ E. $y = \frac{11}{8}x$

Practice

A city has a 5% sales tax.

- 1.1 A toothbrush costs \$3.40 before tax. How much does it cost including tax?

- 1.2 Is there a proportional relationship between the cost of items before tax and the cost of items after tax?

If yes, what is the constant of proportionality? If no, explain why not.

- 1.3 A book costs \$32.55 after tax. How much did it cost before tax?

- 1.4 A greeting card costs \$4 before tax. A customer has a 15% discount. Then the 5% sales tax is added. How much will the customer pay for the card?

- 1.5 Does it matter if the discount is applied before or after the sales tax? Explain your thinking.

Unit 7.4, Lesson 12: Practice Problems

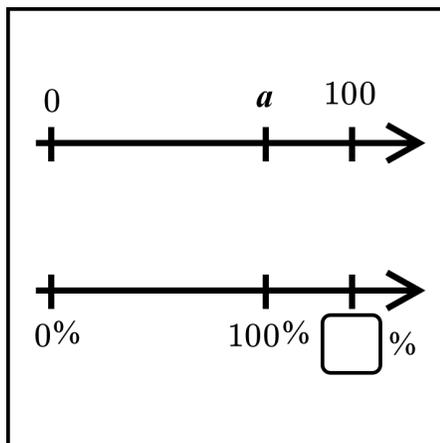
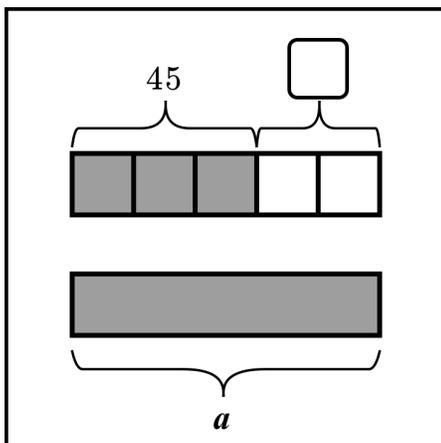
- The price of gold is often reported per ounce. At the end of 2005, gold was \$513 per ounce. At the end of 2015, it was \$1 060 per ounce. By what percent did the price increase?

Zoe's oven thermometer gives a reading that is 2% higher than the actual temperature.

- If the actual temperature is 325 °F, what will the thermometer reading be?
- If the thermometer reading is 76 °F, what is the actual temperature?

Explore

The value of a is the same in each image. Determine the value of a and write it here: _____
Then fill in the blank value in each image.

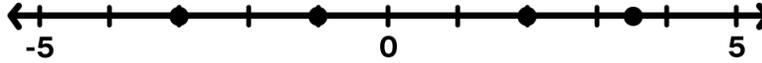


Reflect

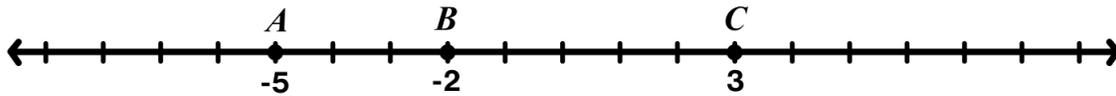
- Draw a heart next to the question you are most proud of.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Label each point on the number line.



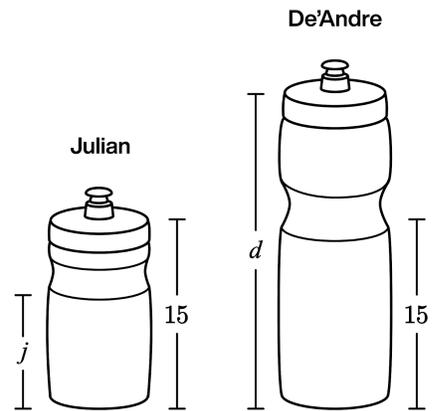
Practice



- 1.1 Point D is 1 unit to the left of point A . Plot and label point D .
- 1.2 Point E is at 0. Plot and label point E .
- 1.3 List both locations that are 4 units away from point B .
- 1.4 Point F is the same distance from point A and point C . Plot and label point F .
- 1.5 Write your own clue for point G , which is located at -3.5 .
- 1.6 Describe where you would plot -100 on the number line.

Unit 6.7, Lesson 1: Practice Problems

Two friends at soccer practice are drinking from their water bottles. Julian drinks $\frac{3}{5}$ of his 15-ounce bottle. DeAndre drinks 15 ounces of water, which is $\frac{3}{5}$ of his bottle.



2.1 How are these two situations similar?

2.2 How are these two situations different?

2.3 Write an equation to represent the amount of water Julian drinks, j .

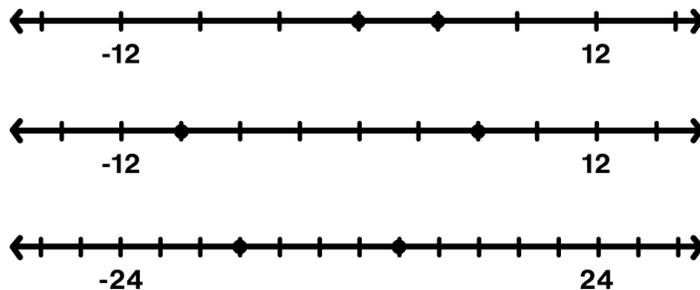
2.4 Write an equation to represent the total amount of water in DeAndre's bottle, d .

3. A rectangle has an area of 24 square centimeters. If one side is $2\frac{2}{5}$ centimeters long, how long is the other side? Show your reasoning.



Explore

Label the two points on each number line with their location.



Reflect

- Put a question mark next to one question you are still wondering about.
- Use the space below to ask one question you have or to share something you are proud of.

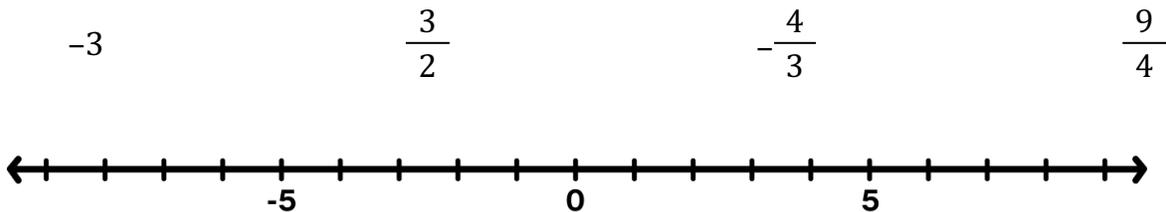
Warm-Up

Select **all** the numbers that are equivalent to $\frac{7}{2}$.

- 3.5
 $-\frac{7}{2}$
 $3\frac{1}{2}$
 -3.5
 7.2

Practice

1. Plot and label each number in its approximate location on the number line.



2.1 Complete each statement below.

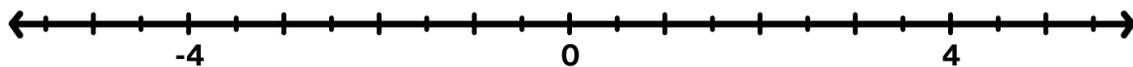
The opposite of -2 is _____.

The opposite of $\frac{5}{4}$ is _____.

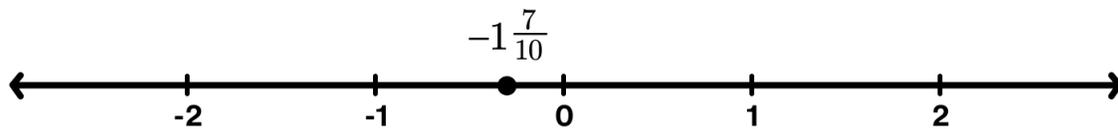
The opposite of -3.4 is _____.

The opposite of 0 is _____.

2.2 Plot and label each number from the statements above **and** its opposite on the number line.



Remy plotted the point $-1\frac{7}{10}$ on the number line.



3.1 What advice would you give Remy to help them see their mistake?

3.2 Plot $-1\frac{7}{10}$ in the correct location on the number line.

Unit 6.7, Lesson 2: Practice Problems

Use any strategy to solve each equation.

4.1 $3x = 6$

4.2 $\frac{1}{3}x = 6$

4.3 $\frac{1}{3} = 6x$

4.4 $\frac{1}{3} = \frac{1}{6}x$

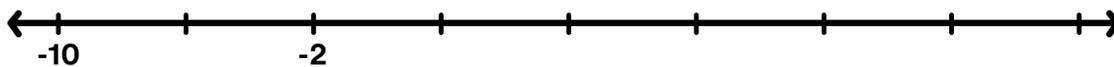
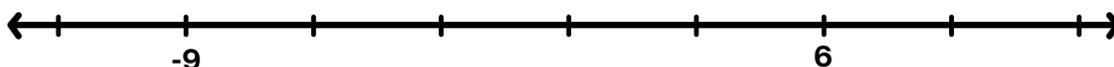
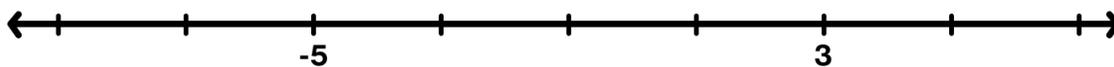
There are 15.24 centimeters in 6 inches.

5.1 There are 12 inches in a foot. How many centimeters are in a foot?

5.2 There are 3 feet in a yard. How many centimeters are in a yard?

Explore

Label the location of zero on each number line.



Reflect

1. Circle the question you found most interesting.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Order the numbers from least to greatest.

1.3 0 -7 1.25 $\frac{1}{7}$

Least _____ Greatest

Practice

1. Complete each number sentence with a number that makes it true.

_____ < 5 _____ < -5 -5 < _____ -5 > _____

2. Complete each number sentence with the symbol >, <, or =.

-5 _____ 2 5 _____ -5 -12 _____ -15 -12.5 _____ -12

Determine whether each statement is true or false.

3.1 -8.4 is to the right of -8.7 on the number line. True False

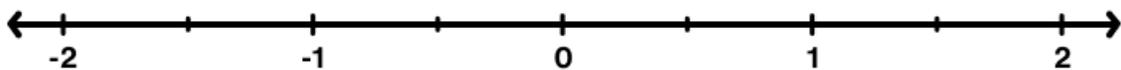
3.2 -2.4 is greater than -2.3. True False

3.3 $-\frac{11}{12} < -\frac{7}{12}$ True False

3.4 Choose one statement above. Explain how you know whether it is true or false.

4. Plot and label each number in its approximate location on the number line.

• 0.4 • -1.5 • $-1\frac{4}{5}$ • $-\frac{9}{10}$



Unit 6.7, Lesson 3: Practice Problems

Solve each equation. Write each solution as a fraction and as a decimal.

5.1 $2x = 3$

5.2 $5y = 3$

5.3 $0.3z = 0.09$

6.1 Each lap around a track is 400 meters. How many meters will someone run in . . .

. . . 2 laps? _____ . . . 5 laps? _____ . . . x laps? _____

6.2 If Sol ran 7 600 meters, how many laps did they run? Explain how you know.

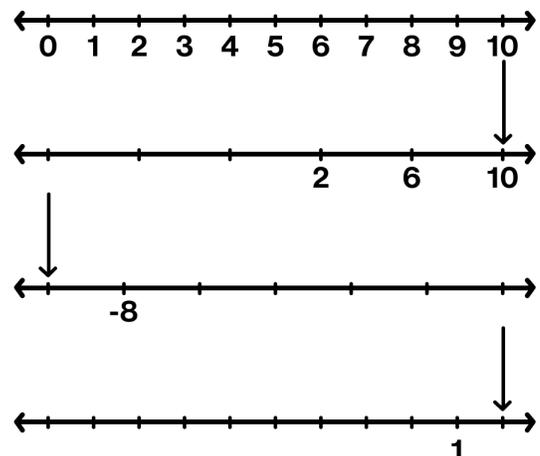
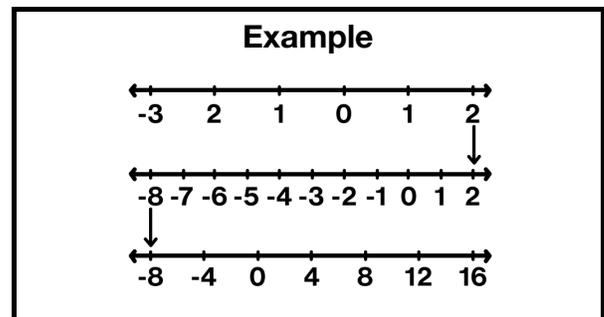
Explore

Here is a number line maze.

Each number line has a different scale, but at least one matching number, which is shown by the arrows.

Determine the missing values in this number line maze.

Optional: Create your own number maze.



Reflect

1. Put a question mark on a question you want to talk about with another person.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Complete each number sentence with a number that makes it true.

_____ < 0.5

_____ < -0.5

-0.5 < _____

-0.5 > _____

Practice

1.1 Write each of these temperatures as a positive or a negative number.

| | | | |
|----------------------|----------------------|----------------------|-------------------------|
| 5 degrees above zero | 3 degrees below zero | 2 degrees above zero | 2.75 degrees below zero |
| _____ | _____ | _____ | _____ |

1.2 Order the temperatures above from coldest to warmest.

Coldest _____ _____ _____ _____ **Warmest**

1.3 Which temperature is warmer? Circle one.

-11°F

-15°F

Explain your reasoning.

This table shows five states and the lowest elevation in each state.

| State | California | Colorado | Delaware | Louisiana | Wyoming |
|-------------------------------|------------|----------|----------|-----------|---------|
| Lowest Elevation (ft.) | -282 | 3315 | 0 | -8 | 3099 |

2.1 Order the states' lowest elevations from lowest to highest.

Lowest _____ _____ _____ _____ **Highest**

2.2 Write an elevation that is lower than all of the elevations listed here.



Unit 6.7, Lesson 4: Practice Problems

Determine if each quotient is greater than, less than, or equal to 1. Then determine its value.

3.1 $\frac{1}{2} \div 2$

3.2 $\frac{1}{2} \div \frac{1}{2}$

3.3 $\frac{2}{1} \div \frac{1}{2}$

3.4 $\frac{2}{3} \div 3$

Determine the value of each expression.

4.1 $2^3 \cdot 4$

4.2 $\frac{2^3}{4}$

4.3 $2^4 - 4$

4.4 $2^3 + 4^3$

A stadium can seat 16 000 people at full capacity.

5.1 If there are 13 920 people in the stadium, what percent of the stadium is **full**?
Explain or show your reasoning.

5.2 What percent of the stadium is **empty**?

Explore

List 3–5 situations in life where negative numbers might appear. Consider asking family and friends to add to your list.

Reflect

1. Star the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** the numbers that are less than -5 .

-5.3

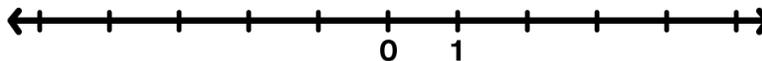
-6

3

-4

-4.75

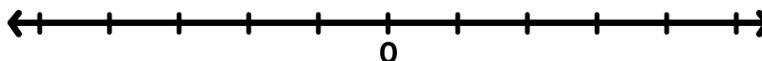
Practice



- 1.1 Plot and label all numbers that are 4 units away from 0.
- 1.2 Plot and label all numbers with an absolute value of $\frac{5}{2}$.
- 1.3 Ivory claims that a number and its opposite will always have the same absolute value.
Is Ivory correct? Explain your thinking.

Complete each number sentence with the symbol $<$, $>$, or $=$.

Use the number line if it helps you with your thinking.



2.1 -3.2 _____ 1.5

2.2 $|-3.2|$ _____ $|1.5|$

2.3 2 _____ -1.5

2.4 $|2|$ _____ $|-1.5|$

2.5 $\frac{3}{2}$ _____ -1.5

2.6 $\frac{3}{2}$ _____ $|-1.5|$

2.7 $|-2.7|$ _____ $|-4.5|$

2.8 $|-2.7|$ _____ -4.5

Unit 6.7, Lesson 5: Practice Problems

3. The coldest temperature on record in Death Valley, CA, was -10°C in January 1913. The coldest temperature on record in Danbury, CT, was -38°C in February 1943. Which temperature was colder? Explain how you know.

Determine the value of each quotient.

4.1 $24 \div 15$

4.2 $0.24 \div 0.15$

4.3 $0.24 \div 0.015$

4.4 $0.024 \div 0.015$

- 4.5 What do you notice? What do you wonder?

Explore

Fill in the blanks using each number at most **once**.

$-3, -2, -1, 0, 1, 2, 3$

Use the extra space to record your thinking.

| ____ | = ____

| ____ | > | ____ |

____ < | ____ |

Reflect

1. Star a question that you are still feeling confused about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Complete using the symbols $>$ (greater than), $<$ (less than), or $=$ (equal to).

$3 \text{ ____ } -3$

$12 \text{ ____ } 24$

$-12 \text{ ____ } -24$

$7.2 \text{ ____ } 7$

$-7.2 \text{ ____ } -7$

Practice

- 1.1 One Monday in December, it was -8°C in Harbin, China and -2°C in Beijing, China.

Which city was colder on that day? Explain your thinking.



- 1.2 On the same day, it was about 7 degrees warmer in Shanghai than it was in Beijing. What was the temperature in Shanghai?
- 1.3 How many degrees warmer was it in Shanghai than in Harbin?
- 1.4 On Tuesday in Beijing, it was 5 degrees colder than it was the day before. What was the new temperature?
- 1.5 On Tuesday in Harbin, the temperature started at -6°C and reached a high of 3°C . By how much did the temperature rise throughout the day?
- 1.6 How is changing temperature similar to adding and removing floats and anchors on a submarine?

Unit 7.5, Lesson 1: Practice Problems

A shade of green paint is made by mixing 2 cups of yellow with 3.5 cups of blue.

- 2.1 How many cups of yellow and blue paint will make the same shade of green but a smaller amount?

- 2.2 Write a recipe for a mixture that will make the same shade of green but a larger amount.

- 2.3 Will a mixture that is 3 cups of yellow and 4.5 cups of blue be more blue, more yellow, or the same shade of green? Explain your reasoning.

Explore

Use the digits 1, 2, 3, 4, 5, 6, 7, 8, and 9 in that order to create 100. You can add, subtract, and join digits as many ways as you can. Here is one example: $1 + 2 + 34 - 5 + 67 - 8 + 9 = 100$.

Try going backwards! Use the digits 9, 8, 7, 6, 5, 4, 3, 2, and 1 in that order to create 100.

Reflect

1. Draw a star on your favorite question on this worksheet.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Complete each statement with a temperature that makes the statement true.

$_____ < 7^\circ\text{F}$

$_____ < -3^\circ\text{F}$

$_____ < -0.1^\circ\text{F}$

$_____ > -2^\circ\text{F}$

Practice

Determine the value of each expression.

1.1 $5 + (-3)$

1.2 $-5 + 3$

1.3 $-5 - 3$

1.4 $-5 - (-3)$

Tracking temperature change is important in many industries, including agriculture. For each situation, determine the final temperature or change in temperature.

2.1 The temperature was 13°F and then **fell** 5 degrees. What was the final temperature?

2.2 The temperature was -13°F and then **fell** 5 degrees. What was the final temperature?

2.3 The temperature was -13°F and then **rose** 5 degrees. What was the final temperature?

2.4 The temperature was -13°F and then **rose to** 5°F . What was the change in temperature?

2.5 Riku wrote the expression $-13 - 5$ for Problem 2.2.

Charlie wrote the expression $-13 + (-5)$.

Who is correct? Explain your reasoning.

Unit 7.5, Lesson 2: Practice Problems

Imani was assigned to make 64 cookies for the bake sale.

3.1 If Imani made 25% more than they were assigned, how many cookies were made?

3.2 Only 90% of the cookies Imani made were sold. How many of the cookies were left after the bake sale?

Explore

Complete each of the puzzles so that each row, column, and diagonal adds up to the same total.

Puzzle 1

| | | |
|----|---|---|
| 3 | | 1 |
| -2 | | |
| -1 | 4 | |

Puzzle 2

| | | |
|---|--|----|
| | | -2 |
| | | 3 |
| 4 | | 2 |

Puzzle 3

| | | | |
|----|---|----|----|
| 7 | | -6 | 4 |
| | 2 | | |
| 0 | | -3 | |
| -5 | 5 | 6 | -8 |

Reflect

1. Put a smiley face next to the question you spent most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Determine the value of the variable that makes each equation true.

$30 + a = 40$

$40 + b = 30$

$c - 3 = 8$

$d - 3 = -8$

Practice

Determine the value of each expression.

1.1 $4.4 - 2.9$

1.2 $-2.9 + 4.4$

1.3 $-4.4 + (-2.9)$

1.4 $4.4 - (-2.9)$

The table shows how the amount of Ariel's bank account changed over several weeks.

2.1 Fill in the missing values.

| Week # | Account Balance (\$) | Change From Previous Week (\$) |
|--------|----------------------|--------------------------------|
| 1 | 360.00 | |
| 2 | 337.50 | -22.50 |
| 3 | 182.35 | |
| 4 | -41.40 | |
| 5 | | 40.00 |
| 6 | -5.80 | |

2.2 By how much did Ariel's account change from week 1 to week 6? Make sure to show whether the change is positive or negative.

Unit 7.5, Lesson 3: Practice Problems

3.1 Last week, the price of gasoline per gallon was g dollars. This week, the price of gas increased by 5% .

Select all of the expressions that represent this week's price of gasoline per gallon.

- $g + 0.05$
- $g + 0.05g$
- $1.05g$
- $0.05g$
- $(1 + 0.05)g$

3.2 If the price of gas increases by 5% again next week, will the price be 10% higher than it was originally? Explain your reasoning.

Explore

These are equation puzzles.

Fill in each blank with a number so that each row and column makes a true equation.

Puzzle 1

| | | | | |
|----|---|----|---|---|
| 1 | - | | = | 8 |
| + | | + | | |
| | - | | = | |
| = | | = | | |
| -5 | | -4 | | |

Puzzle 2

| | | | | | | |
|---|---|----|---|----|---|---|
| 3 | + | | - | -1 | = | 0 |
| + | | + | | + | | |
| | + | | - | | = | 0 |
| + | | - | | + | | |
| | - | -4 | - | 3 | = | 0 |
| = | | = | | = | | |
| 0 | | 0 | | 0 | | |

Reflect

- Circle the question you feel most confident about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Evaluate each expression.

$(-11) + 2$

$2 + (-11)$

$-11 - 2$

$2 - (-11)$

Practice

1.1 Fill in the table with the value of each expression.

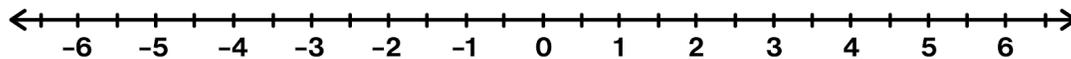
| A | | B | |
|-------------------|--|-------------------|--|
| $3 - 2$ | | $2 - 3$ | |
| $5 - (-9)$ | | $(-9) - 5$ | |
| $(-11) - 2$ | | $2 - (-11)$ | |
| $(-6) - (-3)$ | | $(-3) - (-6)$ | |
| $(-1.5) - (-4.7)$ | | $(-4.7) - (-1.5)$ | |
| $(7) - (-3.5)$ | | $(-3.5) - (7)$ | |

1.2 What pattern do you notice between the values and expressions in column A and those in column B?

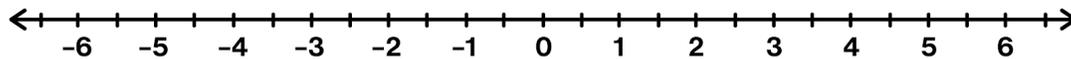
1.3 Explain why this pattern makes sense.

2. Use the number line to determine the value of each expression.

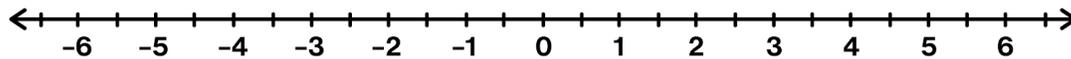
$(-2) - 4$



$(-3.1) + (-2)$



$(-4.3) - (-8)$



Unit 7.5, Lesson 4: Practice Problems

Bettie's Boutique is having a 20% off sale.

- 3.1 Is the relationship between original price and sale price proportional? Explain your reasoning.

| Original Price | Sale Price |
|----------------|------------|
| \$15 | \$12 |
| \$25 | \$20 |
| \$35 | \$28 |

- 3.2 If the relationship is proportional, what is the constant of proportionality?
If the relationship is not proportional, what values could you change to make it proportional?

Explore

Complete each of the puzzles so that each row, column, and diagonal adds up to the same total.

Puzzle 1

| | | |
|-----|-----|-----|
| 0.4 | | 0.2 |
| | 0.1 | 0.3 |
| 0 | 0.5 | |

Puzzle 2

| | | |
|-----|-----|------|
| 0.2 | | 0 |
| | | 0.1 |
| | 0.3 | -0.4 |

Puzzle 3

| | | | |
|------|-----|------|------|
| 7.5 | | -5.5 | 4.5 |
| | 2.5 | | |
| 0.5 | | -2.5 | |
| -4.5 | 5.5 | 6.5 | -7.5 |

Reflect

- Put a smiley face next to the question you spent most time on.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Order the expressions by value from least to greatest.

$-5 - (-4)$

$-4 - (-5)$

$-4 - (5)$

$4 - (-5)$

Least _____ Greatest

Practice

1.1 Is the solution to $-2.7 + x = -3.5$ positive or negative? Explain how you know.

1.2 Select **all** of the equations that are equivalent to $-2.7 + x = -3.5$.

$-3.5 + 2.7 = x$

$3.5 - 2.7 = x$

$-3.5 - (-2.7) = x$

$-3.5 - 2.7 = x$

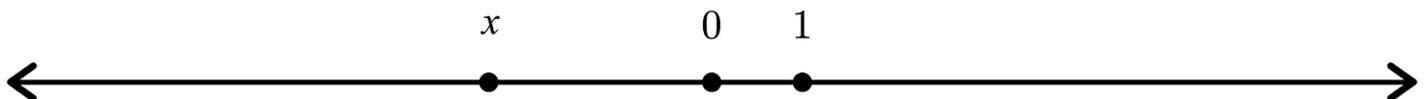
Determine the value of the variable that makes each equation true.

2.1 $33 + a = -33.8$

2.2 $-9 - b = 3.5$

2.3 $c = \left(-\frac{3}{4}\right) + \frac{3}{2}$

2.4 $d + 0.7 = -4$



3.1 Plot the approximate location of $x + 4$ on the number line.

3.2 Plot the approximate location of $4 - x$ on the number line.

Unit 7.5, Lesson 5: Practice Problems

Annie's Attic is having a \$5 off sale.

- 4.1 Is the relationship between original price and sale price proportional? Explain your reasoning.

| Original Price | Sale Price |
|----------------|------------|
| \$15 | \$10 |
| \$25 | \$20 |
| \$35 | \$30 |

- 4.2 If the relationship is proportional, what is the constant of proportionality?
If the relationship is not proportional, what values could you change to make it proportional?

Explore

These are equation puzzles.

Fill in each blank with + or - so that each row and column makes a true equation.

Puzzle 1

| | | | | |
|----|--|----|---|----|
| -3 | | 5 | = | 2 |
| | | | | |
| -2 | | -1 | = | -3 |
| = | | = | | |
| -1 | | 6 | | |

Puzzle 2

| | | | | | | |
|----|--|---|--|----|---|---|
| -1 | | 1 | | 2 | = | 0 |
| | | | | | | |
| 1 | | 2 | | -1 | = | 0 |
| | | | | | | |
| -2 | | 1 | | -1 | = | 0 |
| = | | = | | = | | |
| 0 | | 0 | | 0 | | |

Reflect

- Put a star next to the question you are most proud of answering.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Determine the value of the variable that makes each equation true.

$3 \cdot a = 12$

$-3 \cdot 4 = b$

$-3 \cdot c = 12$

$d \cdot -4 = -12$

Practice

A submarine starts at 0 units and has groups of 3 floats and groups of 4 anchors attached.

1.1 Select **all** of the expressions that would make the submarine's final position positive.

$-(5)(3) + (2)(-4)$

$(2)(3) + (5)(-4)$

$(5)(3) - (2)(-4)$

$-(2)(3) - (5)(-4)$

$-(5)(3) - (2)(-4)$

$(2)(3) - (5)(-4)$

1.2 Which expression would make the submarine float the highest? What will its final position be?

1.3 Which expression would make the submarine sink the lowest? What will its final position be?

1.4 Using these groups of floats and anchors, write as many different expressions as you can that would make the submarine's final position -5 units.

A weather station on top of a mountain reports that the temperature is currently 0°C and has been **decreasing** at a constant rate of 3°C per hour.

2.1 What will the temperature be . . .

. . . in 2 hours?

. . . in 5 hours?

2.2 What was the temperature . . .

. . . 1 hour ago?

. . . 3 hours ago?

Unit 7.5, Lesson 6: Practice Problems

Tyler orders a meal that costs \$15. The sales tax rate in Tyler’s county is 6.6%.

- 3.1 How much will the sales tax be on Tyler’s meal?

- 3.2 Write an equation to represent the relationship between the original cost of the meal and the total cost after sales tax. Use x for the original cost of the meal and y for the cost after sales tax.

Tyler also wants to leave a tip between 15% and 20% for the server.

- 3.3 How much do you think he should tip?

- 3.4 What would the total bill be (including the tip)? Explain your reasoning.

Explore

For each value, make an expression using exactly four 4 s, the operations +, −, ×, ÷, and parentheses. You may also use − 4 s. The first two have been done for you.

$$\begin{aligned}
 (4 - 4) \times 4 - 4 &= -4 \\
 (-4 - 4 - 4) \div 4 &= -3 \\
 4 & 4 & 4 & 4 & = -2 \\
 4 & 4 & 4 & 4 & = -1 \\
 4 & 4 & 4 & 4 & = 0 \\
 4 & 4 & 4 & 4 & = 1 \\
 4 & 4 & 4 & 4 & = 2 \\
 4 & 4 & 4 & 4 & = 3 \\
 4 & 4 & 4 & 4 & = 4
 \end{aligned}$$

Reflect

- 1. Circle the question you feel most confident about.

- 2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Decide whether each expression is negative, positive, or zero.

$2 \cdot 3$

$(-2) \cdot 3$

$(-2) \cdot (-3)$

$(-1) \cdot (-2) \cdot (-3)$

Practice

Determine the value of each expression.

1.1 $5(-3)$

1.2 $-5 \cdot 3$

1.3 $(-5)(-3)$

1.4 $-5 \cdot (-0.3)$

A bug is crawling down a tree at a rate of -7 millimeters per second. The bug passes a big branch, which we will call position 0.

2.1 Which equation represents the bug's position 8 seconds **after** it passes the branch?

A. $-7 \cdot 8 = 56$

B. $-7 \cdot 8 = -56$

C. $-7 \cdot -8 = 56$

D. $-7 \cdot -8 = -56$

2.2 Which equation represents the bug's position 8 seconds **before** it passes the branch?

A. $-7 \cdot 8 = 56$

B. $-7 \cdot 8 = -56$

C. $-7 \cdot -8 = 56$

D. $-7 \cdot -8 = -56$

2.3 Describe a situation that could be represented by the equation $7 \cdot -8 = -56$.

The bug has friends on nearby trees. Write equations similar to Problem 2 for each description. Assume each bug starts at the same position as the bug in Problem 2.

3.1 Buggy crawls for 28 minutes at a rate of -2 centimeters per minute. _____

3.2 Buggy slides for 3.2 seconds at -8.1 millimeters per second. _____

3.3 Buggum creeps for 3.5 seconds and finishes at -28.5 centimeters. _____

Unit 7.5, Lesson 7: Practice Problems

A tank of water breaks and begins draining at a constant rate.

4.1 Complete the table.

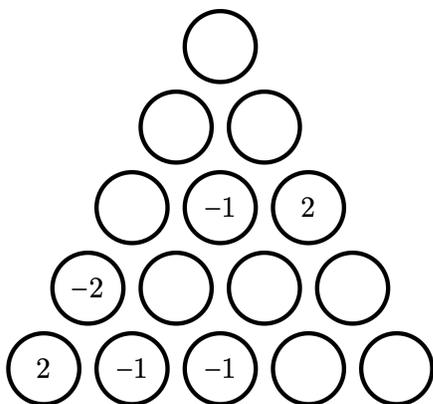
| Time (minutes) | Change in Water (liters) | Expression | Water in the Tank (liters) |
|----------------|--------------------------|------------------|----------------------------|
| 0 | 0 | $770 + (0)(-14)$ | 770 |
| 1 | -14 | $770 + (1)(-14)$ | 756 |
| 2 | | | |
| 5 | | | |

4.2 Is there a proportional relationship between time and the amount of water left in the tank? Explain your reasoning.

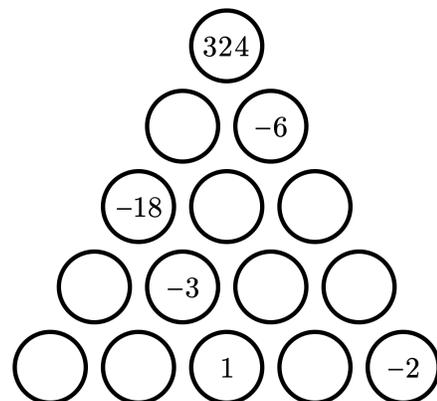
Explore

Complete the number pyramid puzzles. Each number is the product of the two numbers directly below it. For example, in the bottom-left corner $-2 = 2 \cdot -1$.

Puzzle 1



Puzzle 2



Reflect

1. Circle the question you understand best.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Determine the value of the variable that makes each equation true.

$3 \cdot (-4) = a$

$b \cdot (-3) = -12$

$(-12) \cdot c = 12$

$d \cdot 24 = -12$

Practice

Determine the value of each expression.

1.1 $\frac{-15}{12}$

1.2 $\frac{15}{-12}$

1.3 $\frac{-15}{-12}$

1.4 $-\frac{15}{12}$

Determine the value of x that makes each equation true.

2.1 $-3x = 6.3$

2.2 $\frac{x}{3} = -12$

2.3 $-1.2x = -30$

2.4 $\frac{x}{-1.2} = -0.3$

A machine that drills holes for wells drilled to a depth of -72 feet in one day (24 hours).

3.1 How much did the depth change each hour? Make sure to show whether the change is positive or negative.

3.2 If the machine drilled at a constant rate, what was the depth after 15 hours?

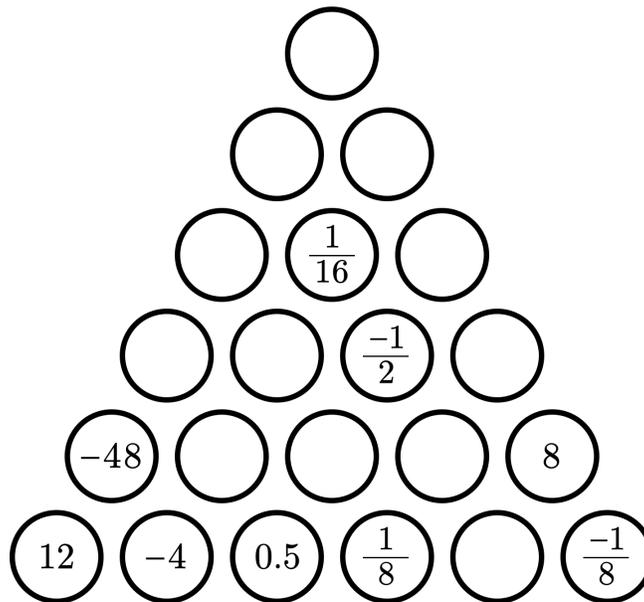
3.3 At this rate, how many hours will it take until the drill reaches its final depth of -132 feet? Explain your reasoning.

Unit 7.5, Lesson 8: Practice Problems

- 4.1 $30 + (-30) = 0$. Write a different equation with **two** numbers whose sum equals 0.
- 4.2 Write an equation with **three** numbers whose sum equals 0.
- 4.3 Write an equation with **four** numbers whose sum equals 0, none of which are opposites. One example of opposites is -30 and 30 .
- 4.4 Write an equation using four numbers that multiply to 0, none of which are opposites.

Explore

Here is a number pyramid puzzle. Fill in the blanks so that each number is the product of the two numbers directly beneath it.



Reflect

- Put a smiley face on the question you spent the most time on.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select all of the expressions that are equivalent to $-\frac{1}{2} \cdot (-16)$.

$2 \cdot (-4)$

$2 \cdot 4$

$(-1) \cdot (2) \cdot (-4)$

$\frac{-1}{8} \cdot (-32)$

$-\frac{16}{2}$

Practice

Determine the value of the variable that makes each equation true.

1.1 $-22 + a = -5$

1.2 $-22 - 5 = b$

1.3 $-5c = -22$

1.4 $\frac{d}{-5} = 22$

1.5 Which expression has the greater value: $(-22) - (-5)$ or $(-5) - (-22)$?
Explain your reasoning.

2.1 The value of x is -2 , y is 4 , and z is 2 .
Order these expressions from least to greatest:

$x - z$

$x - 2y$

$x \cdot y$

xyz

Least _____ **Greatest**

2.2 Would your order be different if the value of x was 2 instead? Why or why not?

2.3 Make your own values for x and y so that $\frac{x}{y}$ is positive and $x + y$ is negative.

Unit 7.5, Lesson 10: Practice Problems

Starting at noon, the temperature changed steadily at a rate of -0.8°C every hour.

3.1 How many hours did it take for the temperature to change by -4.4°C ?

3.2 At 3 p.m., the temperature was -2.5°C . What was the temperature at noon?

Use long division to write each fraction as a decimal.

4.1 $\frac{5}{10}$

4.2 $\frac{5}{15}$

4.3 $\frac{5}{11}$

Explore

Using the numbers $-2, -1, 0, 1,$ and 2 without repeating, fill in the blanks to make a true statement.

Work Space

$$\square - \frac{\square}{\square} < \square - \square$$

Using the numbers -4 to 4 without repeating, fill in the blanks to make a true statement. One number will be unused.

Work Space

$$\frac{\square}{\square} \times \square < \square - \frac{\square}{\square} < \square - \square$$

Reflect

- Put a heart next to the question you found most interesting to complete.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select all of the expressions that are equivalent to $4(5) + 3(5)$.

$7(5)$

$12(5)$

$7 \cdot 2(5)$

$10(5) - 3(5)$

$3(5) - 10(5)$

Practice

Determine the value of the variable that makes each equation true.

1.1 $3 \cdot (-2.5) = x$

1.2 $-3y = 33$

1.3 $-3 - \frac{1}{2} = z$

On January 22 in 1943, the town of Spearfish, South Dakota, set the record for the world's fastest temperature change.

- At 7:30 a.m., the temperature was -4°F .
 - By 7:32 a.m., the temperature was 45°F .
 - By 9:00 a.m. on that same day, the temperature was 54°F .
 - By 9:27 a.m., the temperature was -4°F .
- 2.1 How many degrees did the temperature change each minute from 7:30 to 7:32? Make sure to show whether the change was positive or negative.
- 2.2 How many degrees did the temperature change each minute from 9:00 to 9:27? Make sure to show whether the change was positive or negative.
- 2.3 What is the difference between the temperature at 7:30 and the temperature at 9:27? Make sure to show whether the change was positive or negative.

Unit 7.5, Lesson 11: Practice Problems

Use long division to write each fraction as a decimal.

3.1 $\frac{4}{9}$

3.2 $\frac{5}{8}$

3.3 What is different about these answers?

Explore

These are equation puzzles. Fill in the blanks so that each row and column makes a true equation. Use numbers to complete Puzzle 1 and the symbols +, -, ×, and ÷ to complete Puzzle 2.

Puzzle 1

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | ÷ | | × | | = | 0 |
| × | | + | | + | | |
| | × | 2 | - | | = | 0 |
| + | | - | | + | | |
| 4 | ÷ | | + | 2 | = | 0 |
| = | | = | | = | | |
| 0 | | 0 | | 0 | | |

Puzzle 2

| | | | | | | |
|----|--|----|--|----|---|---|
| -4 | | -1 | | 3 | = | 1 |
| | | | | | | |
| 1 | | -3 | | -3 | = | 1 |
| | | | | | | |
| 4 | | 1 | | -2 | = | 1 |
| = | | = | | = | | |
| 1 | | 1 | | 1 | | |

Reflect

1. Circle the question you feel most confident about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the values of x that are solutions to the inequality $x > -2$.

-1

-2

-3

-2.1

-1.8

Practice

Here are five points on the coordinate plane.

1.1 What are the coordinates of each point?

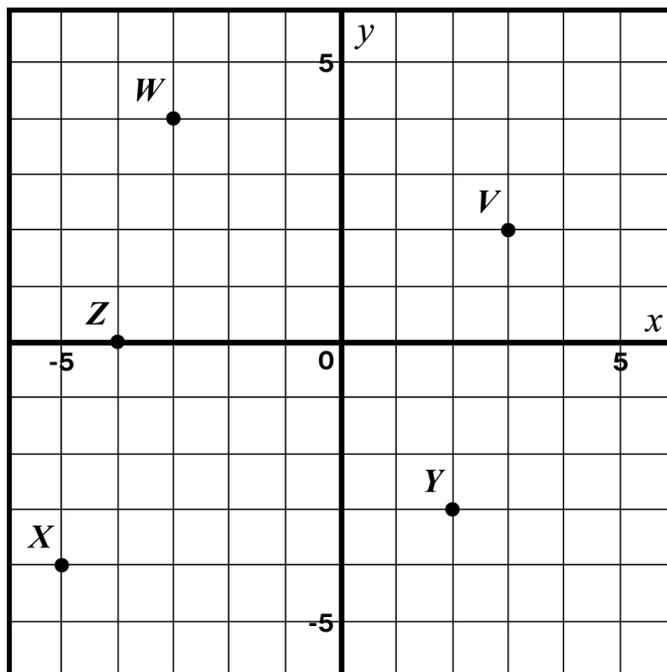
V _____

W _____

X _____

Y _____

Z _____



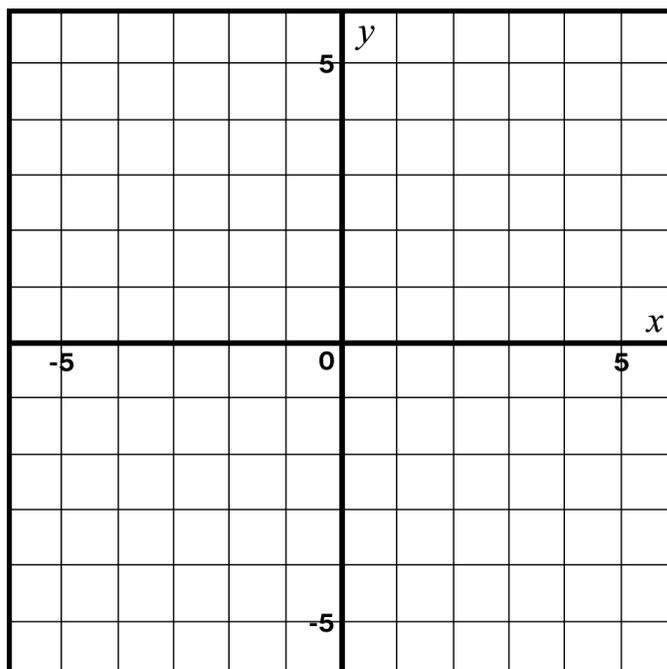
1.2 Plot and label the point A at $(-2, 1)$.

2.1 Plot the point $P = (1, -2)$.

2.2 Plot two points that are 3 units away from point P .

Label each point with its coordinates.

2.3 Point Q is more than 3 units directly to the left of point P . What do you know about the coordinates of point Q ?



Unit 6.7, Lesson 9: Practice Problems

3. An amusement park ride's height requirement is written as $h > 42$, where h represents a rider's height in inches. Write a sentence or draw a sign that describes these rules as clearly as possible.

Use any strategy to solve each equation.

4.1 $3a = 12$

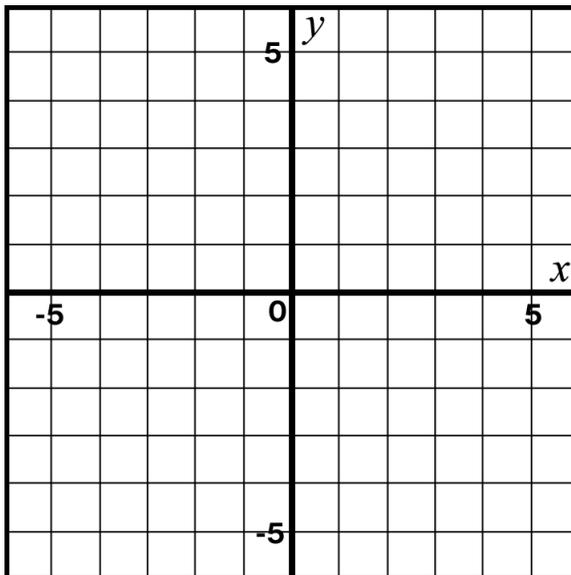
4.2 $b + 3.3 = 8.9$

4.3 $1 = \frac{1}{4}c$

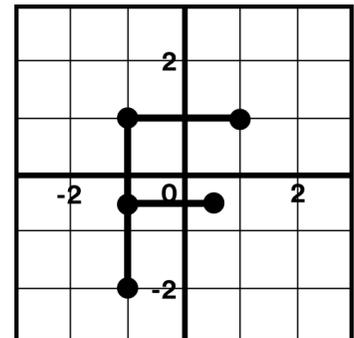
4.4 $2d = 6.4$

Explore

1. Draw the first letter of your name on the coordinate plane so that at least part of your drawing is in each quadrant (quarter).



Example Drawing



2. List the coordinates of each point in your drawing so someone else could recreate it.

Reflect

- Circle the question you are most interested to know more about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Complete each number sentence with the symbol $<$, $>$, or $=$.

$$\left| -\frac{3}{2} \right| \text{ ____ } -\frac{2}{3}$$

$$-\frac{3}{2} \text{ ____ } -\frac{2}{3}$$

$$-\frac{3}{2} \text{ ____ } \frac{2}{3}$$

$$\frac{3}{2} \text{ ____ } \left| -\frac{2}{3} \right|$$

Practice

1.1 Plot and connect each coordinate pair in order.

$(-2, -9)$

$(-2, -3)$

$(-4, -3)$

$(-6, -1)$

$(-6, 4)$

$(-4, 2)$

$(-2, 4)$

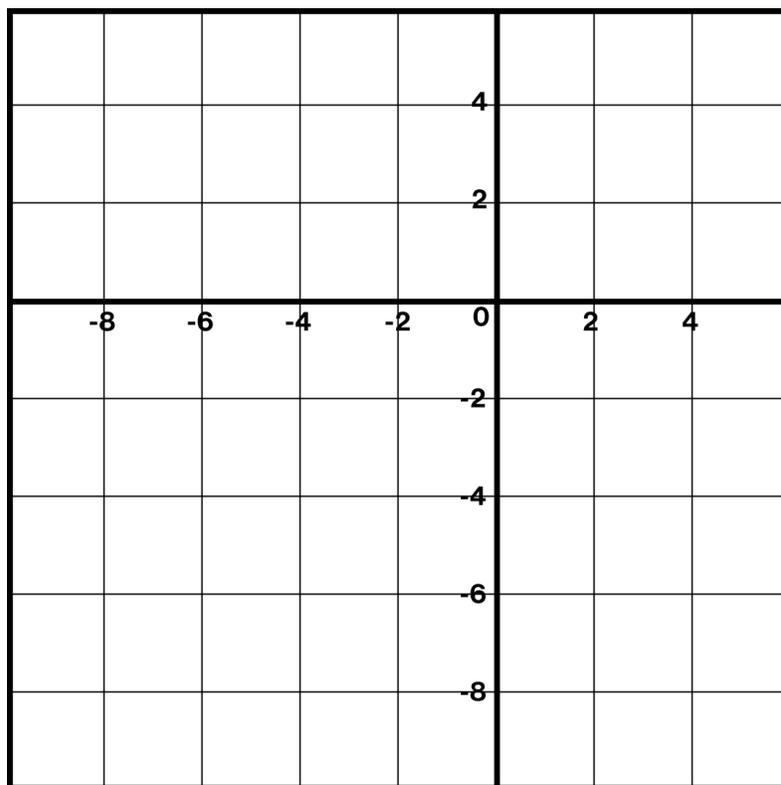
$(0, 2)$

$(2, 4)$

$(2, -1)$

$(0, -3)$

$(-2, -3)$



1.2 Describe your strategy for plotting the point $(-2, -9)$.

2. Point A is located at $(3, n)$. Point B is located at $(-3, n)$.

What do you know about points A and B ?

Unit 6.7, Lesson 10: Practice Problems

3.1 DeShawn’s dog weighs 34 pounds. Jacy’s dog weighs 12 pounds more than DeShawn’s dog. Select **all** the equations that show the weight of Jacy’s dog, j .

$j = 34 + 12$ $j = 34 - 12$ $j + 12 = 34$ $j - 12 = 34$ $j = 34 \cdot 12$

3.2 Use one equation to determine how much Jacy’s dog weighs.

4.1 Apples cost \$1.60 at the farmers market. They cost 1.5 times as much at the grocery store. Select **all** the equations that show the cost of apples at the grocery store, g .

$g = 1.5 \cdot 1.60$ $g = 1.60 \div 1.5$ $1.5g = 1.60$
 $g = 1.5 \div 1.60$ $g \div 1.5 = 1.60$

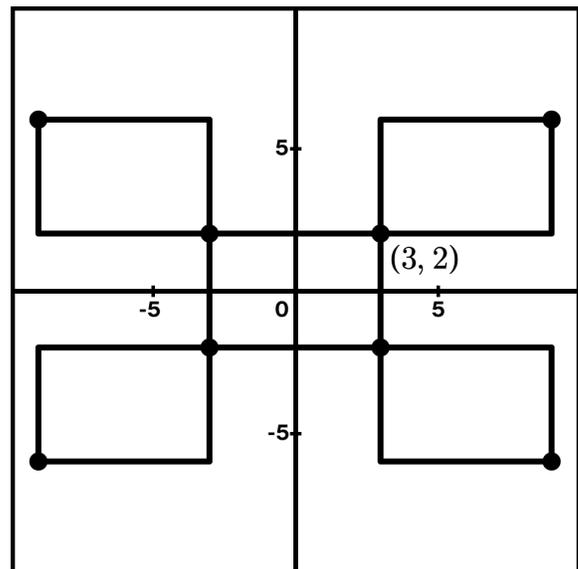
4.2 Use one equation to determine how much apples cost at the grocery store.

Explore

Here are identical rectangles on a coordinate plane.

The origin is in the center of the middle rectangle.

1. Label the coordinates of the remaining points.
2. What patterns do you notice?



Reflect

1. Put a heart next to the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the values of x that are solutions to the inequality $-0.5 > x$.

0

-1

-0.40

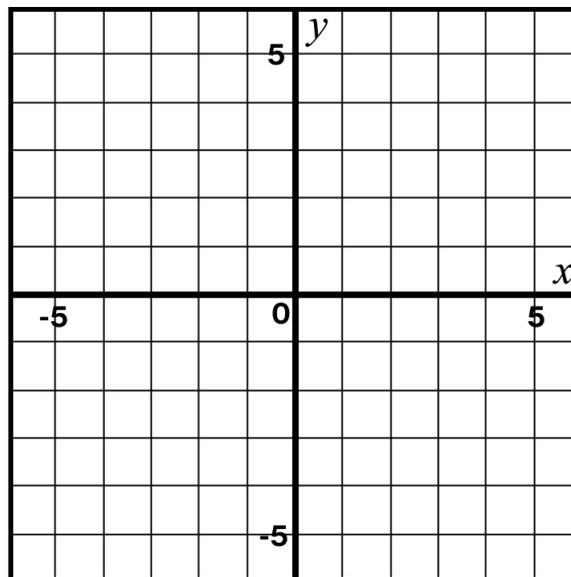
-0.6

-0.55

Practice

- 1.1 Plot and label each point.
Connect the points in order to create a polygon.

| Point | Coordinates |
|----------|-------------|
| <i>A</i> | $(-3, 1)$ |
| <i>B</i> | $(3, 1)$ |
| <i>C</i> | $(3, -4)$ |
| <i>D</i> | $(-1, -4)$ |
| <i>E</i> | $(-1, -2)$ |
| <i>F</i> | $(-3, -2)$ |



- 1.2 What is the length of the segment between *A* and *B*?

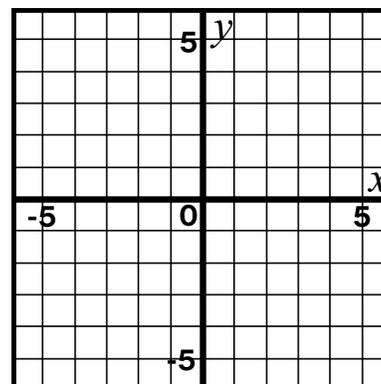
- 1.3 Determine the perimeter of the polygon.

Three points of a rectangle are $(3, 0)$, $(3, -5)$, and $(-4, -5)$.

- 2.1 What are the coordinates of the missing point?

- 2.2 What is the perimeter of the rectangle?

- 2.3 What is the area of the rectangle?



Unit 6.7, Lesson 11: Practice Problems

Decide if each quotient is greater than, less than, or equal to 1. Then determine its value.

3.1 $\frac{1}{5} \div 5$

3.2 $\frac{12}{5} \div \frac{3}{5}$

3.3 $\frac{3}{5} \div \frac{5}{3}$

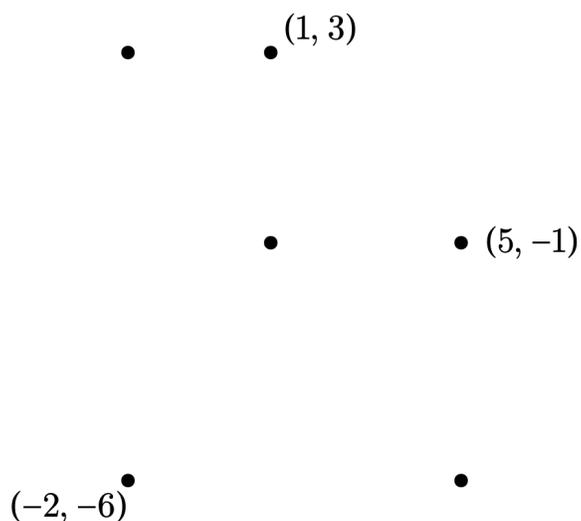
3.4 $\frac{3}{5} \div \frac{3}{5}$

4. At top speed, an elephant can run 25 miles per hour. A giraffe can run 16 miles in $\frac{1}{2}$ an hour. Which animal runs faster? Explain your reasoning.

Explore

Here are some points on a coordinate plane.

1. Draw in the approximate location of the missing axes.
2. Determine the rest of the coordinates.
3. Connect the points in any order to create a polygon.



Reflect

1. Put a star next to the question you spent the most time on.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Here are three animals.

Squirrel

Giraffe

Dog

Here are their heights. Match each animal with the height that makes sense.

15 centimeters

15 inches

15 feet

Practice

5 sixth-grade students at a school were each asked the following survey questions.

- A. What grade are you in?
- B. How many books did you read in the last year?
- C. How many inches are in 1 foot?
- D. How many dogs and cats do you have?

Their answers are shown below. Match each question with the data it produced.

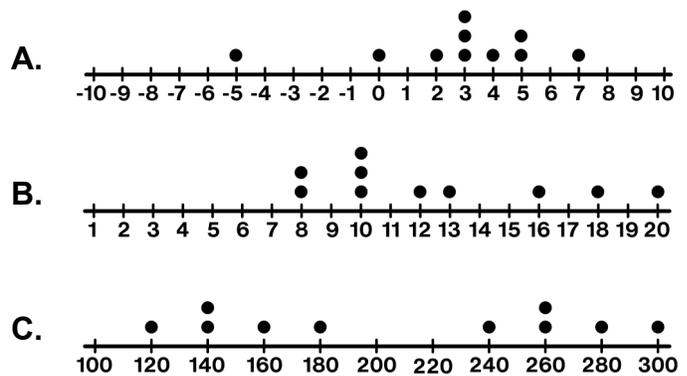
| | Question | Diya | Peter | Tiana | Marc | Callen |
|-----|----------|------|-------|-------|------|--------|
| 1.1 | | 0 | 1 | 1 | 3 | 0 |
| 1.2 | | 12 | 12 | 12 | 12 | 12 |
| 1.3 | | 6 | 6 | 6 | 6 | 6 |
| 1.4 | | 11 | 5 | 18 | 20 | 9 |

- 2. How are questions A and C different from the other questions?

Unit 6.8, Lesson 2: Practice Problems

3.1 Anya asked 10 students how many minutes it takes them to get to school each morning.

Which dot plot could represent the data that Anya collected?



3.2 Select a dot plot that could **not** represent Anya's data. Explain your thinking.

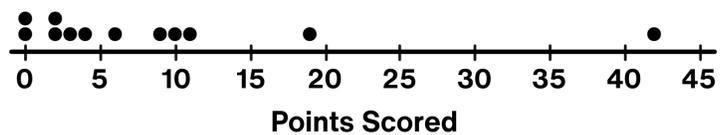
4. Order these numbers from least to greatest.

$|-17|$ $|-18|$ -18 $|19|$ 20

Least _____ Greatest

Explore

This dot plot represents the points scored by 12 players on a basketball team during an important game.



Write a story about the basketball game.

Reflect

- Put a circle next to a question you are still curious about.
- Use the space below to ask one question you have or to share something you are proud of.

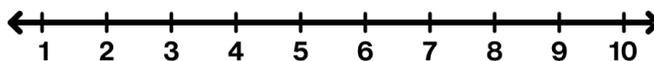
Warm-Up

Graph the inequalities on a number line.

$$m > 6$$

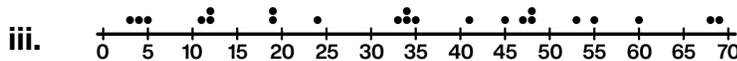
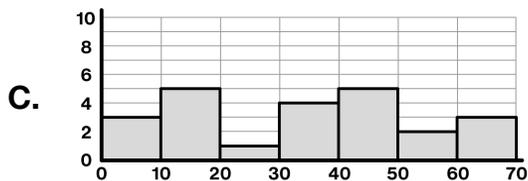
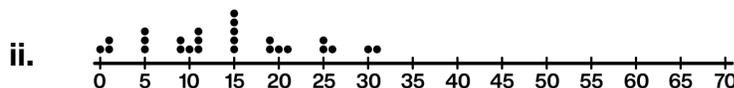
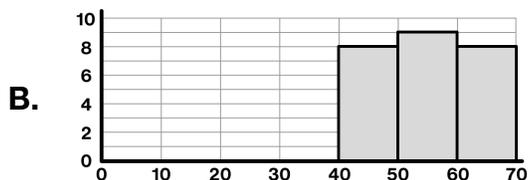
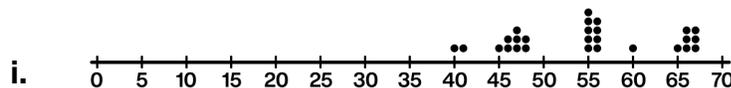
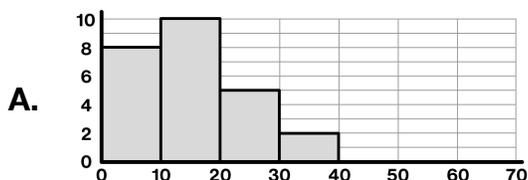


$$3 > n$$



Practice

1.1 Draw a line to match each histogram with the dot plot that represents the same data set.

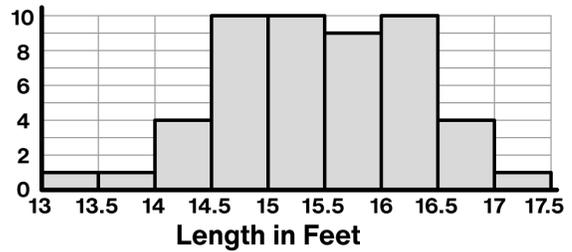


1.2 Ramon went to a family reunion. He made a histogram of the ages of everybody there. Which histogram above could represent this data?

Explain your thinking.

Unit 6.8, Lesson 5: Practice Problems

A marine biologist is studying a group of sharks. She made a histogram of the lengths of a group of adult sharks.



Determine if each statement is true or false.

- | | | | |
|-----|--|------|-------|
| 2.1 | A total of 9 sharks were measured. | True | False |
| 2.2 | Two of the sharks are less than 14 feet long. | True | False |
| 2.3 | A typical shark is about 14.5 to 16.5 feet long. | True | False |
| 2.4 | The longest shark measured was 10 feet long. | True | False |
| 2.5 | Explain your thinking for one of the false statements. | | |

Determine the quotients.

3.1 $\frac{2}{5} \div 2$

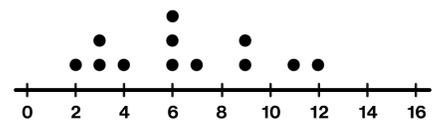
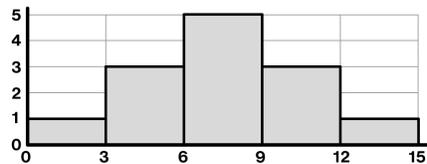
3.2 $\frac{2}{5} \div 5$

3.3 $2 \div \frac{2}{5}$

Explore

Here are three representations of the same data set.

2, 3, 3, 4, 6, 6, 6, 7, 9, 9, 11, 12



One representation has an error. Find what's wrong and fix it.

Reflect

- Put a heart next to the question you are most proud of.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the values of x that are solutions to the inequality $x > -3$.

 -2 $|-4|$ -4 3.5 -3.5

Practice

1. A preschool teacher plans to reorganize these 4 boxes of playing blocks so that each box contains an equal number of blocks.

| Box 1 | Box 2 | Box 3 | Box 4 |
|-----------|-----------|-----------|----------|
| 32 blocks | 18 blocks | 41 blocks | 9 blocks |

How could they determine the number of blocks to put in each box?

2. 3 classes worked together to raise money for their classroom libraries and agreed to share the money equally. The first class raised \$25.50, the second class raised \$49.75, and the third class raised \$37.25.

What is each class's equal share? Explain or show your reasoning.

3. Kimaya guesses that 11 is the mean of this data set.

| | | | | | |
|---|---|----|---|---|----|
| 8 | 7 | 11 | 7 | 6 | 12 |
|---|---|----|---|---|----|

Without calculating, determine if Kimaya's guess could be correct. Explain your thinking.

Unit 6.8, Lesson 7: Practice Problems

For the past 12 school days, Mai has recorded how long her bus rides to school take in minutes. The times she recorded are shown in the table.

| | | | | | | | | | | | |
|---|----|---|---|----|---|---|----|---|---|----|----|
| 9 | 12 | 6 | 9 | 10 | 7 | 6 | 12 | 9 | 8 | 10 | 10 |
|---|----|---|---|----|---|---|----|---|---|----|----|

4.1 Find the mean for Mai’s data. Show or explain your thinking.

4.2 What does the mean tell us about Mai’s trip to school?

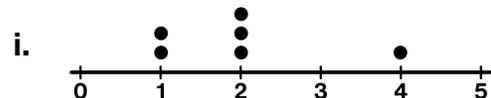
Evaluate the expression $4x^3$ for each value of x .

| | | |
|-------|-------|-------------------|
| 5.1 1 | 5.2 2 | 5.3 $\frac{1}{2}$ |
|-------|-------|-------------------|

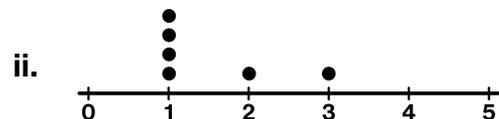
Explore

Select the dot plot that matches each statement. You can only select a dot plot once.

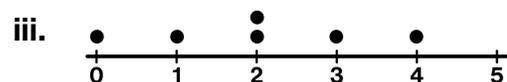
A. The mean is 2.



B. Only one value is greater than the mean.



C. Two values are greater than the mean.



Reflect

- Put a question mark next to a question you were feeling stuck on.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** the expressions that are equivalent to $2(6 + 3x)$.

- $8 + 5x$
 $12x + 6$
 $12 + 6x$
 $6(2 + x)$
 $2(9x)$

Practice

This table shows the amount of time it takes 6 students to get to school. They have a mean travel time of 22 minutes.

1.1 Calculate the absolute deviation of each value from the mean.

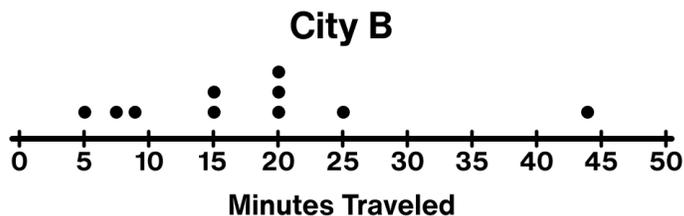
| | | | | | | |
|--|----|----|----|----|----|----|
| Time (minutes) | 10 | 10 | 18 | 20 | 30 | 44 |
| Absolute Deviation (distance from 22) | | | | | | |

1.2 Calculate the *mean absolute deviation (MAD)* of this data set.

These dot plots show the travel times for 10 students from two cities.

2.1 The MADs have been calculated for you. Match each MAD to the correct data set.

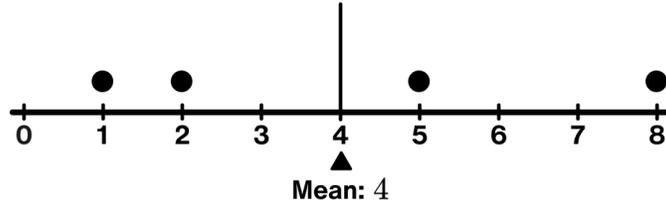
| MAD | City |
|-----|------|
| 4.4 | |
| 7.8 | |



2.2 Without calculating, explain how you matched the MADs to the data sets.

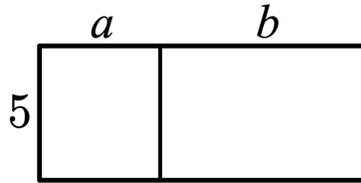
Unit 6.8, Lesson 9: Practice Problems

3. Calculate the MAD of this data set. Use the table if it helps with your thinking.



| | | | | |
|---|--|--|--|--|
| Data Point | | | | |
| Absolute Deviation (distance from 4) | | | | |

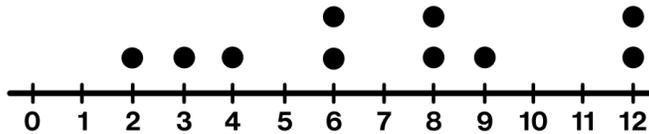
4. Select **all** the expressions that represent the total area of the rectangle.



- $5(a + b)$
 $5 + ab$
 $5a + 5b$
 $2(5 + a + b)$
 $5ab$

Explore

Remove points from this dot plot so that the mean is 8. For an additional challenge, remove as few dots as possible.

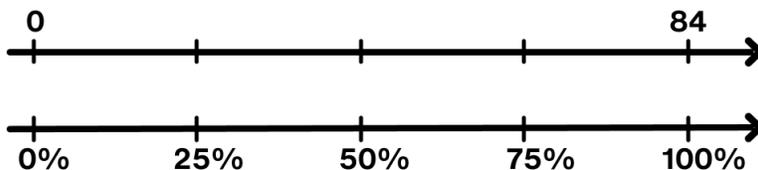


Reflect

- Put a circle next to a question you are still curious about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

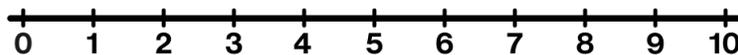
Use this double number line to determine 25%, 50%, and 75% of 84.



Practice

1.1 Make a dot plot of this data.

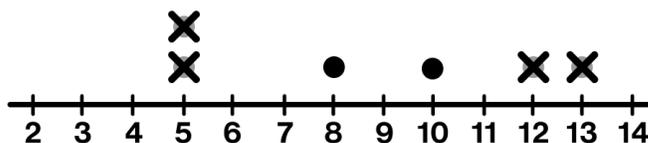
| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 6 | 7 | 6 | 2 | 9 | 3 |
|---|---|---|---|---|---|---|



1.2 Determine the median of the data.

Kayla wants to determine the median of the data in this dot plot. She started solving the problem but wasn't sure what to do next.

2.1 What advice would you give Kayla?



2.2 What is the median of this data?

3. Pilar recorded the number of points she scored in her last 7 basketball games. She says that the median score was 8 points.

Is Pilar correct? Explain your thinking.

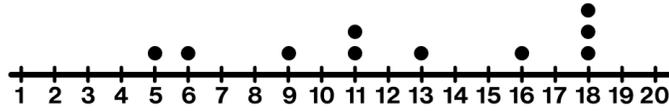


Unit 6.8, Lesson 11: Practice Problems

4. Match each dot plot with its median.

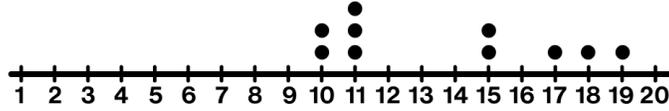
A. Median: 15

i.



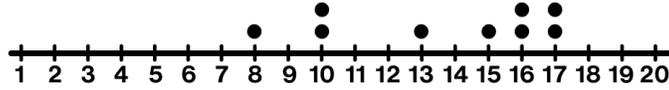
B. Median: 12

ii.



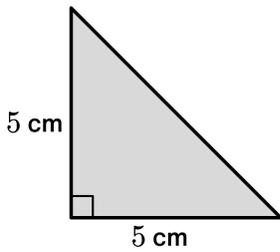
C. Median: 13

iii.

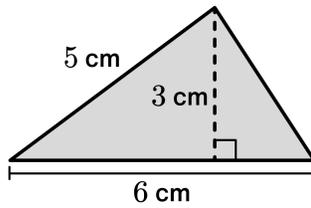


Find the area of each triangle.

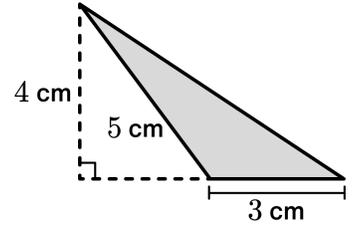
5.1



5.2

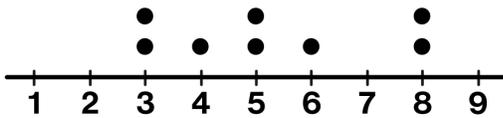


5.3

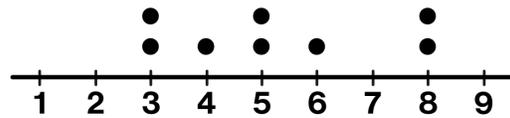


Explore

Add points to this dot plot such that the median is 4.



Remove points from this dot plot such that the median is 4.



Reflect

- Put a heart next to the question you are most proud of.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Complete each statement.

25% of 40 is _____.

25% of 120 is _____.

25% of 90 is _____.

Practice

Here are the ages of 20 people at a family reunion, ordered from youngest to oldest.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 3 | 8 | 9 | 10 | 11 | 11 | 12 | 18 | 18 | 28 | 30 | 35 | 37 | 40 | 53 | 54 | 58 | 65 | 70 | 72 |
|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

1.1 The value of quartile 2 (Q2) is 29. Explain what the number 29 tells us about the people at the family reunion.

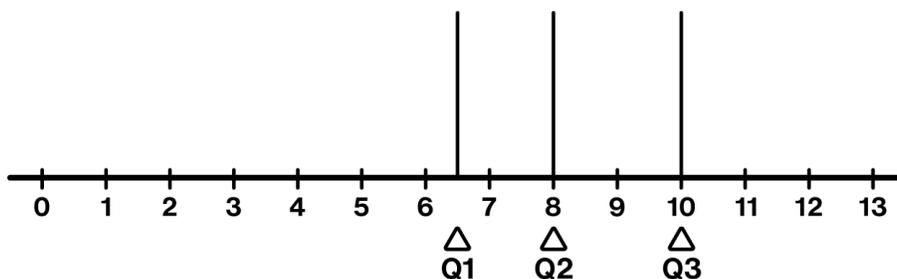
1.2 Determine the value of quartile 1 (Q1) and quartile 3 (Q3).

Quartile 1 (Q1): _____

Quartile 3 (Q3): _____

Haru recorded how long his bus ride to school took for 16 days. Here are the values of the quartiles.

Bus Ride Length (minutes)



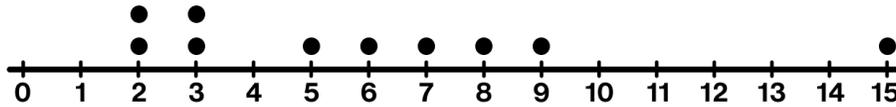
2.1 **About how many** rides would you expect to be **less** than 6.5 minutes long?

2.2 **About how many** rides would you expect to be **less** than 10 minutes long?

2.3 **About what percent** of the rides would you expect to be between 6.5 minutes and 10 minutes long?

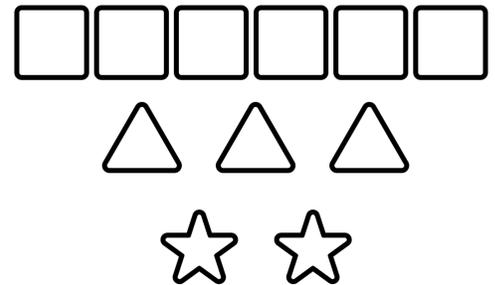
Unit 6.8, Lesson 13: Practice Problems

3. Here is a dot plot with 10 points. Use this dot plot to complete the table below.



| Median | Q1 | Q3 |
|--------|----|----|
| | | |

Answer the questions based on this picture.



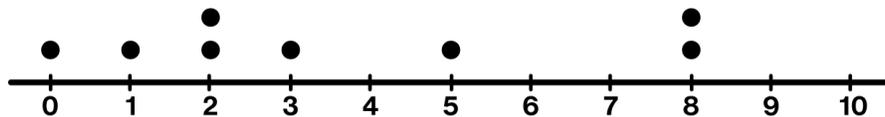
4.1 The ratio of squares to stars is ____ to ____.

4.2 The ratio of stars to triangles is ____ : ____.

4.3 For every 2 triangles, there are _____ squares.

Explore

Add 5 points to the dot plot without changing the interquartile range (IQR).



Reflect

- Put a star next to a question you are still curious about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

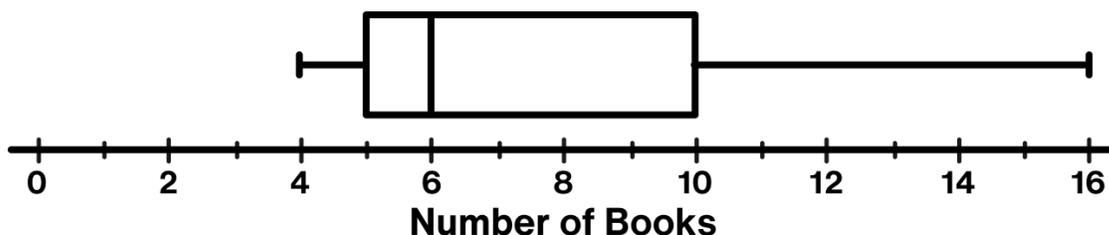
Which has the largest value?

- A. 25% of 80 B. 100% of 60 C. 75% of 100 D. 50% of 120

Practice

Each student in a class recorded how many books they read in a school year.

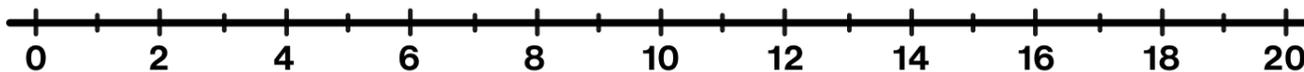
Here is a box plot that summarizes their data.



- 1.1 What is the greatest number of books that a student read this year? _____
- 1.2 What is the median of this data? _____
- 1.3 What is the range of this data? _____

2.1 Sketch a box plot that meets this description.

| | | | | |
|------------|-------|-----------|--------|-------------|
| Minimum: 4 | Q1: 6 | Median: 9 | Q3: 13 | Maximum: 19 |
|------------|-------|-----------|--------|-------------|



2.2 What is the interquartile range (IQR) of this data? _____

Unit 6.8, Lesson 14: Practice Problems

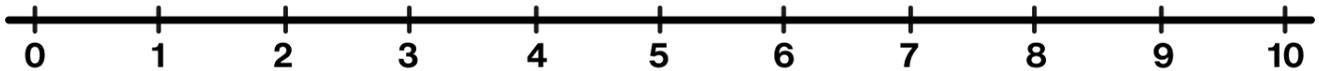
A group of seventh-grade students recorded the number of hours they spent doing homework in one week. Here is the data listed from least to greatest.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 3 | 4 | 5 | 5 | 6 | 7 | 7 | 9 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

3.1 Complete the table based on this data.

| Minimum | Q1 | Median | Q3 | Maximum |
|---------|----|--------|----|---------|
| | | | | |

3.2 Sketch a box plot of this data.



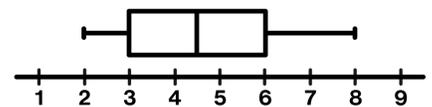
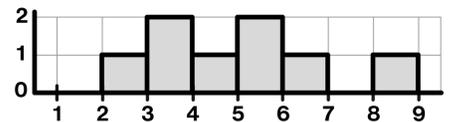
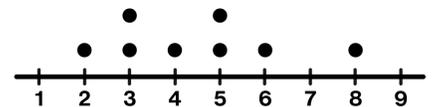
4. Select all of the values of m that are solutions to the inequality $m > -4$.

- 4.5
 -8
 3
 -4.5
 -2

Explore

Here are three representations of the same data set. One representation has a mistake.

Determine the incorrect representation and fix the mistake.



Reflect

- Circle the question you feel most confident about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Calculate the mean of each data set.

8, 9, 9, 9, 10

2, 6, 12, 16

5, 6, 12, 13

Practice

1. Select **all** the measures of center.

- Mean IQR
(interquartile range) MAD
(mean absolute deviation) Median Range

You wonder: *How much time do seventh graders at my school spend outdoors on a typical day?*

2.1 What is the **population** for your question?

2.2 Select all possible **samples** that are part of the population for your question.

- A. The 20 students in a seventh grade math class
- B. The first 20 people to arrive at your middle school on a particular day
- C. The seventh graders participating in a science fair with students from four middle schools
- D. The 10 seventh graders on the school soccer team
- E. The students on the high school debate team

2.3 Select two samples from above and list **another possible population** each sample could belong to.

Sample:

Possible population:

Sample:

Possible population:

Unit 7.8, Lesson 10: Practice Problems

3. There are 50 marbles in a bag. Students picked a marble, recorded its color, and put it back in. Each student separately carried out a different number of experiments. Here are their results:

- **Student 1:** In 4 experiments, they picked a green marble 1 time.
- **Student 2:** In 12 experiments, they picked a green marble 5 times.
- **Student 3:** In 9 experiments, they picked a green marble 3 times.

Estimate the probability of getting a green marble from this bag. Explain your reasoning.

A bookstore has discounted the price for all books by 15% .

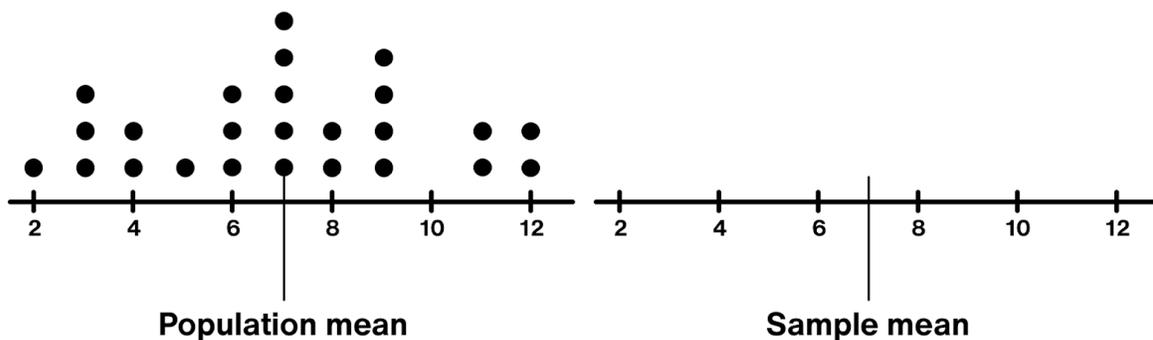
4.1 How much is the discount on a book that normally costs \$18 ?

4.2 After the discount, how much would the book cost?

Explore

Create a dot plot of a sample of the population whose mean is the same as the population mean.

Your sample should have more than six, but fewer than 20 data points.



Reflect

1. Circle one problem, word, or concept you want to know more about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Determine the value of each quotient.

$34\,000 \div 10$

$340 \div 100$

$34 \div 10$

$3.4 \div 100$

Practice

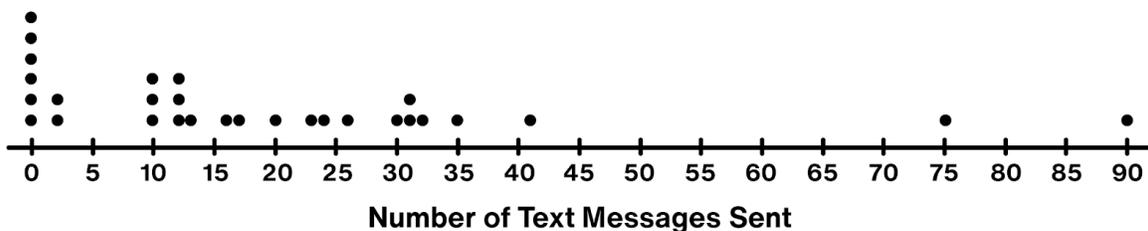
1. Select **all** the reasons why random samples tend to produce a more representative sample.

- You can determine how many people you want in the sample.
- It is the easiest way to select a sample from a population.
- It avoids the bias that can occur with other sampling methods.
- Each person in the population has an equal chance of being selected.
- The sample mean will always be the same as the population mean.

2. Jada wants to learn about the percentage of students who like the food in the cafeteria. Jada asks the first 25 students who purchase lunch at the cafeteria if they like the food.

Is Jada’s method likely to produce a representative sample? Explain your reasoning.

This is a dot plot of the number of text messages sent on one day for a sample of students at a high school. 30 random students were sampled.



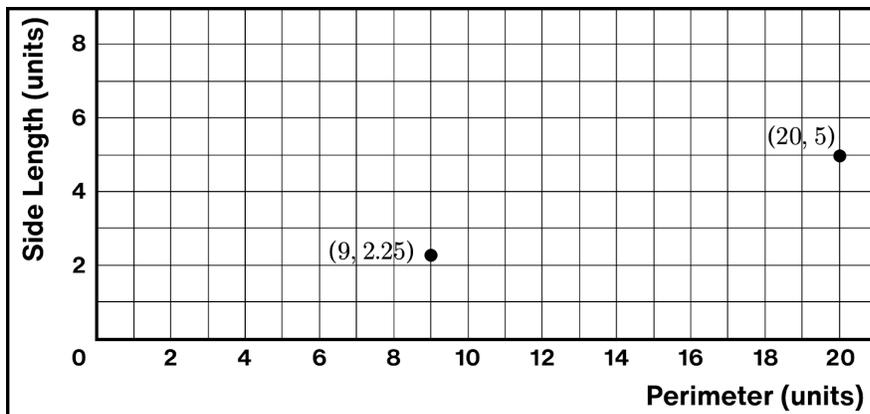
3.1 What do the six dots at 0 on the dot plot represent?

3.2 Since this sample is representative of the population, describe what a dot plot for the entire high school might look like.

Unit 7.8, Lesson 11: Practice Problems

This graph shows the side length of a square vs. its perimeter. A couple of points are plotted.

4.1 Plot and label at least two more points on the graph.



4.2 Is there a proportional relationship between the perimeter and side length? Explain how you know.

Explore

Write a question you're interested in finding the answer to.

What is the population for your question?

Describe a strategy to get an **unfair sample** to answer your question.

Describe a strategy to get a **random sample** to answer your question.

Reflect

1. Put a heart next to the question you are most proud of.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Complete the table so that each column has the same value.

| | | | | |
|-----------------|---------------|------|----------------|-------|
| Fraction | $\frac{2}{5}$ | | $\frac{3}{10}$ | |
| Decimal | | 0.75 | | 0.125 |
| Percent | 40% | 75% | | |

Practice

Faaria and Ariel wondered what proportion of students at school would dye their hair blue. They each surveyed a different random sample of the students at school.

- 1.1 Faaria asked 10 students, and 2 of them said they would. Based on Faaria's sample, what proportion of the students would dye their hair blue?
- 1.2 Ariel asked 100 students, and 17 of them said they would. Based on Ariel's sample, what proportion of the students would dye their hair blue?
- 1.3 Whose proportion is likely to be closest to the proportion of all the students?
Explain how you know.

In a school of 580 students, one class was asked which hand they write with. "L" means they use their left hand, and "R" means they use their right hand.

Here are the results: L, R, R, R, R, R, R, R, R, R, L, R, R, R, R, R.

- 2.1 Based on this sample, estimate the **proportion** of students at the school who write with their left hand.
- 2.2 Estimate the **number** of students at the school who write with their left hand.

Unit 7.8, Lesson 12: Practice Problems

2.3 A different class of 18 students is surveyed. Estimate how many write with their left hand.

Match each expression in the first list with an equivalent expression from the second list.

3.1 $(8x + 6y) - (2x + 4y)$

a. $10x - 10y$

3.2 $(8x + 6y) - (2x - 4y)$

b. $10x - 2y$

3.3 $8x - 6y - (-2x + 4y)$

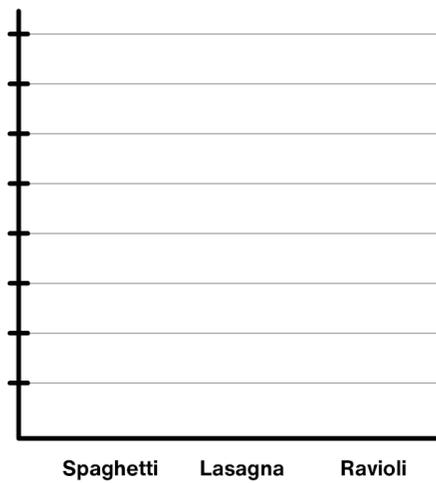
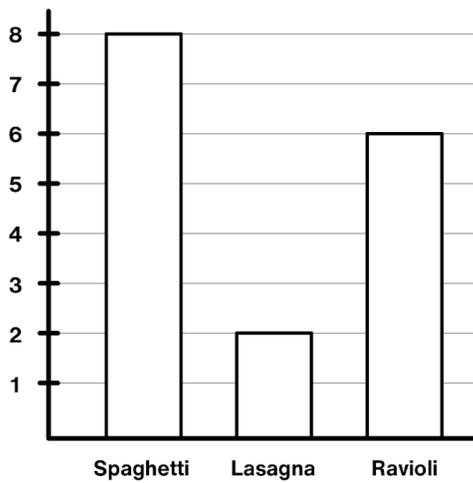
c. $6x + 2y$

3.4 $8x - 6y - (-2x - 4y)$

d. $6x + 10y$

Explore

16 students at a school were asked about their favorite pasta dish. Create a bar graph showing the possible results for all 400 students in the school. Be sure to label the vertical axes.

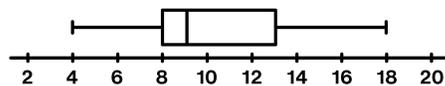
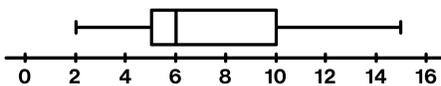
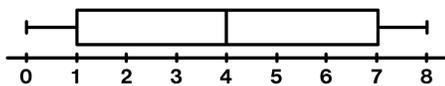


Reflect

- Put a smiley face next to the question you are most confident about.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Determine the IQR (interquartile range) for each box plot.



Practice

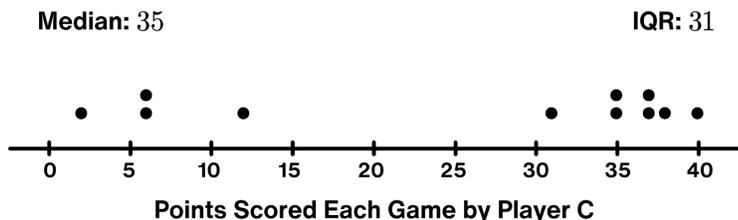
A basketball coach is trying to determine the Most Valuable Player.

The points scored in each game for two of the players he is considering is below:

| | Points Scored Each Game |
|-----------------|--|
| Player A | 18, 21, 22, 22, 23, 23, 23, 23, 24, 24, 30 |
| Player B | 14, 20, 20, 21, 23, 23, 23, 23, 24, 27, 35 |

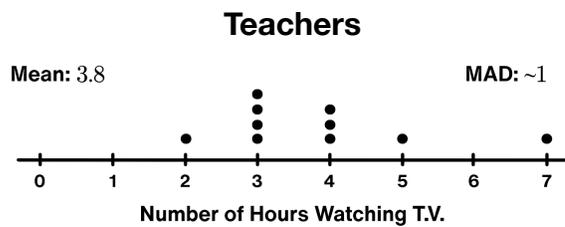
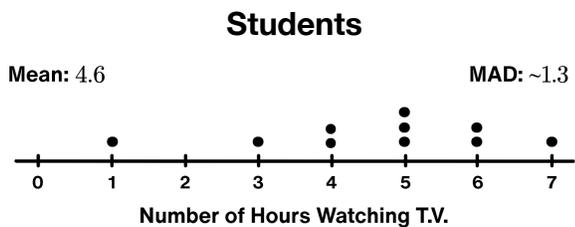
- 1.1 Which player has the higher median?
- 1.2 Determine the IQR of each player's scores.
- 1.3 Between these two players, which player should receive the award? Use at least one piece of evidence to support your claim.
- 1.4 Some fans think Player C should win the award. Do you agree?

Explain your reasoning.



Unit 7.8, Lesson 14: Practice Problems

Abdullah compared the time spent watching T.V. by students and teachers over the weekend. He took a random sample of 10 students and 10 teachers and plotted their responses.



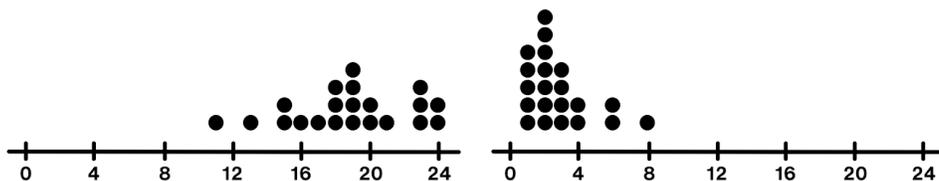
- 2.1 Is there a big difference between students' data and teacher's data? Use at least one piece of evidence to support your claim.

- 2.2 Abdullah took a random sample of 10 parents and found that they watched a mean of 2.5 hours of T.V. with a MAD of 1 hour. Is there a big difference between how much T.V. parents watch and students watch? Use at least one piece of evidence to support your claim.

3. Sora says that 0.77 is a **repeating decimal** because both digits are the same. Is she correct? Explain your thinking.

Explore

Use the two data sets to create your own scenario. Label the axes and write a headline.



Reflect

1. Put a heart next to the question you enjoyed doing the most.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Order these probabilities from least to greatest.

60%

8 out of 10

0.37

20%

$\frac{5}{6}$

Least _____ Greatest

Practice

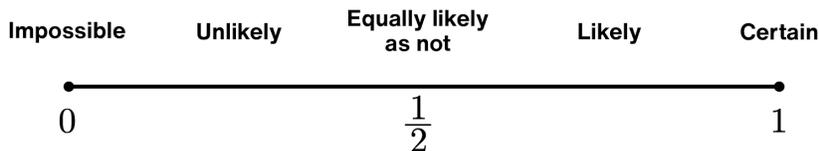
List the sample space for each chance experiment.

(For example, the sample space of flipping one fair coin is heads or tails.)

- 1.1 Selecting a random season of the year.
- 1.2 Selecting a random day of the week.
- 1.3 Selecting a random block out of a bag with 2 green blocks and 3 blue blocks.

Estimate or calculate the probability of each event. Use the probability scale if it helps you with your thinking.

- 2.1 You read this sentence. _____
- 2.2 A fair coin lands on heads when flipped. _____
- 2.3 A weekend day is selected randomly from the days of the week. _____
- 2.4 You see a live unicorn outside today. _____
- 2.5 A spinner with equal parts red, yellow, and green lands on green on the next spin. _____
- 2.6 You pick a green block when you randomly pick one block from a bag with 7 green blocks and 3 blue blocks. _____



A computer randomly selects a letter from the alphabet.

- 3.1 How many different outcomes are possible?
- 3.2 What is the probability the computer selects the first letter of your first name?
- 3.3 What is the probability the computer selects a vowel (A, E, I, O, or U)?

Unit 7.8, Lesson 2: Practice Problems

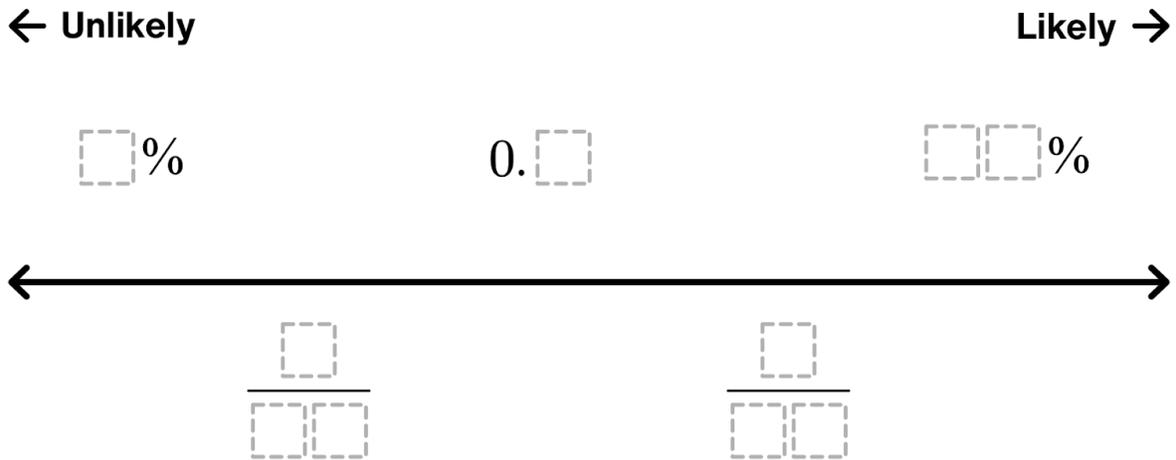
E represents an object's weight on Earth and M represents that same object's weight on the Moon. The equation $M = \frac{1}{6} E$ represents the relationship between these quantities.

4.1 What does the $\frac{1}{6}$ represent in this situation?

4.2 If a person weighs 24 pounds on the Moon, how many pounds would they weigh on Earth?

Explore

Fill the blanks using each of the digits 0 to 9 without repeating.



Reflect

- Put a heart next to the question you are most proud of.
- Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

For each word, determine the probability of selecting the letter "A" at random.

LAMB

SAFETY

ALABAMA

Practice

1. What is the probability of selecting a random month of the year and getting a month that starts with the letter "J"?

If you get stuck, consider listing the sample space.

2. A bag has 6 blocks in it. Joel picks a block out of the bag 60 times. He gets a green block 43 times.

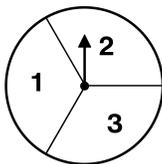


Based on these results, how many blocks do you expect to be green? Explain your reasoning.

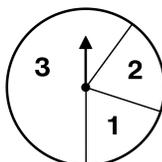
3. Miko spun a spinner with numbered sections 15 times and recorded the results:

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

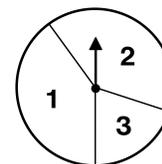
Spinner A



Spinner B



Spinner C



Which spinner is most likely the one he used? _____ Explain your reasoning.

A textbook has 428 numbered pages, starting with 1. You are equally likely to stop on any of the pages if you flip through the book randomly.

4.1 What is the probability that you turn to page 45?

4.2 What is the probability that you turn to an even-numbered page?

4.3 If you repeat this experiment 50 times, about how many times do you expect to turn to an even-numbered page?

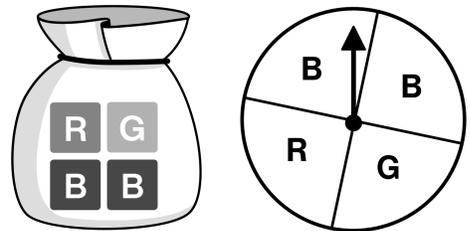
Unit 7.8, Lesson 3: Practice Problems

5. Select **all** of the situations in which the surface area would be useful to know.
- Ordering tiles to replace the roof of a house.
 - Estimating how long it will take to clean the windows of a greenhouse.
 - Deciding whether leftover soup will fit in a container.
 - Estimating how long it will take to fill a swimming pool with a garden hose.
 - Buying fabric to sew a couch cover.
 - Deciding whether one muffin pan is enough to bake a muffin recipe.

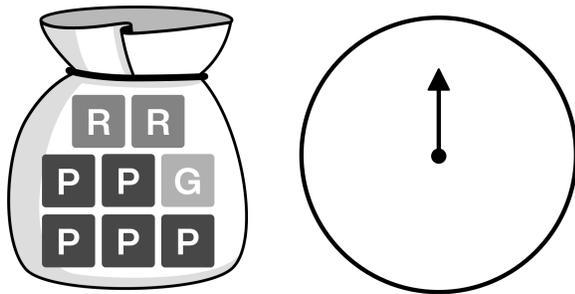
Explore

Here is a spinner and a bag of blocks.

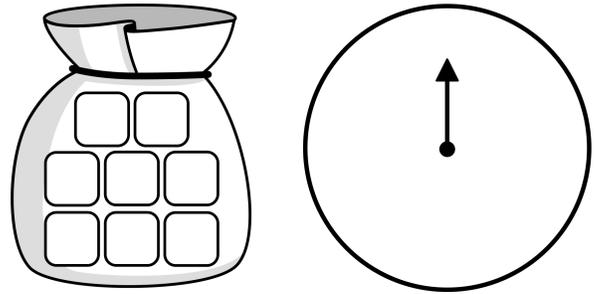
The spinner and the bag have the same probabilities of getting “R”, “G”, or “B”.



Create a spinner to match the probabilities of picking blocks from the bag.



Create your own set of blocks and a spinner with matching probabilities.



Reflect

1. Star a question you are still wondering about.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

If you select a random letter from the word PINEAPPLE, what is the probability that . . .

. . . you select a "P"?

. . . you select a vowel
(A, E, I, O, U)?

. . . you select a letter that
appears in APPLE?

Practice

Deja has a six-sided number cube.

- 1.1 If this were a standard number cube, what would be the probability that the cube lands on a five?

- 1.2 Deja suspects the six-side number cube is not so standard.
 - Deja rolled a five 40 times out of 100.
 - Manuel rolled a five 21 times out of 50.
 - Santino rolled a five 11 times out of 30.

Based on these results, what would you say is the probability of landing on a five?

- 1.3 Is it likely this is a standard number cube? Explain your reasoning.

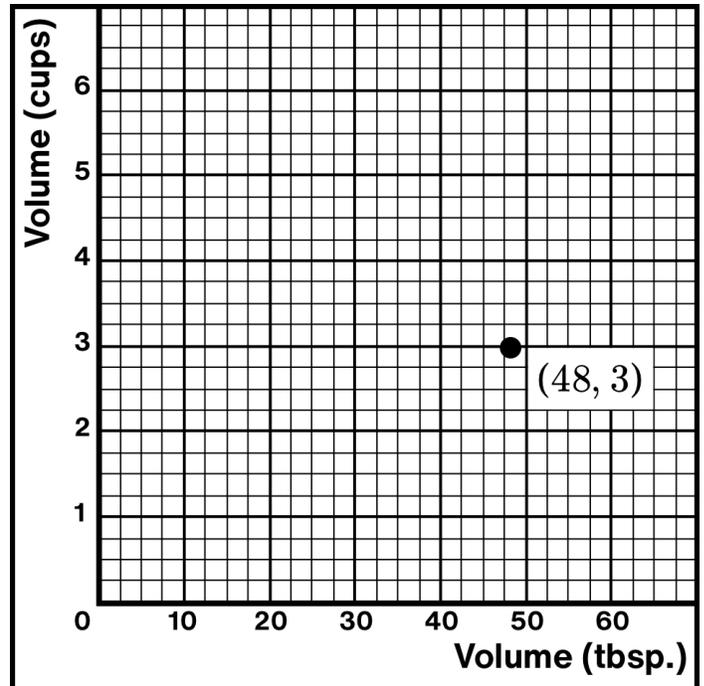
- 2.1 Santino wants to know if his quarter is fair, so he flips it 10 times. It lands on heads 3 times and on tails 7 times. Are these results enough to determine if the coin is fair?? Explain your reasoning.

- 2.2 What could Santino do to be more sure of his results?

Unit 7.8, Lesson 5: Practice Problems

There is a proportional relationship between sugar measured in cups and sugar measured in tablespoons. For example, 48 tablespoons of sugar is equivalent to 3 cups of sugar.

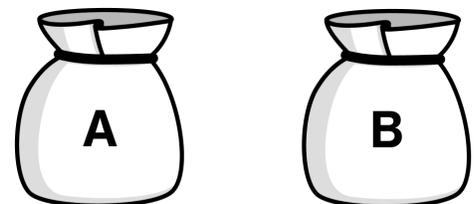
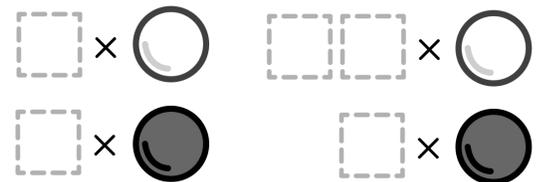
- 3.1 Plot and label at least two more points that represent the relationship.
- 3.2 Draw a line that represents the relationship.
- 3.3 What is a constant of proportionality for this relationship?
- 3.4 Write an equation representing this relationship. Use c for cups and t for tablespoons.



Explore

Here are two bags, each with a different mixture of black and white marbles.

Fill in each blank using the digits 1 to 9 without repeating such that the probability of drawing a black marble from either bag is the same.



Reflect

- 1. Circle the question you spent the most time on.
- 2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Select **all** of the true equations.

$8 = (8 + 8 + 8 + 8) \div 3$

$(10 + 10 + 10 + 10 + 10) \div 5 = 10$

$(6 + 4 + 6 + 4 + 6 + 4) \div 6 = 5$

Practice

Farah made a tree to help her choose a theme, location, and day of the week for her birthday party.

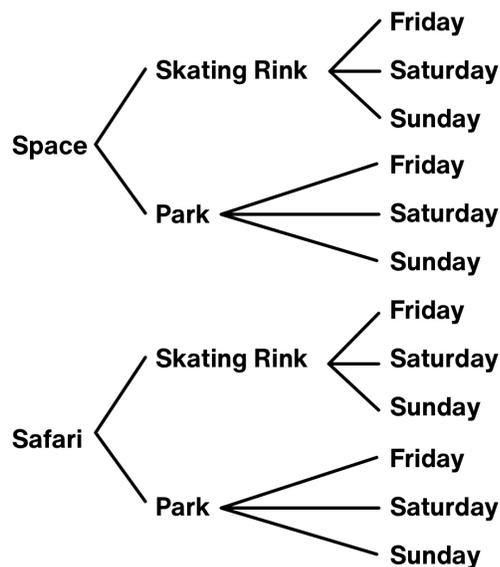
1.1 How many themes is Farah considering? _____

1.2 How many locations is Farah considering? _____

1.3 How many days is Farah considering? _____

1.4 One party Farah is considering is a space theme at the skating rink on Sunday.

Write two other possible parties Farah could have.



1.5 If Farah lets her brother choose a theme, location, and day at random, what is the probability that Farah's birthday will be a safari at the park on Saturday?

Explain your reasoning.

Juan and Neo are playing rock-paper-scissors. They each choose one of the three items.

2.1 Create a list, table, or tree to represent all the possible combinations of choices.

2.2 What is the probability that they both choose the same object?

Unit 7.8, Lesson 6: Practice Problems

Isabella selects one type of lettuce and one dressing to make a salad.

- **Lettuce types:** iceberg, romaine
- **Dressings:** ranch, Italian, Caesar

3.1 Create a list, table, or tree to represent all the possible combinations of choices.

3.2 If Isabella picks a type of lettuce and dressing out of the fridge at random, is it more likely that she will get iceberg lettuce or Caesar dressing?

Explain your reasoning.

$\frac{1}{3}$ produces a decimal that repeats every one digit. What fraction produces each of the following:

4.1 A decimal that **repeats** every two digits.

4.2 A decimal that **terminates** after two digits.

Explore

Twelve toy turtles run a race. Each turtle is numbered from 1 to 12. A turtle can move forward one step whenever their number is rolled from the sum of two six-sided number cubes.

Who do you think is most likely to win the race?

Make an argument to justify your choice.

Reflect

1. Star a question you think you should practice more.
2. Use the space below to ask one question you have or to share something you are proud of.

Warm-Up

Write each fraction as a percent.

$$\frac{3}{5}$$

$$\frac{1}{50}$$

$$\frac{9}{10}$$

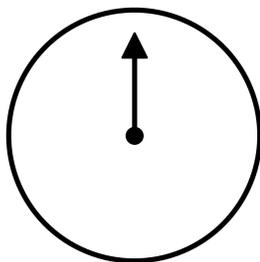
$$\frac{9}{5}$$

$$\frac{18}{60}$$

Practice

The weather forecast says there is a 75% chance it will rain today.

- 1.1 Draw a spinner you could use to simulate a 75% chance of rain.



- 1.2 Explain why using a number cube to simulate this probability may be less useful than using a spinner.

- 1.3 Describe or draw a different way you could simulate this probability.

Esteban has 3 kittens. According to the vet, each kitten is born with blue eyes and there is a 50% chance of it changing color once they reach three months. Esteban decides to run a simulation using 3 coins, where heads represent the eyes changing color. Here are the results of his simulation.

| Experiments with . . . | Count |
|-------------------------|-------|
| No blue-eyed kittens | 11 |
| One blue-eyed kitten | 32 |
| Two blue-eyed kittens | 43 |
| Three blue-eyed kittens | 14 |

2. Estimate the probability that at least one of Esteban’s kittens will still have blue eyes at three months old.

Explain or show your thinking.

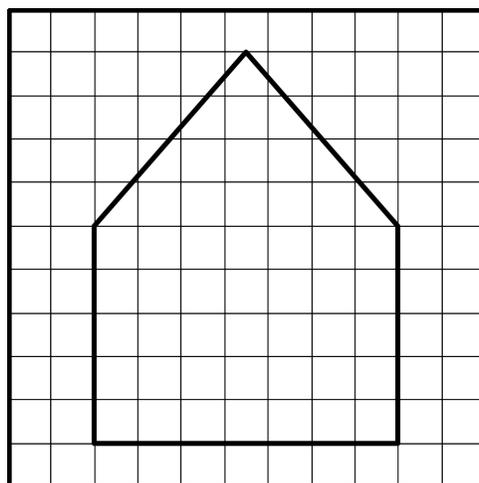
Unit 7.8, Lesson 7: Practice Problems

- Kayla and Riya are playing a game where they roll a number cube and flip a coin. List or show the sample space of the possible outcomes for this game.

Here is a diagram of the base of a bird feeder. Each square on the grid represents 1 square inch.

- What is the area of the base of the bird feeder?

- The distance between the two bases is 8 inches. What is the volume of the bird feeder?



Explore

Melanie and Alexis use the following method to decide who will pay the bill for lunch:

- They roll two number cubes.
- If the sum of the two numbers is even, Melanie pays.
- If it is odd, Alexis pays.

Who is more likely to pay the bill? Show your thinking.

Reflect

- Circle the question that you are least confident about.
- Use the space below to ask one question you have or to share something you are proud of.