

Warm-Up

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

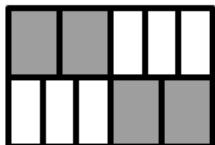


Figure 1

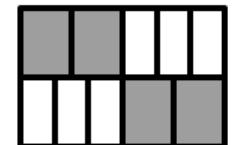


Figure 2

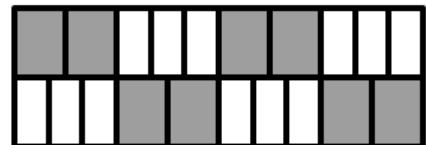


Figure 3

Figure 4

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 ?

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	

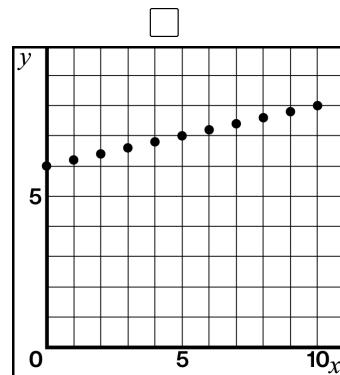
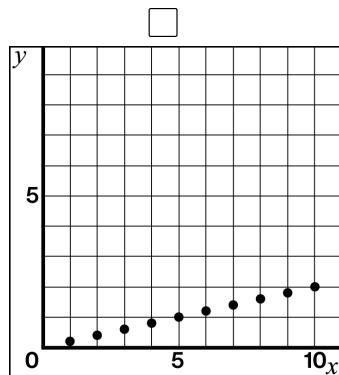
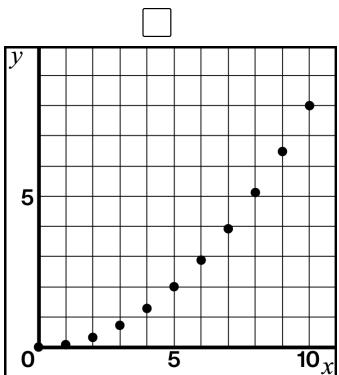
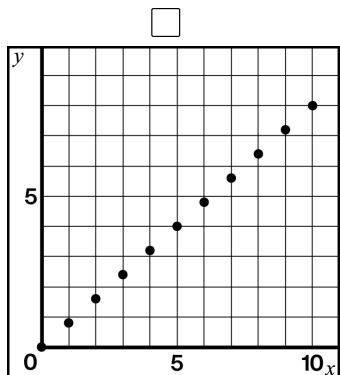
4. Use the equation $s = 3.2r + 5$ to complete the table.

Is s proportional to r ?

r	s
1	
2	
4	

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.

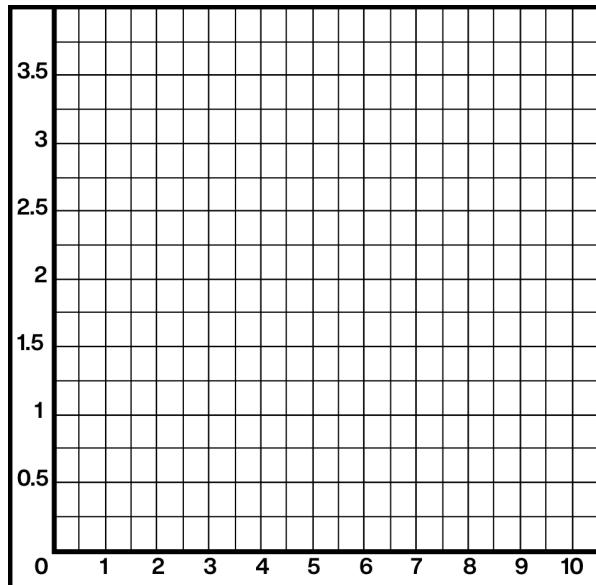
- 1.1 What does x represent?

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

- 1.2 What does y represent?

- 1.3 Is there a proportional relationship between x and y ?

- 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?

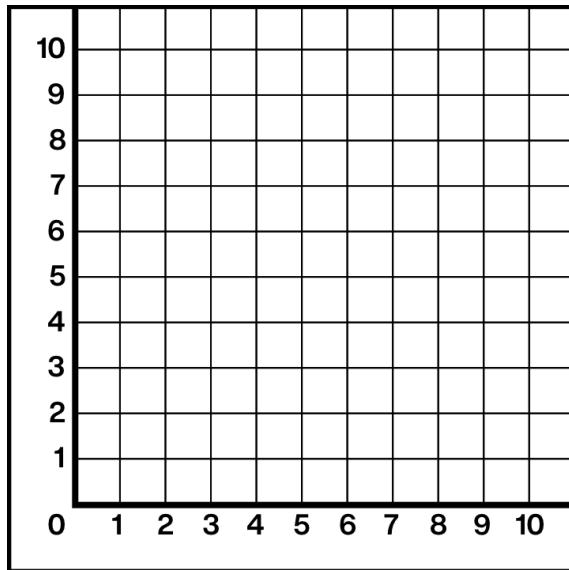
Explain your reasoning.

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.

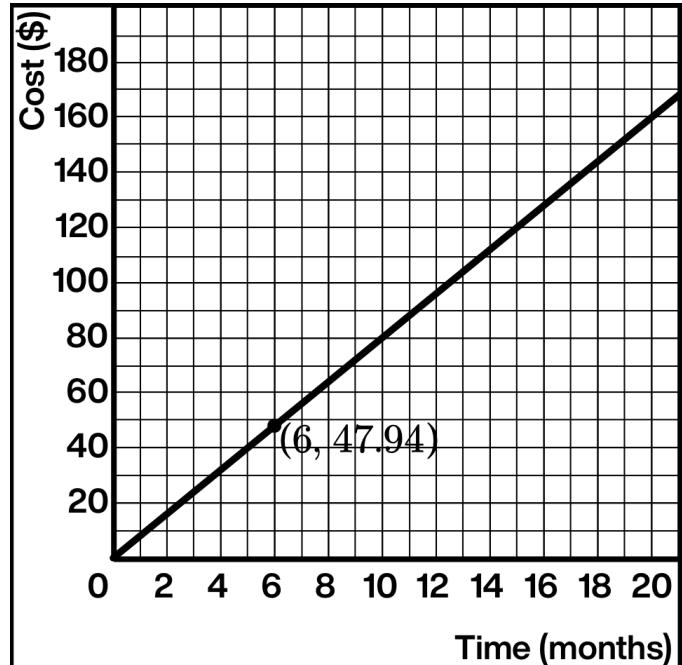
- 1.1 What is the constant of proportionality in this relationship?

- 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.



Unit 7.2, Lesson 10: Practice Problems

Name _____

Warm-UpSelect **all** of the equations that are true.

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

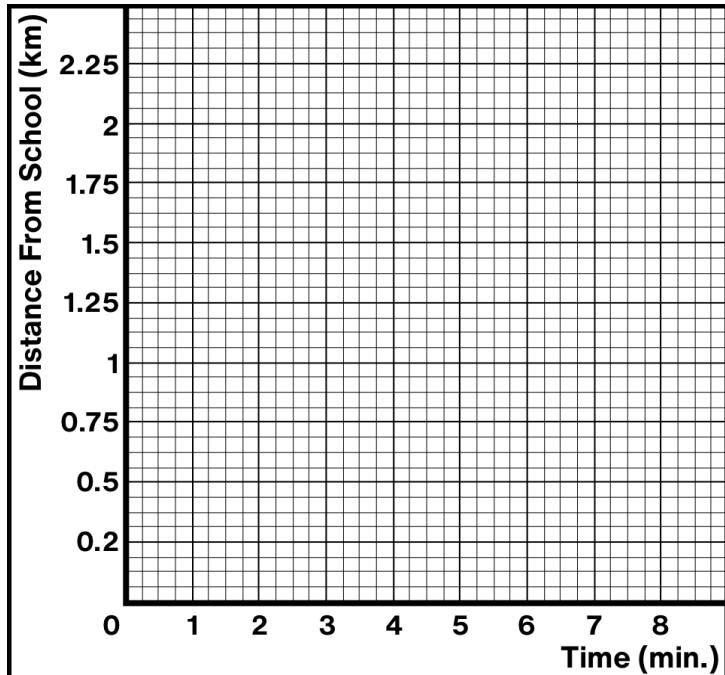
$\frac{3}{4} \div \frac{1}{2} = \frac{6}{4} = \frac{1}{4}$

$2.8 \cdot 13 = 0.7 \cdot 52$

Practice

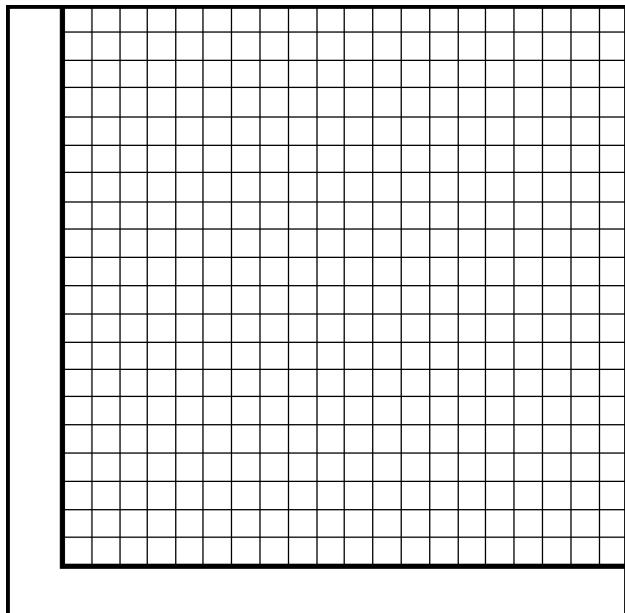
Mia and Jamal bike home from school at a steady pace. Mia bikes 1.25 kilometers and it takes her 4 minutes. Jamal bikes 1.75 kilometers and it takes him 7 minutes.

- 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.





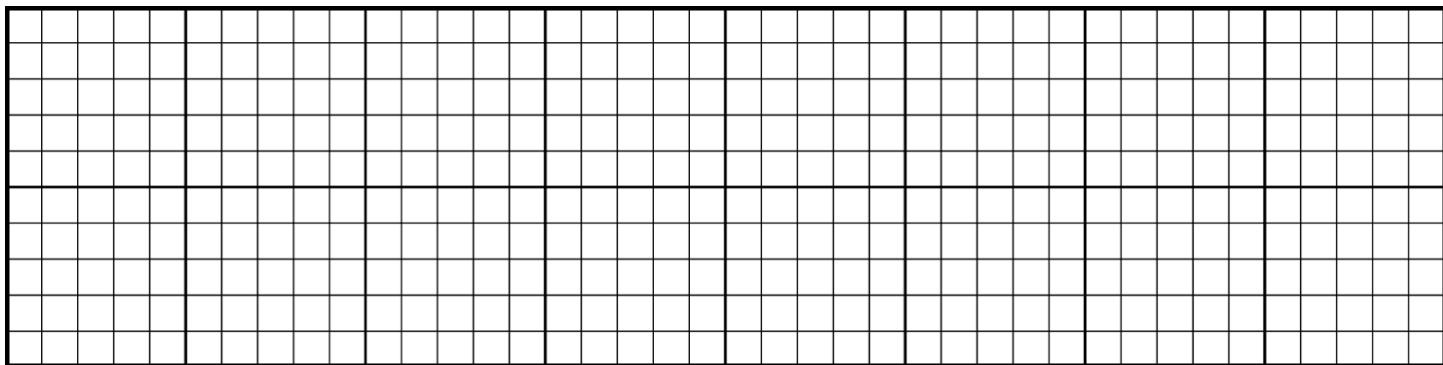
Warm-Up

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? _____



Science Mom Lesson 70

Unit 7.3, Lesson 3: Practice Problems

Name _____

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.

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

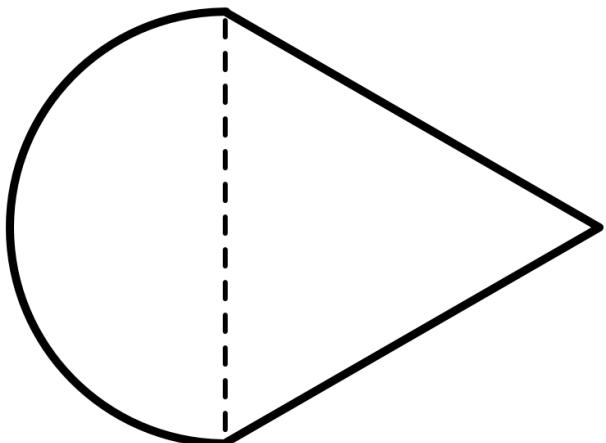
Practice

- 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?



Warm-Up

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

$3 \cdot 4^2$

$6 + 6 \cdot 4$

50% of 96

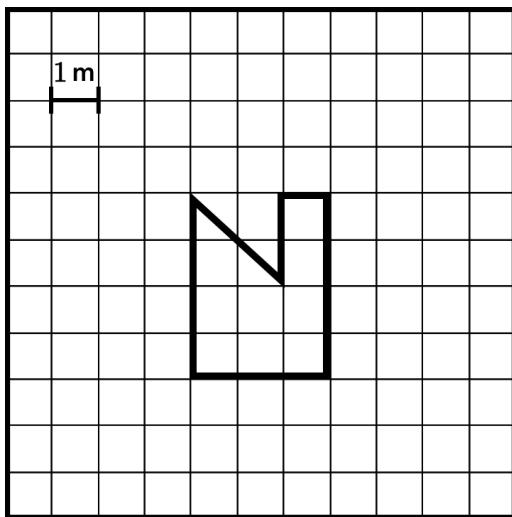
$(3 \cdot 4)^2$

$4(6 + 6)$

Practice

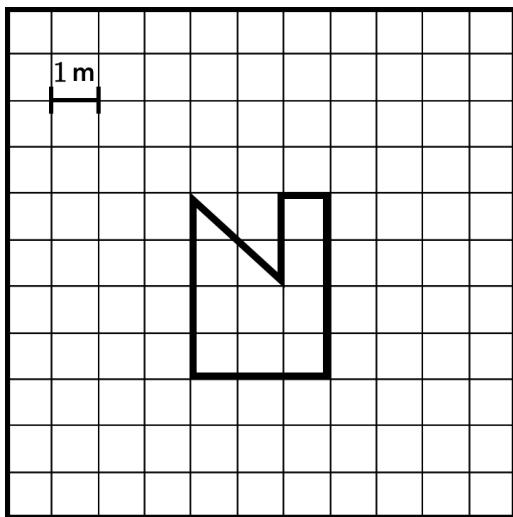
- 1.1 What is the area of this figure?

Draw to help to show your thinking.



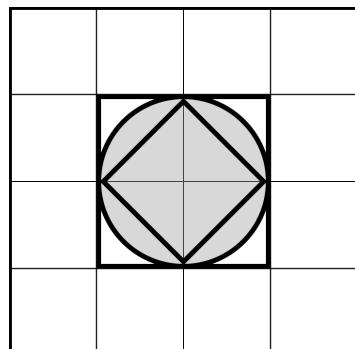
- 1.2 Describe another way to determine the area of this figure.

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 6: Practice Problems

Name _____

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 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? _____

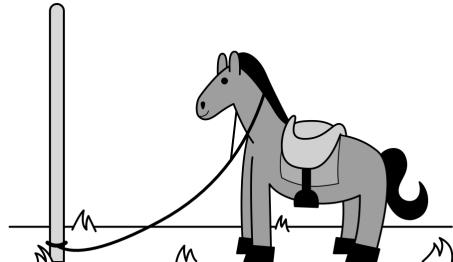
Answer the question.

- 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.



Warm-Up

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

. . . 50% of the circle?

. . . 25% of the circle?

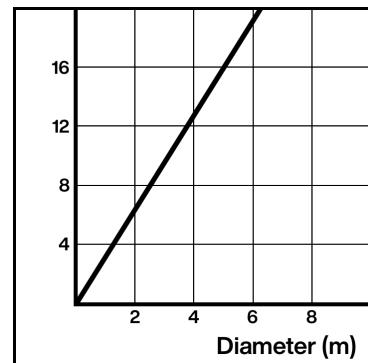
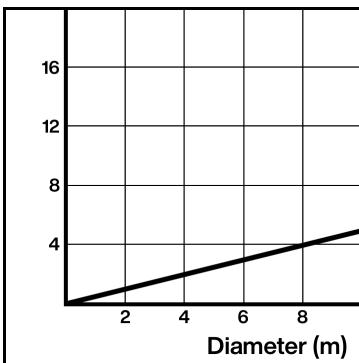
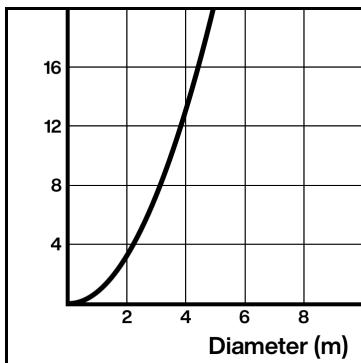
. . . 20% of the circle?

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?

Warm-Up

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

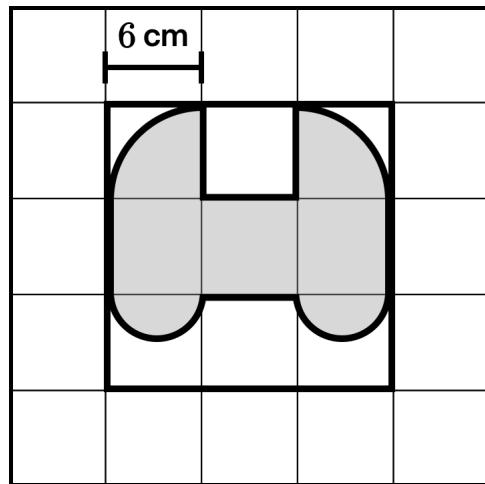
. . . 10% of the circle?

. . . 5% of the circle?

. . . 15% of the circle?

Practice

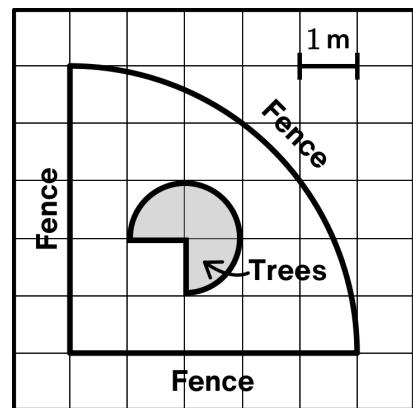
- Calculate the area of this figure.



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?



Warm-Up

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

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

Practice

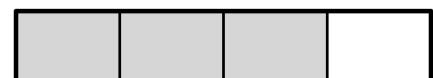
1. Here are 24 stars. Circle 25% of these stars.



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.

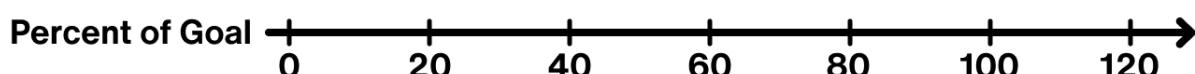
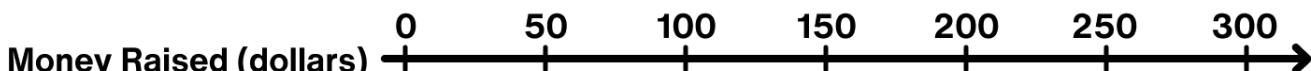
Warm-Up

What percent of each figure is shaded?

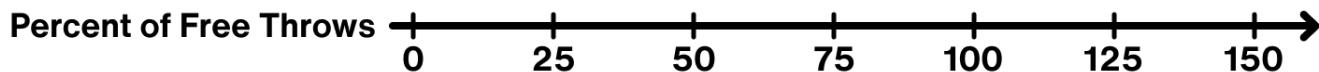
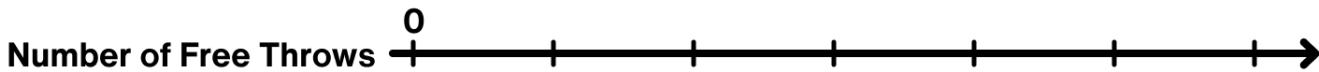


Practice

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.





Science Mom Lesson 78

Unit 6.3, Lesson 11: Practice Problems

Name _____

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?



Warm-Up

Calculate the following values:

$$10\% \text{ of } 27$$

$$1\% \text{ of } 27$$

$$6\% \text{ of } 27$$

$$16\% \text{ of } 27$$

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?

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?

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?

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?

Warm-Up

Solve each equation.

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

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

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

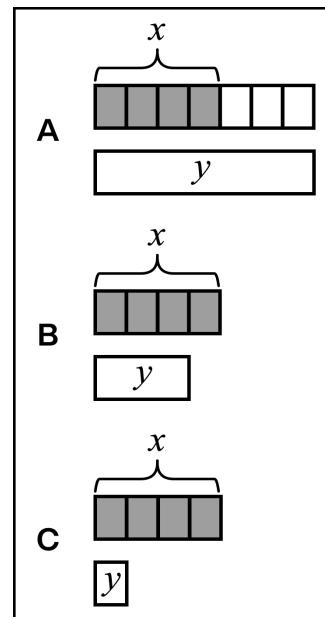
Practice

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. $(1 + 0.3) \cdot 80$

Warm-Up

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

A. 0.5

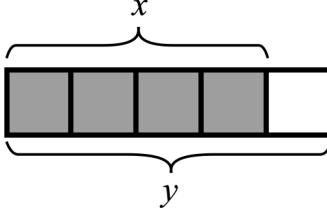
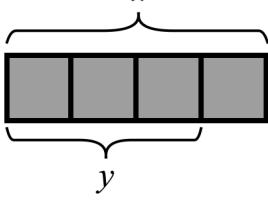
B. 0.6

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.	

Warm-Up

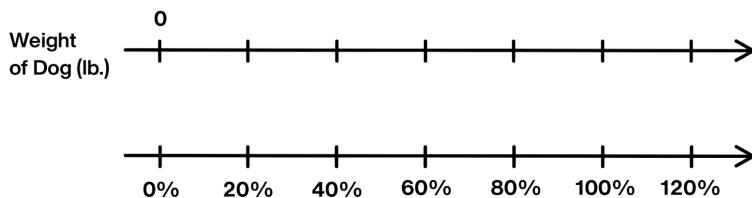
Circle **all** of the expressions that represent an 8% increase compared to x .

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

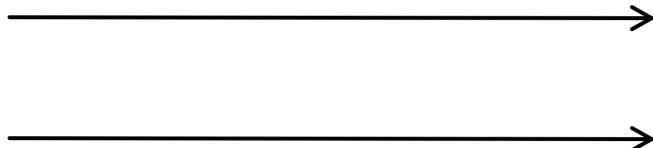
Practice

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

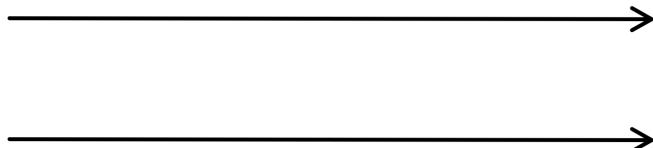
- 1.1 A dog weighs 20% more than it did three months ago. It weighs 36 pounds now. How much did the dog weigh three months ago?



- 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. $y = 1.2x$

Warm-Up

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

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

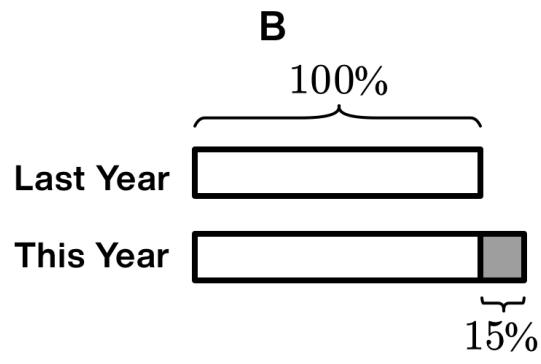
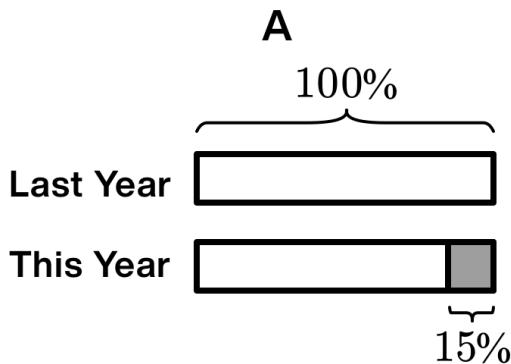
B. $\frac{9}{8}x$

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?



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?



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.

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.

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.

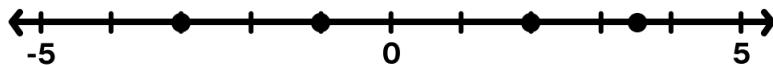
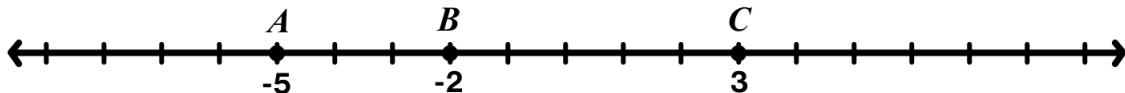
- 1.3 A book costs \$32.55 after tax. How much did it cost before tax?

- 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.

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.



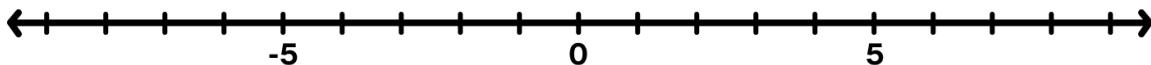
Warm-Up

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.

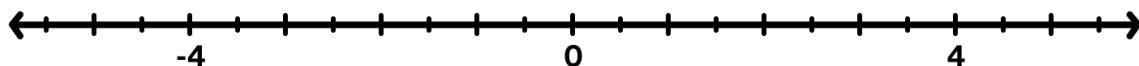
The opposite of -2 is ____.

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

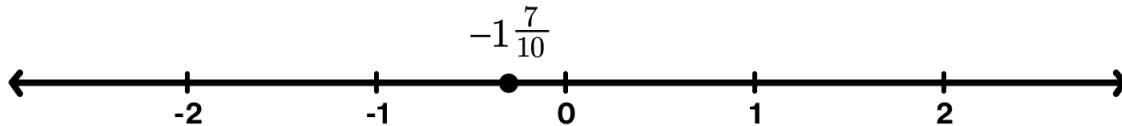
The opposite of -3.4 is 3.4 .

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.



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.

 $\underline{\quad} < 5$ $\underline{\quad} < -5$ $-5 < \underline{\quad}$ $-5 > \underline{\quad}$

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

 $-5 \underline{\quad} 2$ $5 \underline{\quad} -5$ $-12 \underline{\quad} -15$ $-12.5 \underline{\quad} -12$

Determine whether each statement is true or false.

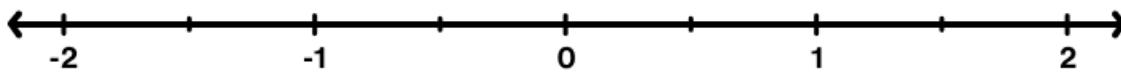
- 3.1 -8.4 is to the right of -8.7 on the number line. True False

- 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.

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



Science Mom Lesson 94

Unit 6.7, Lesson 4: Practice Problems

Name _____

Warm-Up

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

$\underline{\quad} < 0.5$

$\underline{\quad} < -0.5$

$-0.5 < \underline{\quad}$

$-0.5 > \underline{\quad}$

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.

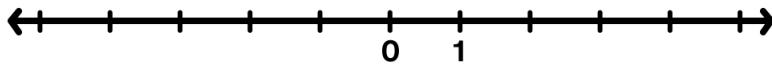


Warm-Up

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.

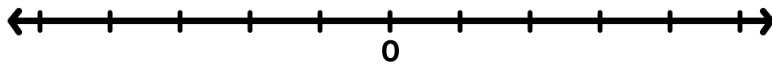
1.2 Plot and label all numbers with an absolute value of $\frac{5}{2}$.

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 $-3.2 \underline{\quad} 1.5$

2.2 $|-3.2| \underline{\quad} |1.5|$

2.3 $2 \underline{\quad} -1.5$

2.4 $|2| \underline{\quad} |-1.5|$

2.5 $\frac{3}{2} \underline{\quad} -1.5$

2.6 $\frac{3}{2} \underline{\quad} |-1.5|$

2.7 $|-2.7| \underline{\quad} |-4.5|$

2.8 $|-2.7| \underline{\quad} -4.5$

Warm-Up

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

$3 \underline{\quad} -3$

$12 \underline{\quad} 24$

$-12 \underline{\quad} -24$

$7.2 \underline{\quad} 7$

$-7.2 \underline{\quad} -7$

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?



Warm-Up

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

$\underline{\quad} < 7^{\circ}\text{F}$

$\underline{\quad} < -3^{\circ}\text{F}$

$\underline{\quad} < -0.1^{\circ}\text{F}$

$\underline{\quad} > -2^{\circ}\text{F}$

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.



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.

$$1.1 \quad 4.4 - 2.9$$

$$1.2 \quad -2.9 + 4.4$$

$$1.3 \quad -4.4 + (-2.9)$$

$$1.4 \quad 4.4 - (-2.9)$$

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.

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.

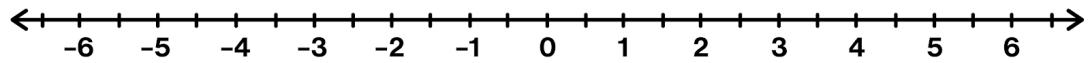
A		B	
$3 - 2$		$2 - 3$	
$5 - (-9)$		$(-9) - 5$	
$(-11) - 2$		$2 - (-11)$	
$(-6) - (-3)$		$(-3) - (-6)$	
$(-1.5) - (-4.7)$		$(-4.7) - (-1.5)$	
$(7) - (-3.5)$		$(-3.5) - (7)$	

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

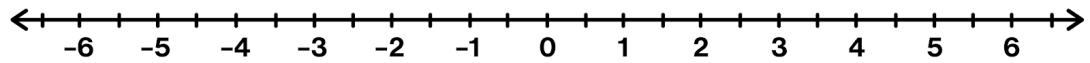
- 1.3 Explain why this pattern makes sense.

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

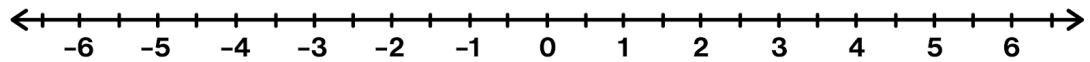
$$(-2) - 4$$



$$(-3.1) + (-2)$$



$$(-4.3) - (-8)$$





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 $-2.7 + x = -3.5$.

$-3.5 + 2.7 = x$

$3.5 - 2.7 = x$

$-3.5 - (-2.7) = x$

$-3.5 - 2.7 = x$

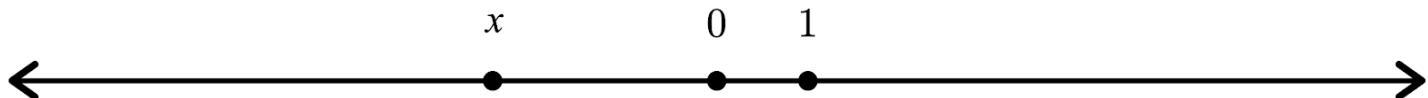
Determine the value of the variable that makes each equation true.

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.



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?

- 2.2 What was the temperature . . .

. . . 1 hour ago?

. . . in 5 hours?

. . . 3 hours ago?



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 Buggo 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. _____



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.

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

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

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

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

Determine the value of x that makes each equation true.

$$2.1 \quad -3x = 6.3$$

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

$$2.3 \quad -1.2x = -30$$

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

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.



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.



Warm-Up

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

 7(5) 12(5) 7 · 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.

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?

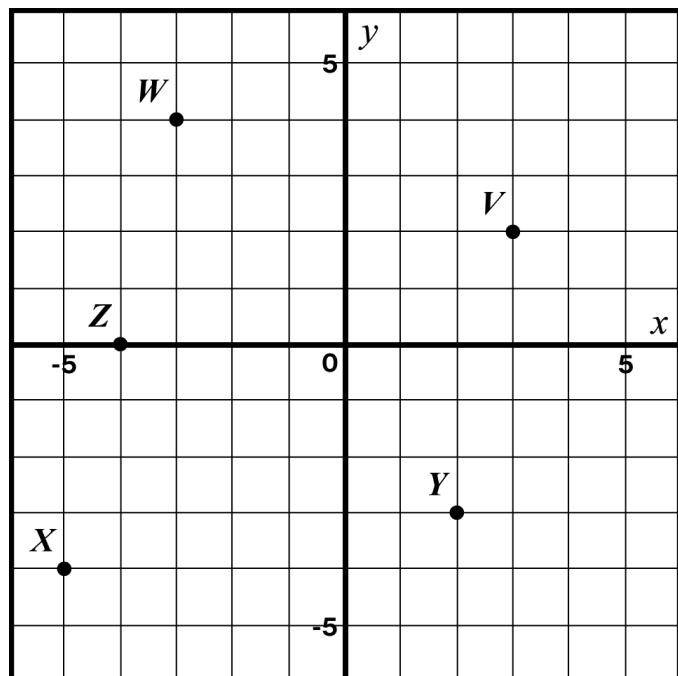
V _____

W _____

X _____

Y _____

Z _____



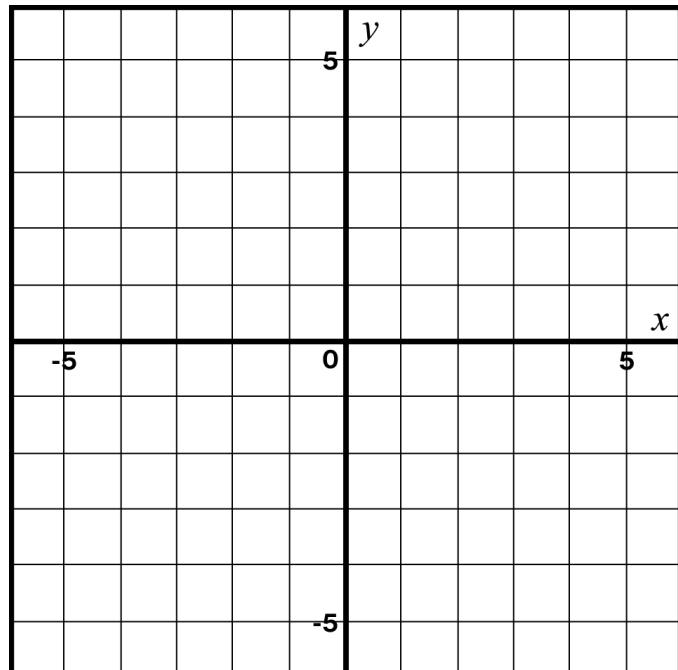
- 1.2 Plot and label the point A at $(-2, 1)$.

- 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 ?





Warm-Up

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

$$\left| -\frac{3}{2} \right| \quad \underline{\hspace{2cm}} \quad -\frac{2}{3}$$

$$-\frac{3}{2} \quad \underline{\hspace{2cm}} \quad -\frac{2}{3}$$

$$-\frac{3}{2} \quad \underline{\hspace{2cm}} \quad \frac{2}{3}$$

$$\frac{3}{2} \quad \underline{\hspace{2cm}} \quad \left| -\frac{2}{3} \right|$$

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)

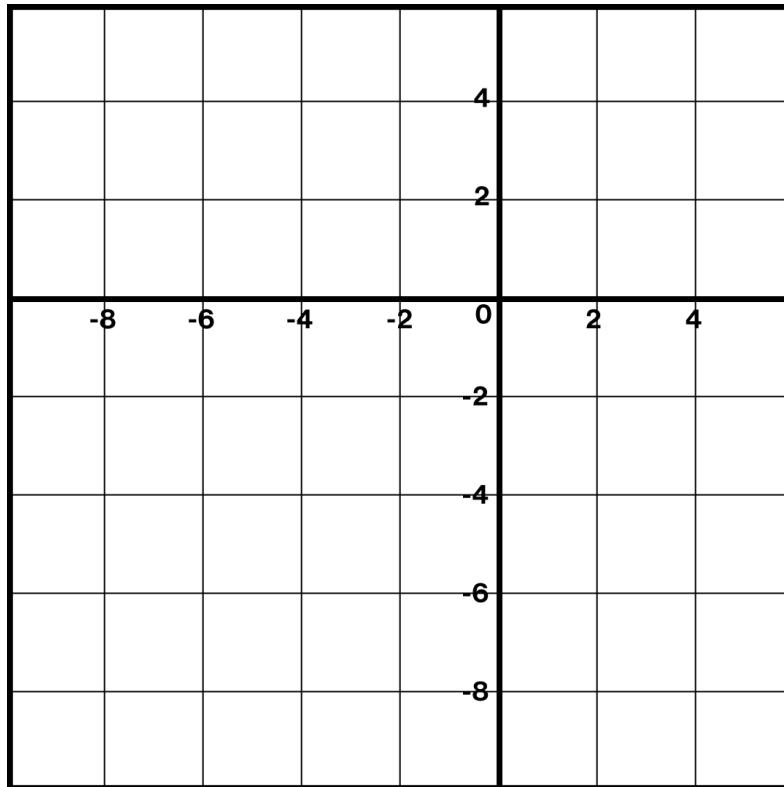
(0, 2)

(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?



Warm-Up

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

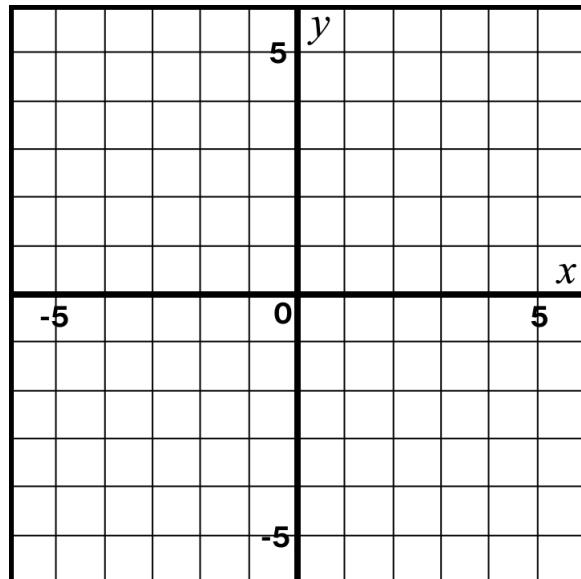
 0 -1 -0.40 -0.6 -0.55

Practice

- 1.1 Plot and label each point.

Connect the points in order to create a polygon.

Point	Coordinates
A	(-3, 1)
B	(3, 1)
C	(3, -4)
D	(-1, -4)
E	(-1, -2)
F	(-3, -2)



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

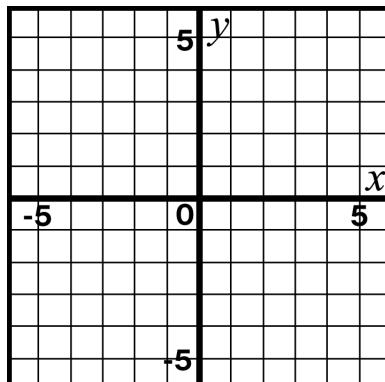
- 1.3 Determine the perimeter of the polygon.

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?





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.

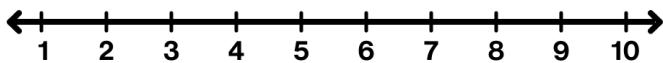
Question	Diya	Peter	Tiana	Marc	Callen
1.1	0	1	1	3	0
1.2	12	12	12	12	12
1.3	6	6	6	6	6
1.4	11	5	18	20	9

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

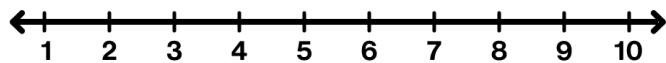
Warm-Up

Graph the inequalities on a number line.

$$m > 6$$

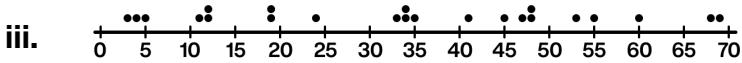
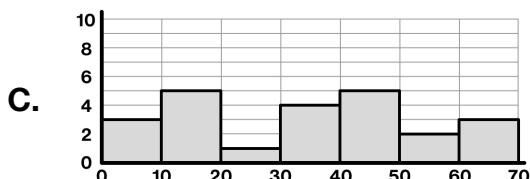
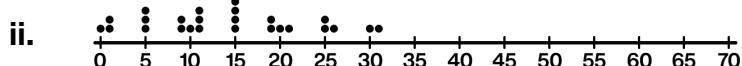
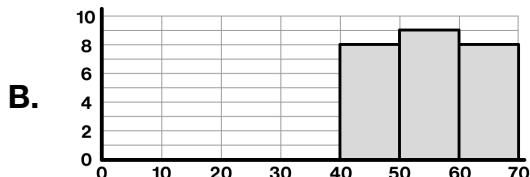
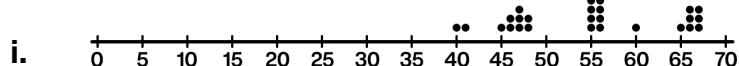
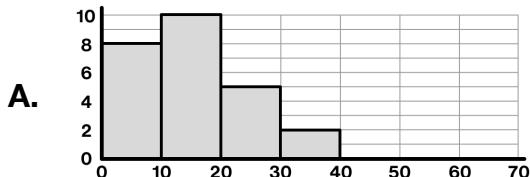


$$3 > n$$



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.



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.

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.

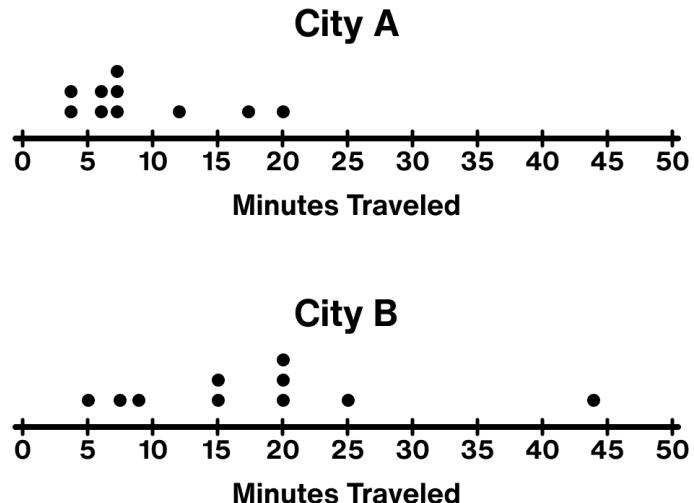
Time (minutes)	10	10	18	20	30	44
Absolute Deviation (distance from 22)						

- 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.

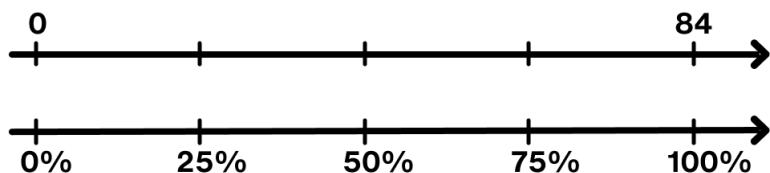
MAD	City
4.4	
7.8	



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

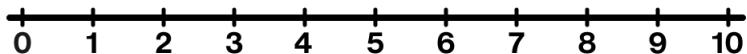
Warm-Up

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
---	---	---	---	---	---	---

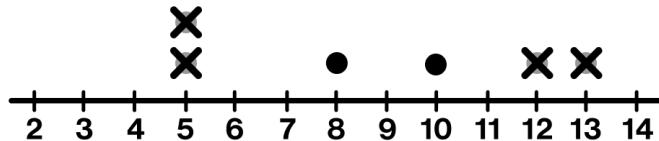


- 1.2 Determine the median of the data.

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.



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
---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

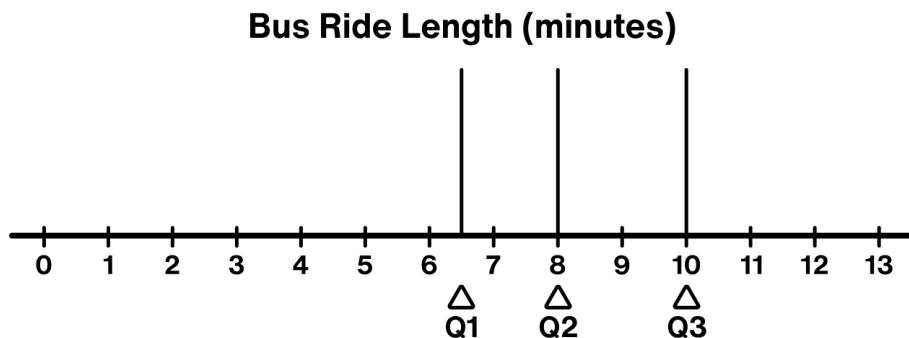
- 1.1 The value of quartile 2 (Q2) is 29. Explain what the number 29 tells us about the people at the family reunion.

- 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.



- 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?

Warm-Up

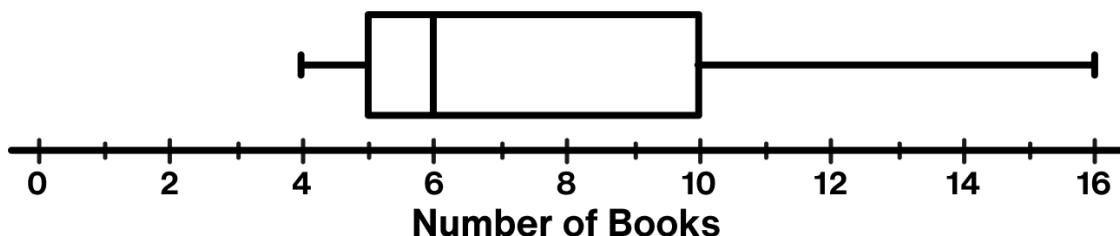
Which has the largest value?

- 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.



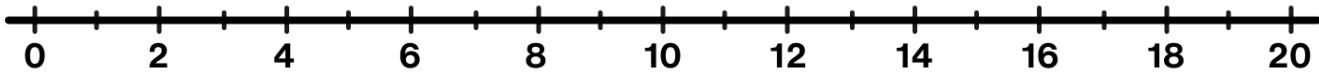
1.1 What is the greatest number of books that a student read this year? _____

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? _____



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:

Warm-Up

Determine the value of each quotient.

$$34\,000 \div 10$$

$$340 \div 100$$

$$34 \div 10$$

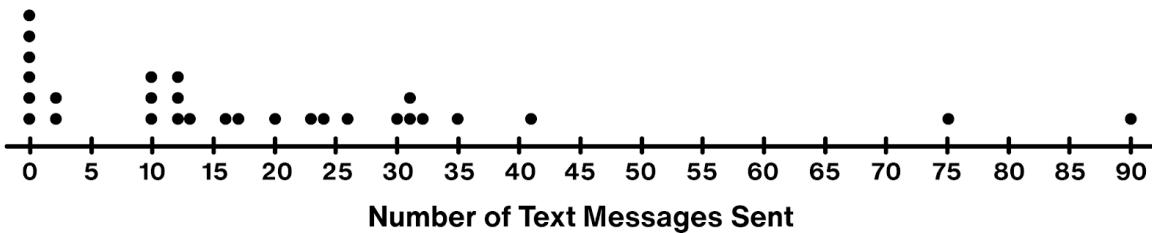
$$3.4 \div 100$$

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.

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.

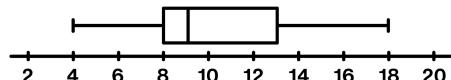
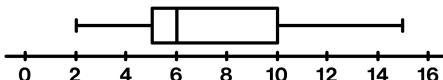
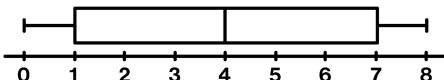
Here are the results: L, R, R, R, R, R, R, R, R, L, R, R, R, R, R.

- 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.

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:

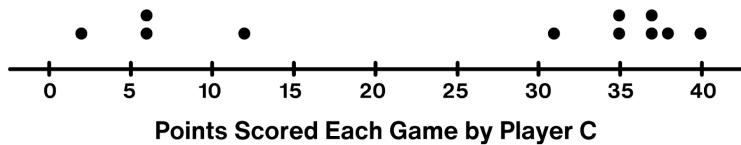
	Points Scored Each Game
Player A	18, 21, 22, 22, 23, 23, 23, 23, 24, 24, 30
Player B	14, 20, 20, 21, 23, 23, 23, 23, 24, 27, 35

- 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?
Median: 35 IQR: 31
Explain your reasoning.



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. _____

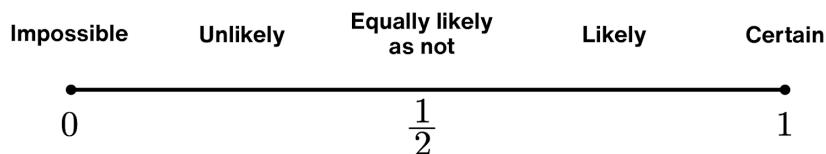
2.2 A fair coin lands on heads when flipped. _____

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 3: Practice Problems

Name _____

Warm-Up

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

LAMB

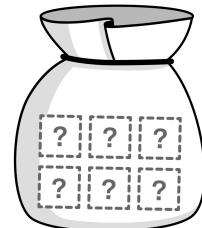
SAFETY

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.

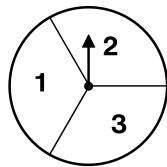


Based on these results, how many blocks do you expect to be green? Explain your reasoning.

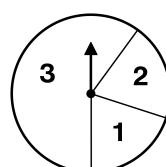
3. Miko spun a spinner with numbered sections 15 times and recorded the results:

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

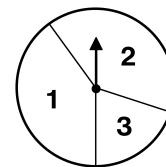
Spinner A



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?

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?

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.

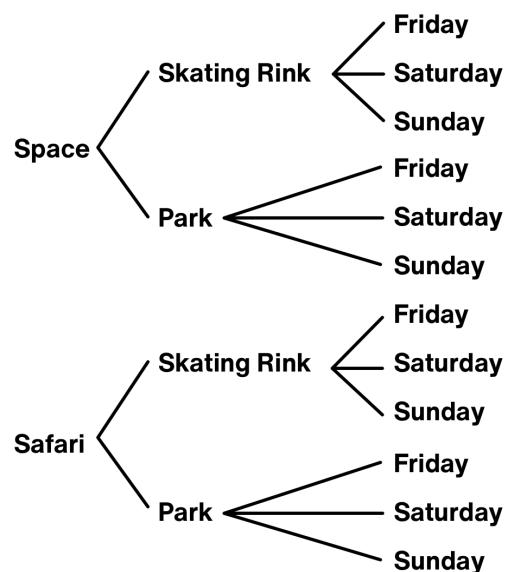
1.1 How many themes is Farah considering? _____

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?

Warm-Up

Write each fraction as a percent.

$\frac{3}{5}$

$\frac{1}{50}$

$\frac{9}{10}$

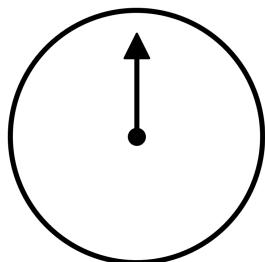
$\frac{9}{5}$

$\frac{18}{60}$

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.