

AchieveMath

Student Book

Volume 1

Name:

Catapult Learning™

Unit 1:

Introduction to Integers

Catapult Learning™

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Game On!

Use **counters** to model each player's score. Use yellow counters for positive integers and red counters for negative integers. Then answer the questions.

1. Idris misses a 3-point question.

a. What does the number of counters represent?	
b. Are the points above or below zero?	
c. Is Idris's score a positive or negative integer?	
d. What is Idris's score?	

2. Jonah gets a 5-point question correct.

a. What does the number of counters represent?	
b. Are the points above or below zero?	
c. Is Jonah's score a positive or negative integer?	
d. What is Jonah's score?	

3. Kim misses a 4-point question.

a. What does the number of counters represent?	
b. Are the points above or below zero?	
c. Is Kim's score a positive or negative integer?	
d. What is Kim's score?	

4. Alan joins the game and gets a 6-point question correct.

a. What does the number of counters represent?	
b. Are the points above or below zero?	
c. Is Alan's score a positive or negative integer?	
d. What is Alan's score?	

Apartment Life

Use **counters** to model each situation. Then answer the questions.

Kim lives on the bottom floor of an apartment building with many floors. When she leaves her apartment, she can ride the elevator to other floors in the building.

1. Kim leaves her apartment and rides 5 floors up to play "Betcha Don't Know" with Jonah.
 - a. How many counters do you use to show how many floors Kim moves from where she starts?

 - b. What color counters do you use to show the direction Kim moves? Why?
I use _____ counters to show Kim moves _____ from where she starts.
 - c. My model represents a _____ integer. My model shows the integer _____.
2. Kim leaves her apartment and rides down 3 floors down to her family's car in the parking garage.
 - a. How many counters do you use to show how many floors Kim moves from where she starts?

 - b. What color counters do you use to show the direction Kim moves? Why?
I use _____ counters to show Kim moves _____ from where she starts.
 - c. My model represents a _____ integer. My model shows the integer _____.
3. Kim leaves her apartment and rides up 9 floors to help Idris with his homework.
 - a. How many counters do you use to show how many floors Kim moves from where she starts?

 - b. What color counters do you use to show the direction Kim moves? Why?
I use _____ counters to show Kim moves _____ from where she starts.
 - c. My model represents a _____ integer. My model shows the integer _____.
4. What does zero represent in each of these situations? _____

Lesson 1 Exit Ticket

Use **counters** to model each situation. Then answer the questions.

1. Marie starts a game with 0 points and loses 6 points.

a. What does the number of counters represent?	
b. Are the points above or below zero?	
c. Is Marie's score a positive or negative integer?	
d. What is Marie's score?	

2. Kwame starts a game with 0 points and gains 4 points.

a. What does the number of counters represent?	
b. Are the points above or below zero?	
c. Is Kwame's score a positive or negative integer?	
d. What is Kwame's score?	

3. What does zero represent in questions 1 and 2? _____

4. Becca works in an office tower. Throughout the day she goes up and down the stairs to other parts of the building. This morning she leaves her office and walks down 7 flights of stairs to talk to the building manager.

- a. How many counters do you use to show how many floors Becca moves from where she starts? _____
- b. What color counters do you use to show the direction Becca moves?
I use _____ counters to show Becca moves _____ from where she starts.
- c. My model represents a _____ integer. My model shows the integer _____.

5. What does zero represent in question 4? _____

Extra Practice: Rocket Launch

Use **counters** to model the time for each moment. Then match the moment to the integer that represents the time.

Mr. Parsons has been helping Kali and Vince build a huge model rocket. They are finally finished! The launch is Saturday at noon.

Saturday at noon	6
At 6 minutes before launch on Saturday, Kali and Vince set up the rocket on the launch pad.	0
After 3 minutes, the rocket falls back to the earth.	-3
The launch is a success! At 2 minutes after launch, Kali and Vince see the rocket's parachute open.	-2
With only 2 minutes to go until the launch, Kali does a quick safety check.	-6
Vince starts a 3-minute countdown for the launch.	2
The rocket launched 6 minutes ago, and now it's time to analyze what happened.	3

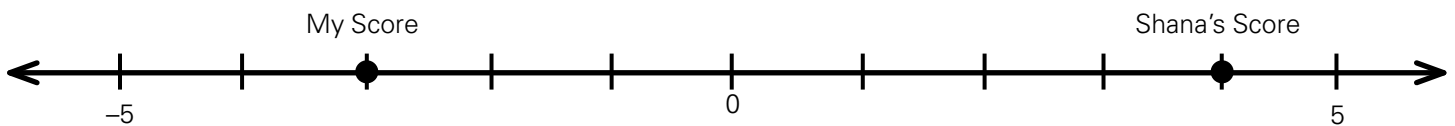
Mini Golf, Maximum Fun

Plot each score on a **vertical number line**. Then answer the questions.

1. My final score in our mini golf game is 5 under par.
 - a. What integer represents my score? _____
 - b. Is this integer positive or negative? _____

2. Shana's final score is 3 over par.
 - a. What integer represents Shana's score? _____
 - b. Is this integer positive or negative? _____

The number line shows our scores at the end of another game. Use the number line to answer the questions.



3. Look at my score.
 - a. Does it represent a positive integer or a negative integer? _____
 - b. What integer does it represent? _____
4. Look at Shana's score.
 - a. Does it represent a positive integer or a negative integer? _____
 - b. What integer does it represent? _____
5. A third friend, Rajiv, played this game with us. His score was par. What integer would show Rajiv's score? _____
6. Plot Rajiv's score on the number line above.

Mini Golf Tournament

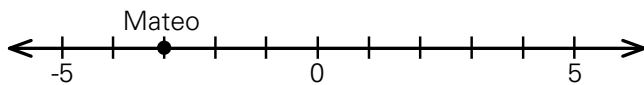
Review the example problem. Then look at the number lines and answer the questions.

Example

A bunch of friends get together at Red Wolf Mini Golf and decide to have a tournament. Mateo plays a game with Shana, Heidi, and Rajiv. He plots his score on a number line. What integer represents Mateo's score?

Step 1

Determine how far away the point is from 0.



If we start at 0 and move to the left, the point is 3 intervals from 0.

Step 2

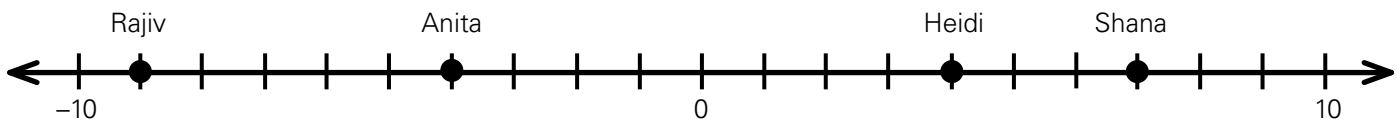
Decide whether the integer is positive or negative.

Since the integer is to the left of 0, it is negative.

Step 3

Write the integer, using a negative sign if it is below 0.

Mateo's score is -3 .

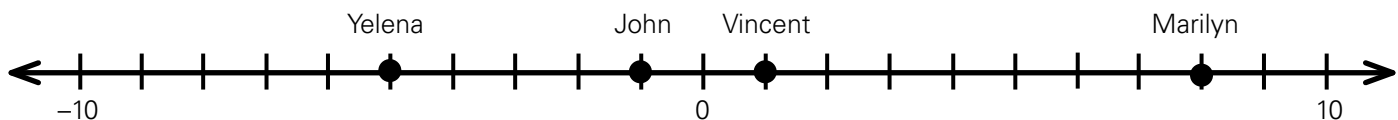


1. What is Shana's score? _____

2. What is Anita's score? _____

3. What is Rajiv's score? _____

4. What is Heidi's score? _____



5. What is Yelena's score? _____

6. What is John's score? _____

7. What is Marilyn's score? _____

8. What is Vincent's score? _____

Lesson 2 Exit Ticket

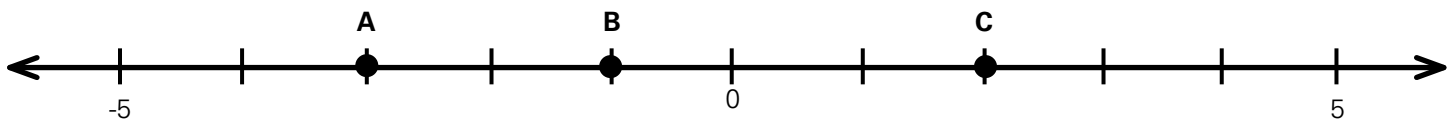
Part 1: Plot the score on a **vertical number line**. Then answer the questions.

- David scores 6 under par in a game of mini golf.
 - What integer represents David's score? _____
 - Is this integer positive or negative? _____

Part 2: Plot the scores on a **horizontal number line** and answer the questions.

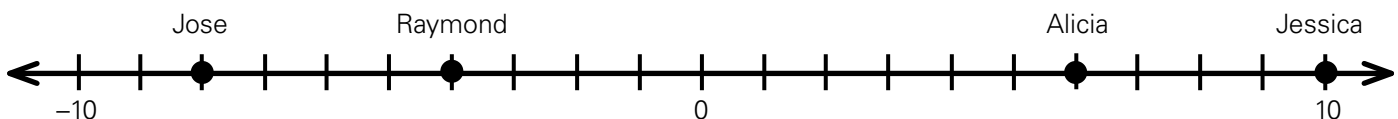
- Laura scores 4 over par in a game of mini golf.
 - Does this represent a positive integer or a negative integer? _____
 - What integer represents Laura's score? _____

Part 3: Use the plotted points to answer the questions.



- Does Point A represent a positive integer or a negative integer? _____
- Does Point B represent a positive integer or a negative integer? _____
- Does Point C represent a positive integer or a negative integer? _____

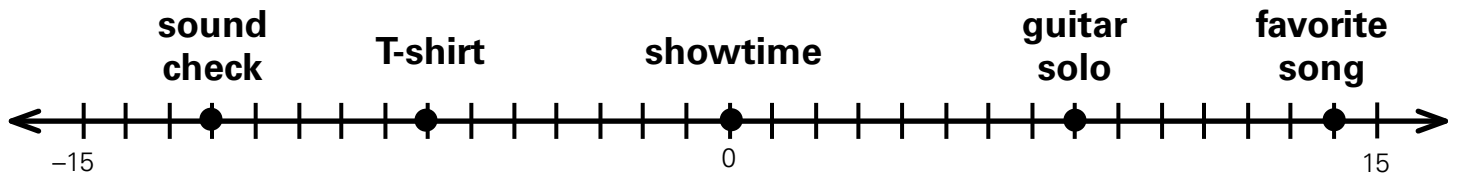
Part 4: Look at the number line and answer the questions.



- What is Jessica's score? _____
- What is Alicia's score? _____
- What is Jose's score? _____
- What is Raymond's score? _____

Extra Practice: Cat Condo

Use the number line to answer the questions.



Cat Condo is Aviva's favorite band. They are playing a big concert tonight, and Aviva will be there!

1. The show starts right on time. What value represents the time the show starts? _____
2. What integer represents the time of the sound check? _____
3. Does the sound check happen before or after showtime? _____
4. Before the show starts, Aviva goes and buys a Cat Condo T-shirt. What integer represents the time she buys the shirt? _____
5. The lead guitar player does an amazing solo! What integer represents the time of the guitar solo?

6. Aviva is excited that Cat Condo plays her favorite song! What integer represents the time of Aviva's favorite song? _____

Vertical Open Number Lines



Vertical Open Number Lines



Open Number Lines

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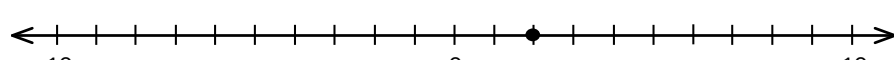
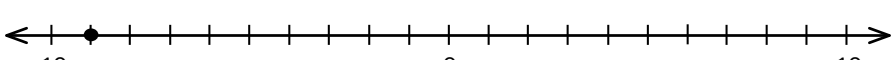
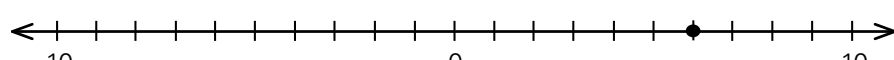
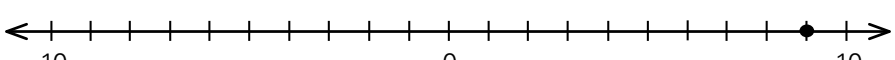
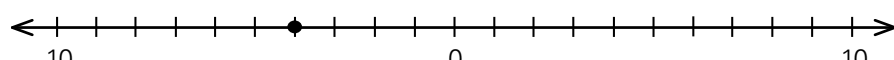
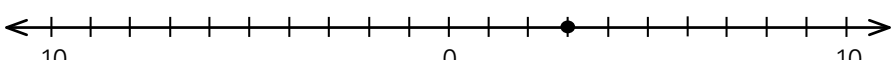
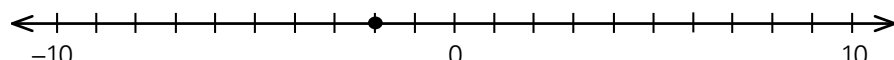
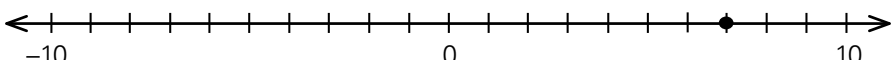
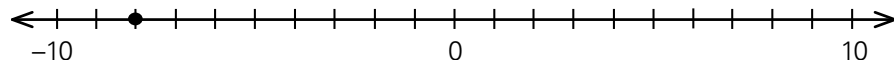
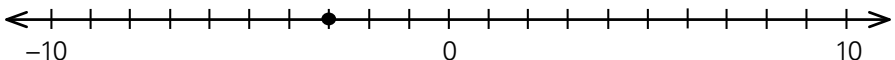
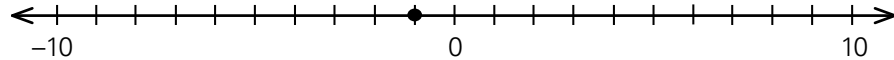
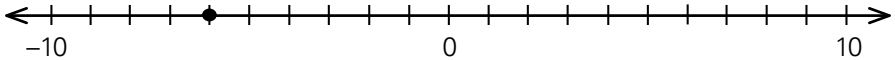
Lesson 2

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Open Number Lines



Memory (Number Lines)



Memory (Integers)

-6

-8

-3

-1

7

-2

3

-4

9

6

-9

2

Gone Fishing

Part 1: Plot each described integer and its opposite on a **vertical number line**. Then answer the questions.

1. Jenny goes fishing in the Ramble River. She finds a good spot and holds her fishing pole so that the tip is 7 inches above the water. The bait is the same distance under the water.
 - a. Plot the location of the water's surface. What integer represents the water? _____
 - b. Plot the location of the tip of the fishing pole. How many inches is it above the water's surface? _____
 - c. Plot the location of the bait. How many inches is it beneath the water's surface? _____
 - d. What integer is the opposite of 7? _____

2. Carlos is fishing with Jenny. He holds his fishing pole so the bait is 9 inches below the water. The tip of his fishing pole is the same distance above the water.
 - a. Plot the location of the water's surface. What integer represents the water? _____
 - b. Plot the location of the bait. How many inches is it beneath the water's surface? _____
 - c. Plot the location of the tip of the fishing pole. How many inches is it from the water's surface? _____
 - d. What integer is the opposite of -9 ? _____

Part 2: Write the opposite of each integer.

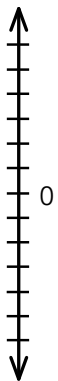
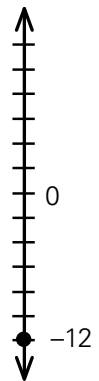
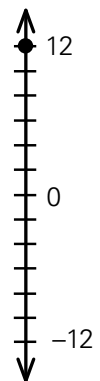
Integer	Opposite
-121	
28	
-603	
-55	
160	

Integer	Opposite
47	
-88	
198	
-151	
72	

Relaxing on the River

Example

A fish takes the bait! The fish pulls the bait **12** inches under the water. Jenny pulls the tip of the pole up so that it is the same distance above the water. What integers describe the location of the bait and the tip of the pole?

Step 1	Step 2	Step 3	Step 4
<p>Identify 0 in the problem and on the number line.</p>  <p>0 is the surface of the water.</p>	<p>Identify the given integer as positive or negative.</p>  <p>The bait is 12 inches below the surface of the water, or 0, so it is -12.</p>	<p>Plot the opposite integer the same distance from 0, in the opposite direction.</p>  <p>The tip of the pole is 12 inches above the water.</p>	<p>Write an equation that represents the opposite integer.</p> $-(-12) = 12$ <p>The opposite of -12 is 12.</p> <p>The tip of the fishing pole is 12 inches above the water.</p>

Part 1: Plot each integer and its opposite on a **vertical number line**. Then answer the questions.

- Near Jenny's fishing spot, there's a tree with a branch growing above the river. The height of the branch is the opposite of the depth of the river. The river is 8 feet deep.
 - What integer represents the depth of the river? _____
 - What integer represents the height of the branch? _____

Part 2: Complete the equations. Remember that a negative sign can mean *the opposite of*.

- $-(-37) =$ _____
- $-(-166) =$ _____
- $-(104) =$ _____
- $-(715) =$ _____
- $-(59) =$ _____
- $-(-207) =$ _____

Lesson 3 Exit Ticket

Part 1: Plot each described integer and its opposite on a **vertical number line**. Then answer the questions.

1. While camping, Jenny's family plays a game called Camp Challenge. They each start with 0 points and win or lose points for things like identifying animal tracks or wearing muddy boots in the tent. Dad is terrible at this game. He always forgets to take off his muddy boots! By the end of the trip, Dad has lost 6 points. Jenny's score is the opposite of her Dad's.
 - a. Plot the integer that represents their scores when the game starts. What integer represents the start of the game? _____
 - b. Plot the integer that represents Dad's score. What is his score? _____
 - c. Plot the integer that represents Jenny's score. What is her score? _____
 - d. What integer is the opposite of -6 ? _____

2. Jenny's older brother Mark has won 4 points by the end the camping trip. Their mom's score is the opposite of Mark's.
 - a. Plot the integer that represents Mark's score. What is his score? _____
 - b. Plot the integer that represents Mom's score. What is her score? _____
 - c. What integer is the opposite of 4? _____

Part 2: Complete each equation.

3. $-(-7) =$ _____

4. $-(-16) =$ _____

5. $-(10) =$ _____

6. $-(15) =$ _____

7. $-(9) =$ _____

8. $-(-20) =$ _____

Extra Practice: Dollars and Sense

Part 1: Plot the integers described on a **number line**. Then answer the questions.

Liam has \$0 in his bank account. On Friday, Liam buys a pair of shoes for \$15 using his credit card.

1. What integer represents the amount of money Liam has? _____
2. What is the opposite of that integer? _____
3. How do you know those integers are opposites? _____

Corinna has \$0 in her bank account. On Friday, Corinna deposits \$10 in her account.

4. What integer represents the amount of money Corinna has? _____
5. What is the opposite of that integer? _____

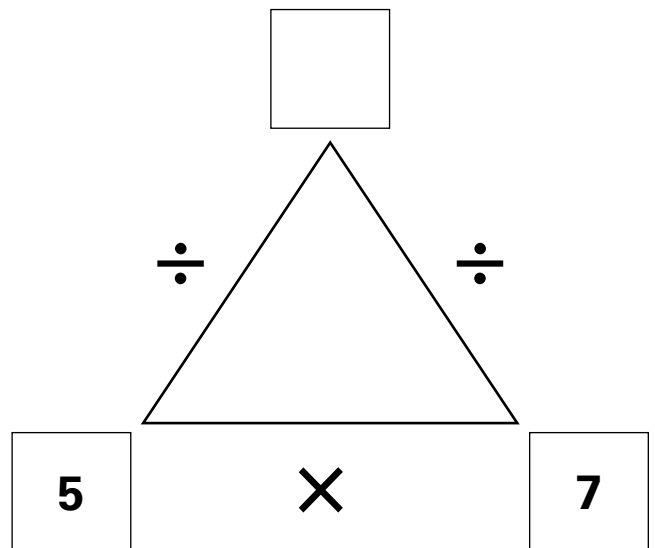
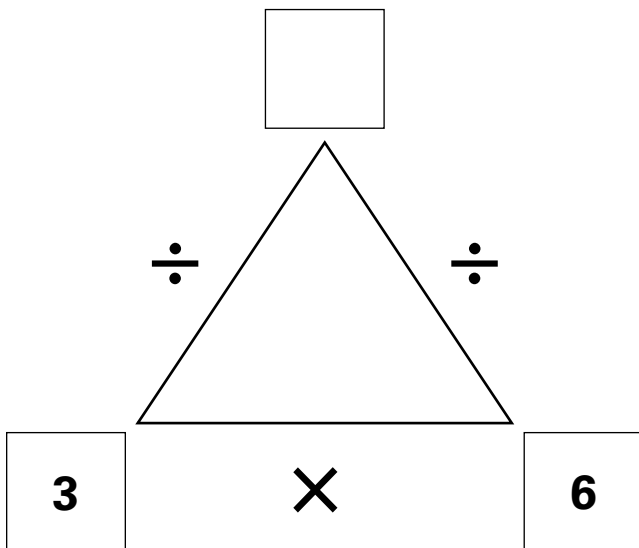
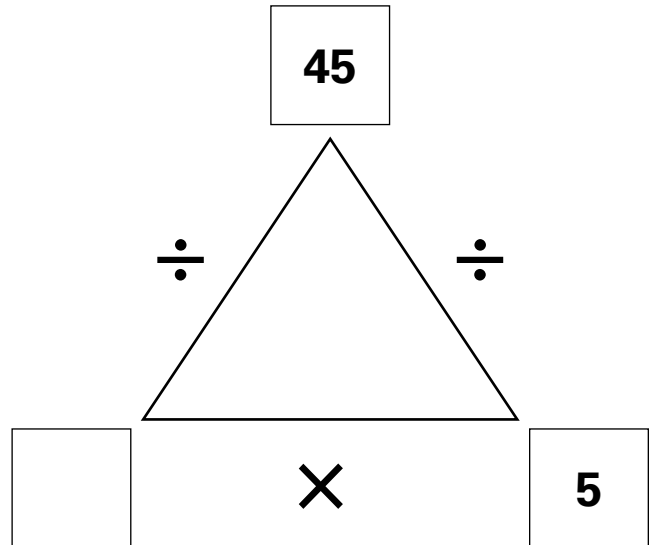
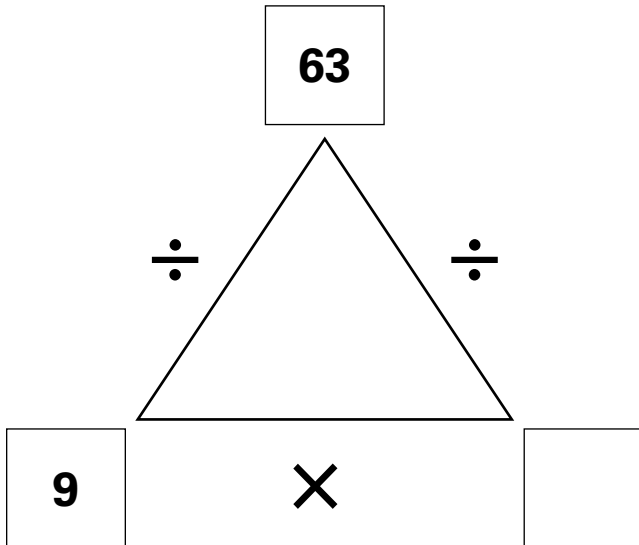
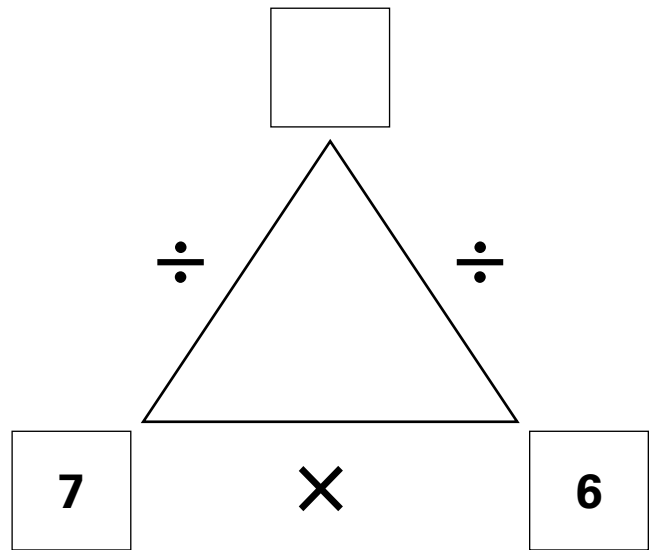
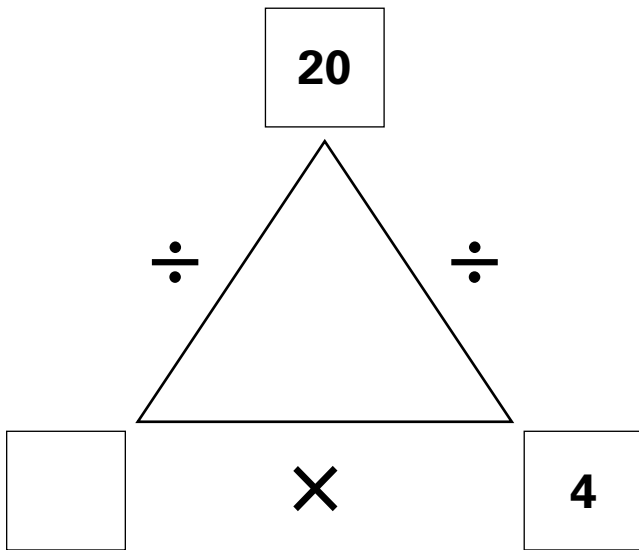
Diego has \$0 in his bank account. On Friday, Diego borrows \$20 from the bank to pay a bill.

6. What integer represents the amount of money Diego has? _____
7. What is the opposite of that integer? _____

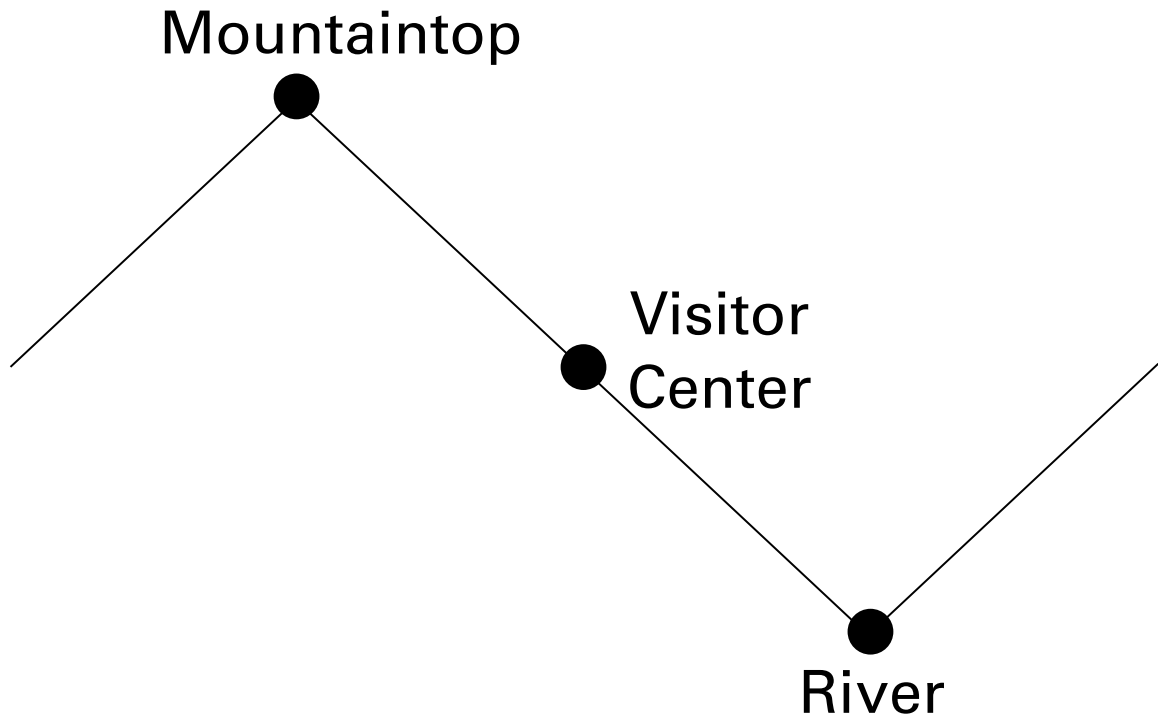
Part 2: Translate each description into an expression. Then complete the equation with an integer.

8. the opposite of negative twelve _____ = _____
9. the opposite of fourteen _____ = _____
10. the opposite of negative seven _____ = _____
11. the opposite of negative three _____ = _____
12. the opposite of nineteen _____ = _____

Number Triangles



Ramble State Park



Vertical Open Number Lines



Vertical Open Number Lines



Vertical Open Number Lines



Vertical Open Number Lines



Riding Home

Part 1: Use **linking cubes** to model the situation. Then answer the questions.

Rosa rides her bicycle 3 miles west to go home after school. Talia rides her bicycle 3 miles east to go home after school. How can you describe and compare the distance each person rides?

1. What is the distance between 0 and -3 ? _____
2. How can we use absolute value to show the distance Rosa is from school? $|\text{_____}| = \text{_____}$
3. What is the distance between 0 and 3? _____
4. How can we use absolute value to show the distance Talia is from school? $|\text{_____}| = \text{_____}$
5. What does the absolute value of each integer describe in this situation?

Part 2: Use a **number line** to model the absolute value of each integer.

6. $|-8| = \text{_____}$
7. $|15| = \text{_____}$
8. $|17| = \text{_____}$
9. $|-13| = \text{_____}$
10. $|-10| = \text{_____}$
11. $|5| = \text{_____}$

Downstairs, Upstairs

Review the example problem. Use **linking cubes** to solve the remaining problems.

Example

Omar and Jane live in apartments on the same floor of a tall building. Omar leaves his apartment and walks **4** floors down to eat lunch at his friend Tommy's. Jane leaves her apartment and walks **5** floors up to eat lunch with her aunt. Who moves the greater number of floors?

Step 1

Determine what represents 0 in the problem.

Jane and Omar start from the same floor. The floor they live on represents 0.

Step 2

Use linking cubes to model the situation.



Step 3

Find the absolute value of each integer.

The **4** red cubes are **4** units away from 0.

The absolute value of **-4** is **4**.

The **5** yellow cubes are **5** units away from 0.

The absolute value of **5** is **5**.

Step 4

Compare the absolute values.

Jane moves the greater number of floors because **5** is greater than **4**.

1. LaShonda eats lunch 5 floors below her science room. Her teacher, Ms. Henry, eats lunch 2 floors above the science room. Who eats lunch closer to the science room?

a. Which integer represents where LaShonda eats? _____

b. Use absolute value to show how close to the science room Lashonda eats.

$$| \text{_____} | = \text{_____} \text{ floors}$$

c. Which integer represents where Ms. Henry eats? _____

d. Use absolute value to show how close to the science room Ms. Henry eats.

$$| \text{_____} | = \text{_____} \text{ floors}$$

2. Who eats closer to the science room? How do you know?

Lesson 4 Exit Ticket

Part 1: Use **linking cubes** to model the situation. Then answer the questions.

Raúl and Alma meet at the bus stop. Raúl rides a bus 8 miles east to a grocery store. Alma takes a different bus 8 miles west to get to work. How can you describe and compare each person's bus ride?

1. What is the distance between 0 and 8? _____

2. How can we use absolute value to show the distance Raúl rides to the store?

$$| \quad | = \quad$$

3. What is the distance between 0 and -8 ? _____

4. How can we use absolute value to show the distance Alma rides to work?

$$| \quad | = \quad$$

5. How can you use absolute value to compare the distances Raúl and Alma ride?

Part 2: Use a **number line** to model the absolute value of each integer.

6. $|12| =$ _____

7. $|19| =$ _____

8. $|-8| =$ _____

9. $|-15| =$ _____

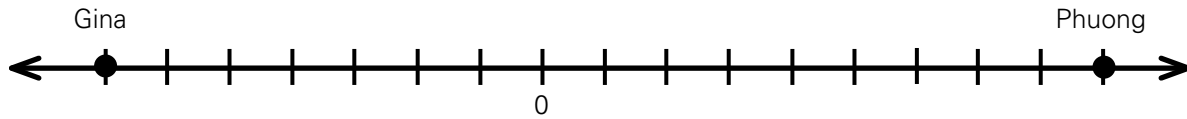
10. $|-4| =$ _____

11. $|11| =$ _____

Extra Practice: Team Trivia

Read each scenario and look at the model. Then answer the questions.

1. Gina and Phuong play a trivia game on a basketball court. They start on the line at half court. For each correct answer they give, they step towards their team's finish line. Gina's finish line is on the left side. Phuong's finish line is on the right. The number line shows their scores from round 1.

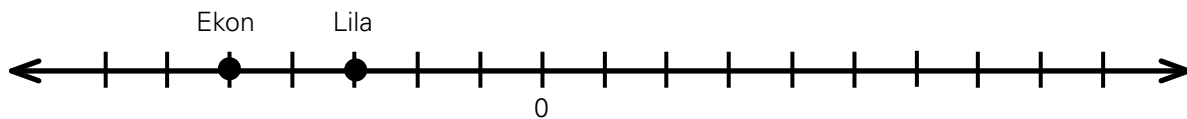


- a. What integer represents Gina's score? _____
- b. What does the absolute value of Gina's score tell you?

- c. What integer represents Phuong's score? _____
- d. What does the absolute value of Phuong's score tell you?

- e. Did Gina's or Phuong's score change by a greater value? Use absolute value to explain how you know this. _____

2. Ekon and Lila play the same game. The number line shows their score after the first round:



Are Ekon and Lila on Gina's team or Phuong's team? How do you know?

- a. Who is doing a better job helping their team win? Explain why you think so.

Open Number Lines



Open Number Lines



Open Number Lines

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Lesson 4

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Open Number Lines



Open Number Lines



Open Number Lines



Group Project

Plot the integers from the table on an **open number line**. Then answer the questions.

1. Aisha is writing about weather for the All About Our State group project. She makes a table of the record low temperatures for five towns.

Town	Record Low Temperature (°F)
Imberly	3
Johnson	-6
New Kent	2
Port Aran	-3

- a. Use math symbols to list the temperatures in order from least to greatest.

Which is warmer: the record low temperature for Johnson or the record low temperature for Port Aran? How does the number line help you answer this question?

2. Emma is researching tourism for the group project. She finds a website that rates towns from -10 to 10 based on their popularity with tourists.

Town	Popularity Rating
Imberly	-1
Johnson	-4
New Kent	5
Port Aran	-7

- a. Use math symbols to list the ratings in order from least popular to most popular.

- b. Which town is less popular: Imberly or Johnson? How do you know?

Our State

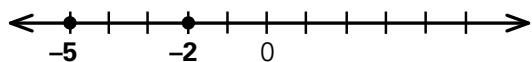
Review the example problem. Then plot the integers on an **open number line** and answer the questions.

Example

Tisha and Teo choose different locations for their All About Our State report. Teo includes the elevation for Lake Reyes (-5 m) and Belton (-2 m). Which elevation is greater?

Step 1

Plot the elevations on a number line.



Step 2

Consider negative integers in the real-world context.

Lake Reyes and Belton both have negative elevations. That means the location with the least negative elevation, or the elevation closest to 0, is greater.

Step 3

Use math symbols to compare the integers.

$$-2 > -5$$

The elevation of Lake Reyes (-5) is farther below 0 than the elevation of Belton (-2). That means the elevation of Belton is greater.

Tisha finds these record low temperatures to include in the report: Bay City (2°F), Carson (-3°F), Arsino (-4°F), Byson (-6°F), and Troya (5°F).

1. How can we tell which city has the coldest record low temperature? _____

2. Which town has the warmest record low temperature? _____

3. Which town has the coldest record low temperature? _____

4. Which town has the colder record low temperature: Carson or Arsino? Use the number line to explain your answer. _____

Lesson 5 Exit Ticket

Plot the integers on an open number line and answer the questions.

Michael researches some state landmarks to include in his group's report. His list of the landmarks and their ratings is below.

Landmark	Rating
The Crow House	-3
Rodrick Memorial Bridge	-4
State Music Hall of Fame	7
Victory Waterfalls Park	8
Westina Canyon	-1

1. Show the ratings on a number line.



2. Use math symbols to list the integers from least to greatest. _____

3. Which rating is the highest? _____

4. Which rating is the lowest? _____

5. Which landmark has a better rating: The Crow House or Westina Canyon? How do you know?

Extra Practice: Back at the Ranch

Plot the points from the table on an **open number line**. Then answer the questions.

1. Benita records the low temperature at her ranch on New Year's Day each year.

Year	Low Temperature (°F)
2015	-3
2016	-7
2017	1
2018	-4

- a. Use math symbols to list the temperatures in order from least to greatest.

- b. Which is colder: the low temperature in 2015 or in 2018? How could you use a number line to help you answer this question?

2. Benita raises wool sheep on her ranch. She enters some of her sheep in the livestock competition at the state fair. The table shows the score for each sheep.

Sheep	Score
Daisy	6
Ida Jo	-6
Lady	-3
Sweet Pea	-2
Wooly Girl	9

- a. Use math symbols to list the scores in order from least to greatest.

- b. Which sheep earned a better score: Sweet Pea or Lady? How do you know?

Open Number Lines

Catapult Learning™



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Lesson 5

43

Open Number Lines



Ryan's Research

Location	Elevation (meters)
Abbey	4
Colville	7
Lake Allard	-10
Mercer Valley	-5
Tarrant	-9



Integer Cards

-20

-19

-18

-17

-16

-15

-14

-13

-12

-11

-10

-9

-8

-7

-6

-5

Integer Cards

-4

-3

-2

-1

0

1

2

3

4

5

6

7

8

9

10

11

Integer Cards

12

13

14

15

16

17

18

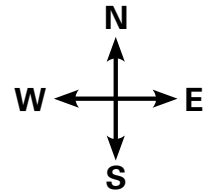
19

20

Welcome to Possum Paw

Part 1: Plot the points on the **Possum Paw Map** on page 57.

1. This year, the youth convention will include a movie night. There are so many kids that they'll need two theaters! The Movietown Theater is 2 blocks south of the library. The Super Cinema is 5 blocks west of the library.



Plot and label the points for Movietown Theater and Super Cinema. What are the ordered pairs?

Movietown Theater: _____ Super Cinema: _____

2. Another night there is going to be a big meteor shower, so they will have star parties where they can watch the sky with a telescope. One group will go 4 blocks east and 5 blocks south of the library to Bonney Hill. Another group will go to Rose Rock, 5 blocks west and 5 blocks north of the library.

Plot and label the points for Bonney Hill and Rose Rock.

Part 2: Plot and label each point on the coordinate plane.

A. $(-4, 10)$

B. $(0, -2)$

C. $(-1, -8)$

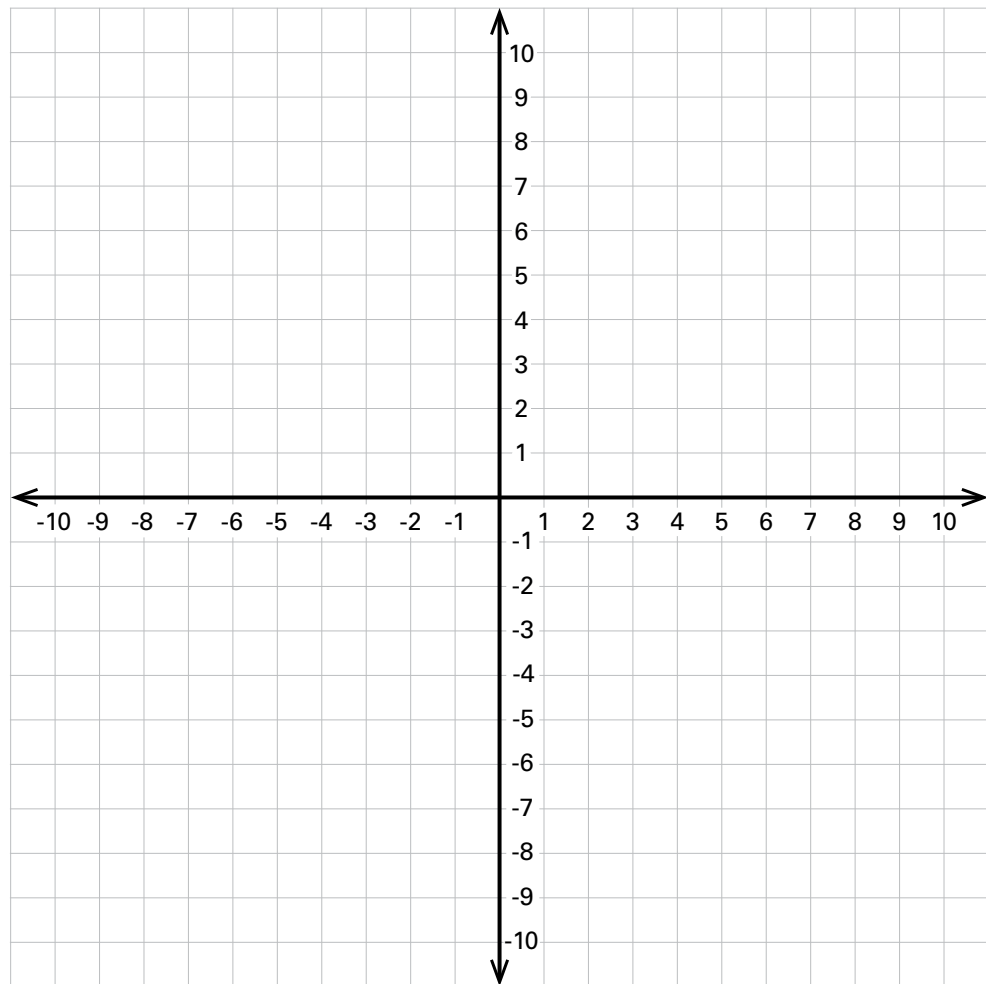
D. $(3, 4)$

E. $(-2, 4)$

F. $(7, 4)$

G. $(-2, 1)$

H. $(8, -6)$



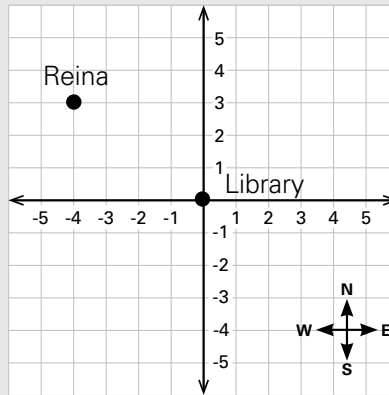
Home, Sweet Home

Review the example problem. Then look at the **Friends Map** on page 58 and write the ordered pair for the location of each friend's house.

Example

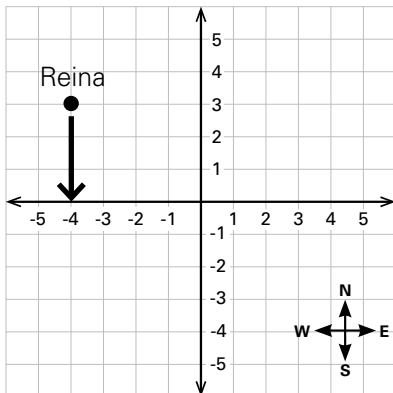
The map shows where Reina lives.

What ordered pair describes where she lives?



Step 1

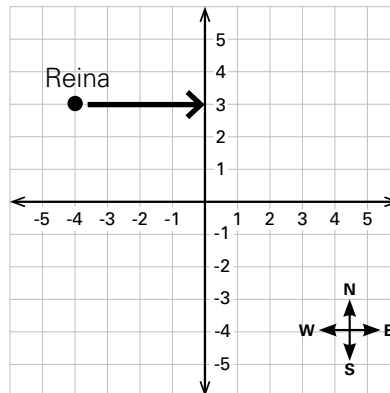
Start at the point. Move toward the x-axis to find the x-coordinate.



The x-coordinate is -4 .

Step 2

Start at the point. Move toward the y-axis to find the y-coordinate.



The y-coordinate is 3 .

Step 3

Write the ordered pair.
 $(-4, 3)$

Friend	Ordered Pair
Annika	
Gus	
Felipe	
Cleo	
Nadia	

Friend	Ordered Pair
Luna	
Arlo	
Isla	
Hugo	
Maeve	

Lesson 6 Exit Ticket

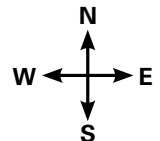
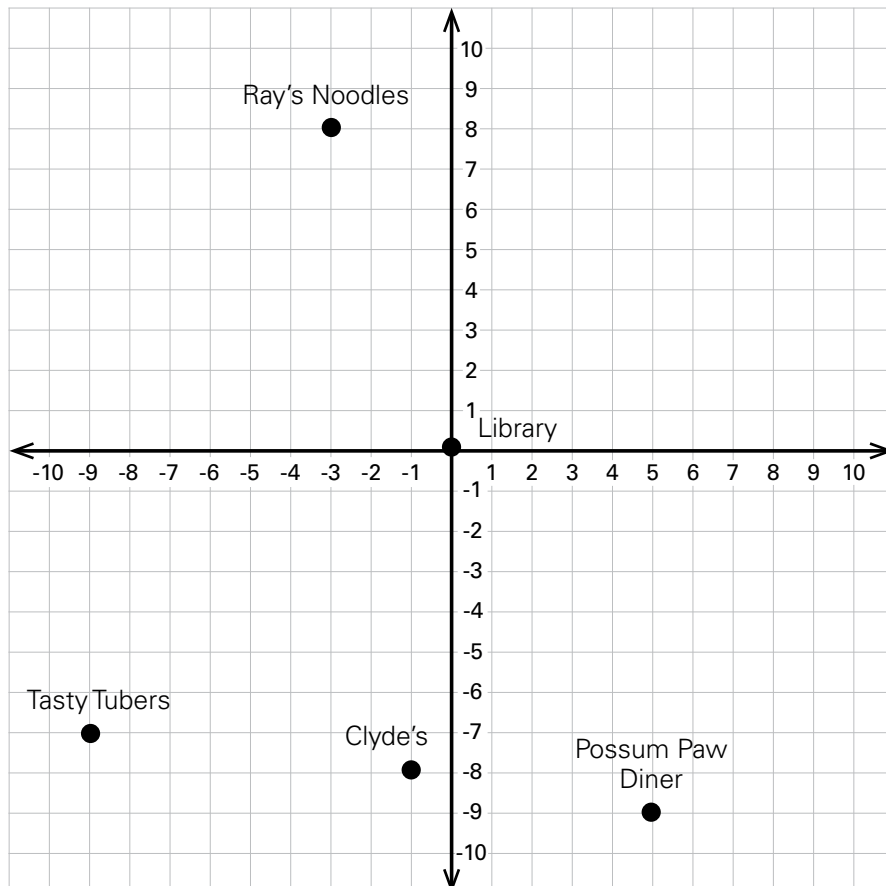
Use the map on the coordinate plane to answer the questions.

- Reina puts together welcome packs for the convention. She visits these four businesses to purchase the items for the snack pack. Where is each business in Possum Paw? Plot and label each business on the map.

Location	Ordered Pair
Tan's Treats	(4, 0)
Snack Shack	(0, -6)
BubCo	(-3, -4)
Sand Time, Inc.	(6, -2)

- Reina wants to give directions to some of her favorite restaurants in Possum Paw. Write the ordered pair that describes the location of each restaurant.

Location	Ordered Pair
Clyde's	
Possum Paw Diner	
Ray's Noodles	
Tasty Tubers	

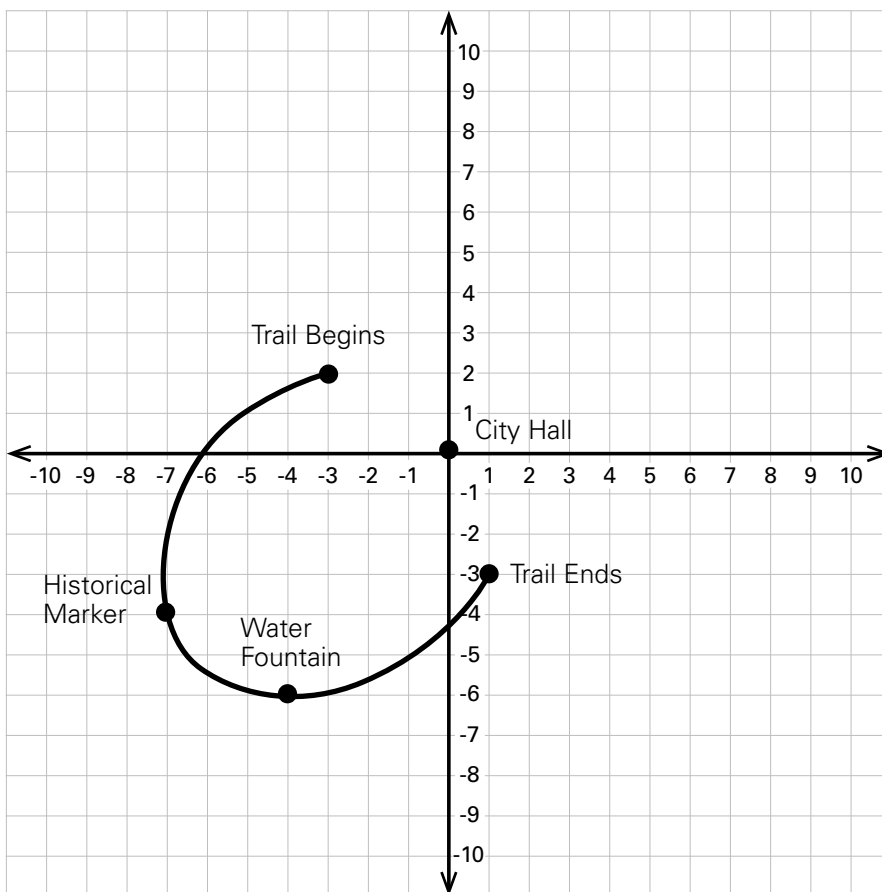


Extra Practice: Badgerville

Plot the points from the table on the coordinate plane. Then complete the table.

- Plot and label the locations of the places Ms. Mehta goes on her trip to Badgerville.

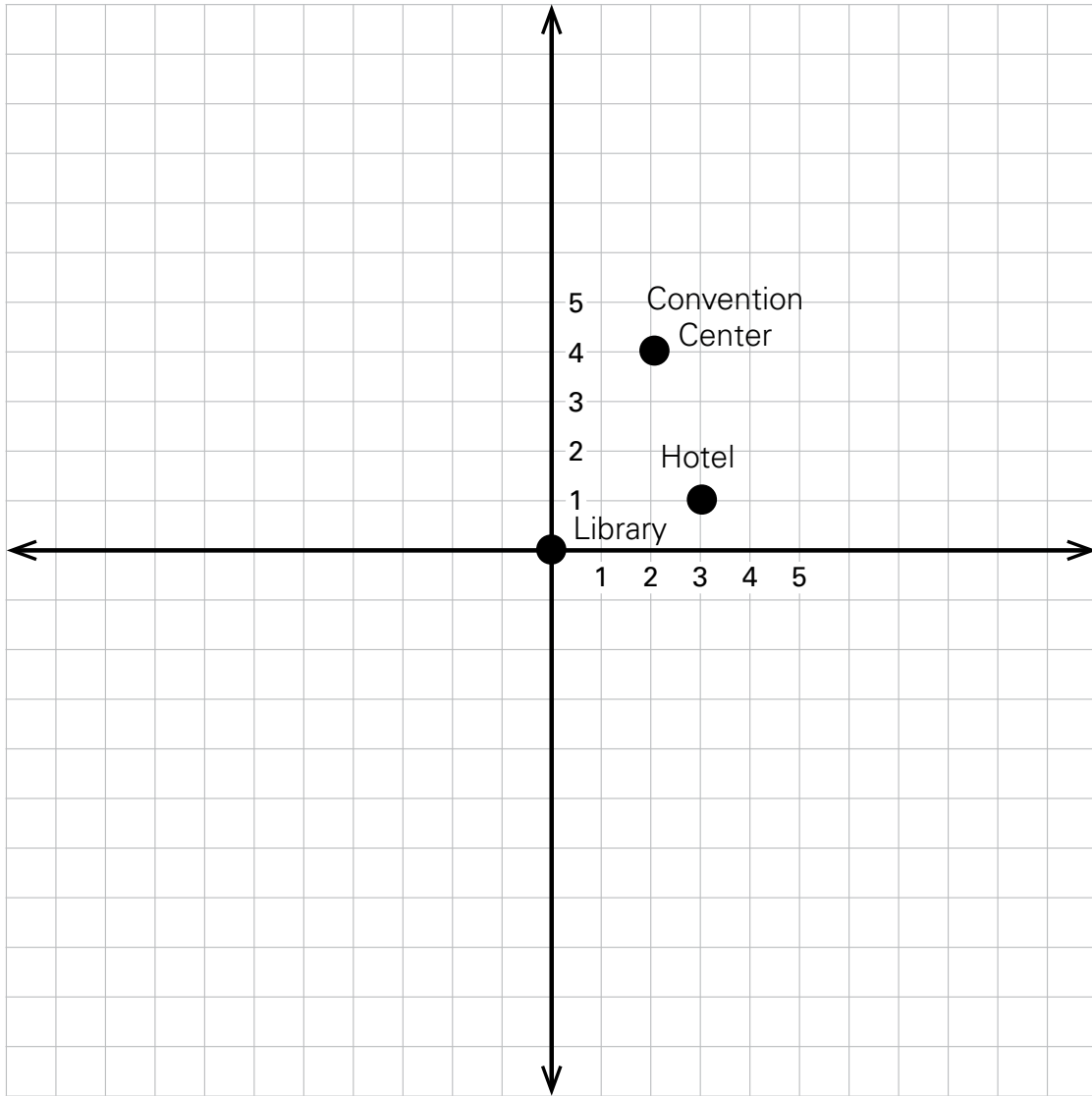
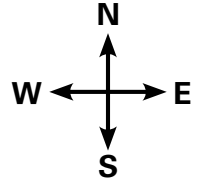
Location	Ordered Pair
Airport	$(10, -7)$
Hotel	$(0, -2)$
Conference Center	$(-8, 0)$
Restaurant	$(7, 3)$



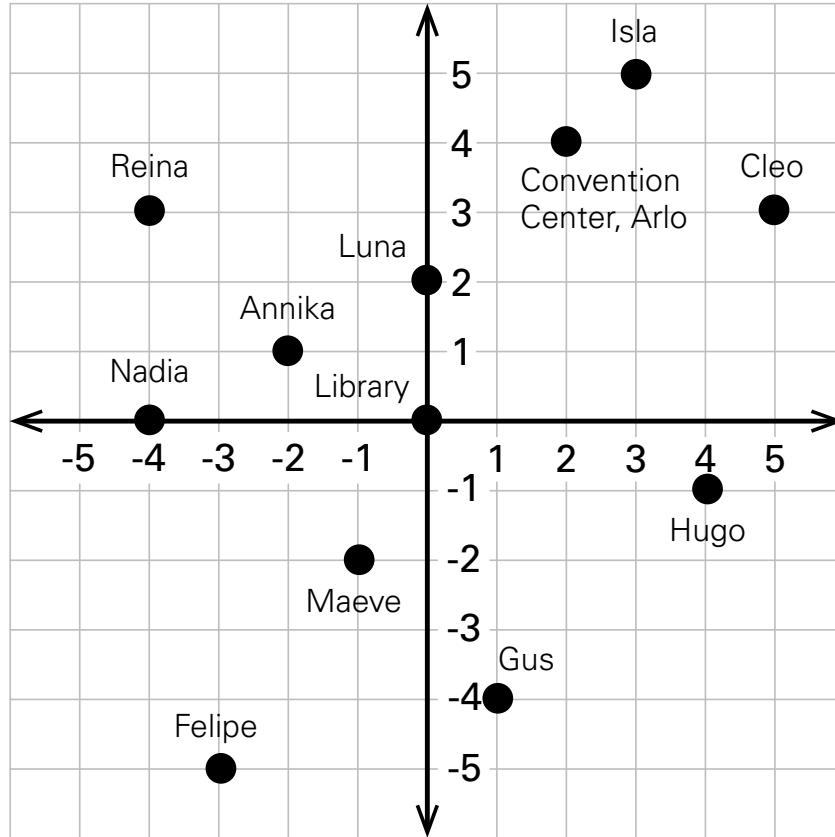
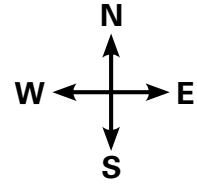
- Ms. Mehta decides to take a break by walking along part of a park trail. Use the map above to complete the table.

Place	Ordered Pair
Trail Begins	
Historical Marker	
Water Fountain	
Trail Ends	

Possum Paw Map



Friends Map



Camp Summerland

Part 1: Use the **Camp Summerland Map** on page 65 to complete the tables with the information for each cabin.

1. Find Owl Cabin. What cabin's location is a reflection across the x -axis?

Cabin	Ordered Pair
Owl Cabin	

2. Find Eagle Cabin. What cabin's location is a reflection across the y -axis?

Cabin	Ordered Pair
Eagle Cabin	

Part 2: Plot the described points on the **Camp Summerland Map**. Then answer the questions.

3. The Eagle fire circle is located at $(-3, 4)$. The Condor fire circle is reflected over the y -axis. What is the ordered pair for the Condor fire circle? _____
4. The Condor picnic shelter is located at $(1, 6)$. The Hawk picnic shelter is reflected over the x -axis and the y -axis. What is the ordered pair of the Hawk picnic shelter? _____

Part 3: Decide where the described locations should go and plot them on the **Camp Summerland Map**. Then answer the questions.

5. The fishing pond and the canoe dock are reflections over the x -axis.
- a. What is the ordered pair of the fishing pond? _____
- b. What is the ordered pair of the canoe dock? _____
- _____
6. The arts and crafts cabin and the climbing wall are reflections over the y -axis.
- a. What is the ordered pair of the arts and crafts cabin? _____
- b. What is the ordered pair of the climbing wall? _____
- _____

Camp Life

Review the example problem. Then use your knowledge of opposite integers to answer the questions. Plot the points on the **Camp Summerland Map** to check your work.

Example

The camp office is at $(1, -3)$, and the store is at $(-1, -3)$ on the map. Are the points reflected over one or more axes on the coordinate plane? Which ones?

Step 1

Determine whether the x -coordinates and y -coordinates have the same absolute value.

$(1, -3)$ $(-1, -3)$

Each x -coordinate has an absolute value of **1**, and each y -coordinate has an absolute value of **3**, so the coordinates *are* reflections.

Step 2

Determine whether the x -coordinates are opposite integers reflected over the y -axis.

$(1, -3)$ $(-1, -3)$

The x -coordinates are 1 and -1 . They *are* opposite integers. Since the x -coordinates *are* opposites, the points *are* reflected across the y -axis.

Step 3

Determine whether the y -coordinates are opposite integers reflected over the x -axis.

$(1, -3)$ $(-1, -3)$

The y -coordinates are -3 and -3 . They *are not* opposite integers. Since the y -coordinates *are not* opposites, the points *are not* reflected across the x -axis.

Fire Circle	Ordered Pair	Are the points reflections? Explain why or why not.
Eagles	$(-3, 4)$	
Hawks	$(-3, -4)$	

Pond	Ordered Pair	Are the points reflections? Explain why or why not.
Owls	$(6, -5)$	
Hawks	$(-6, 5)$	

Picnic Shelter	Ordered Pair	Are the points reflections? Explain why or why not.
Hawks	$(0, -7)$	
Eagles	$(7, 0)$	

Lesson 7 Exit Ticket

Part 1: Use the **Camp Summerland Map** to complete the table with the information for each camp feature.

1. Find the obstacle course. What camp feature is a reflection across the x -axis?

Feature	Ordered Pair
Obstacle course	

Part 2: Decide where the described locations should go and plot them on the **Camp Summerland Map**. Then answer the questions.

2. The first aid station and the camp post office are reflections over the y -axis.
 - a. What is the ordered pair of the first aid station?
 - b. What is the ordered pair of the camp post office?

Part 3: Use your knowledge of opposite integers to answer the question. If the points are reflections, identify the axis that the points are reflected over in your response. Plot the points on the **Camp Summerland Map** to check your work.

Showers	Ordered Pair	Are the points reflections? Explain why or why not.
Condors	(9, 2)	
Owls	(9, -2)	

Extra Practice: Connect the Dots

Plot each point and its reflection across the x -axis on the coordinate plane below. Connect the point and its reflection with a line.

1. $(-9, 9)$

2. $(9, -9)$

3. $(-8, -7)$

4. $(8, -7)$

5. $(6, 5)$

6. $(-6, 5)$

7. $(-4, -3)$

8. $(4, 3)$

9. $(2, 1)$

10. $(-2, 1)$

Plot each point and its reflection across the y -axis on the coordinate plane below. Connect the point and its reflection with a line.

11. $(-9, 9)$

12. $(9, -9)$

13. $(-7, -7)$

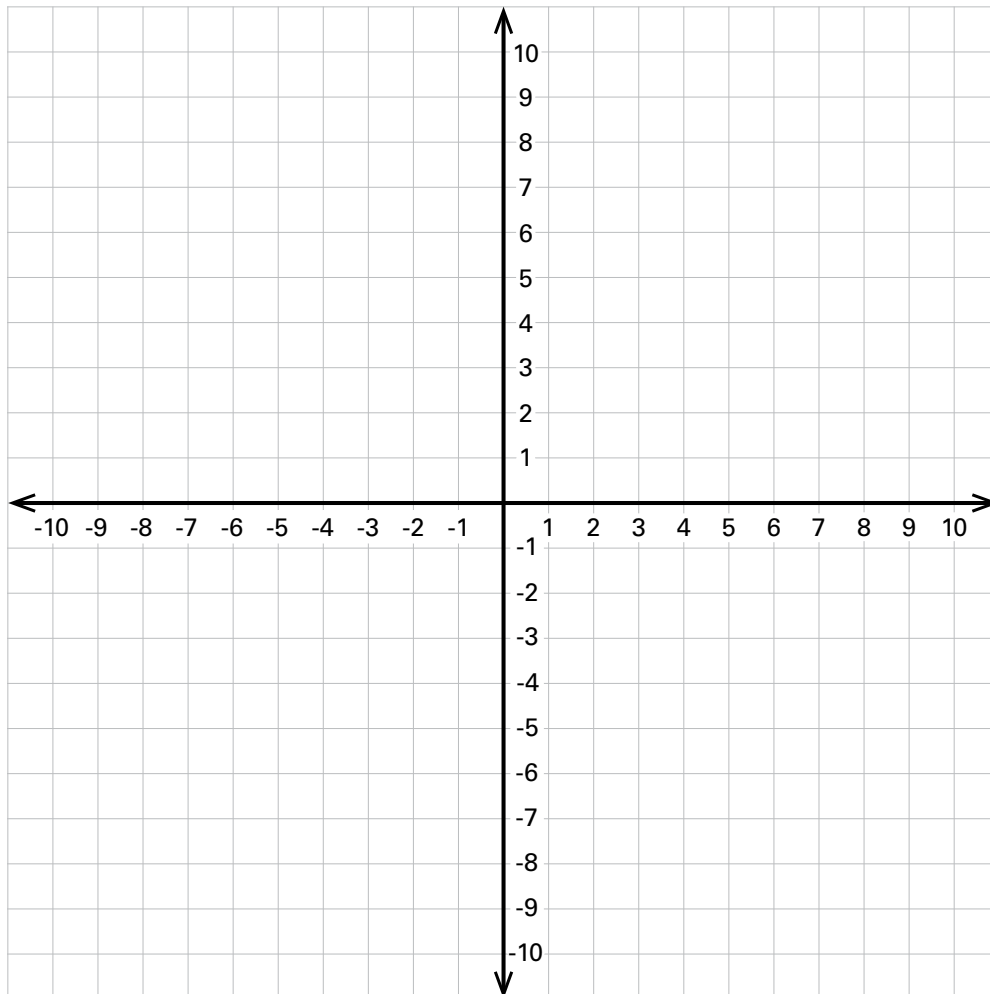
14. $(7, 7)$

15. $(5, 5)$

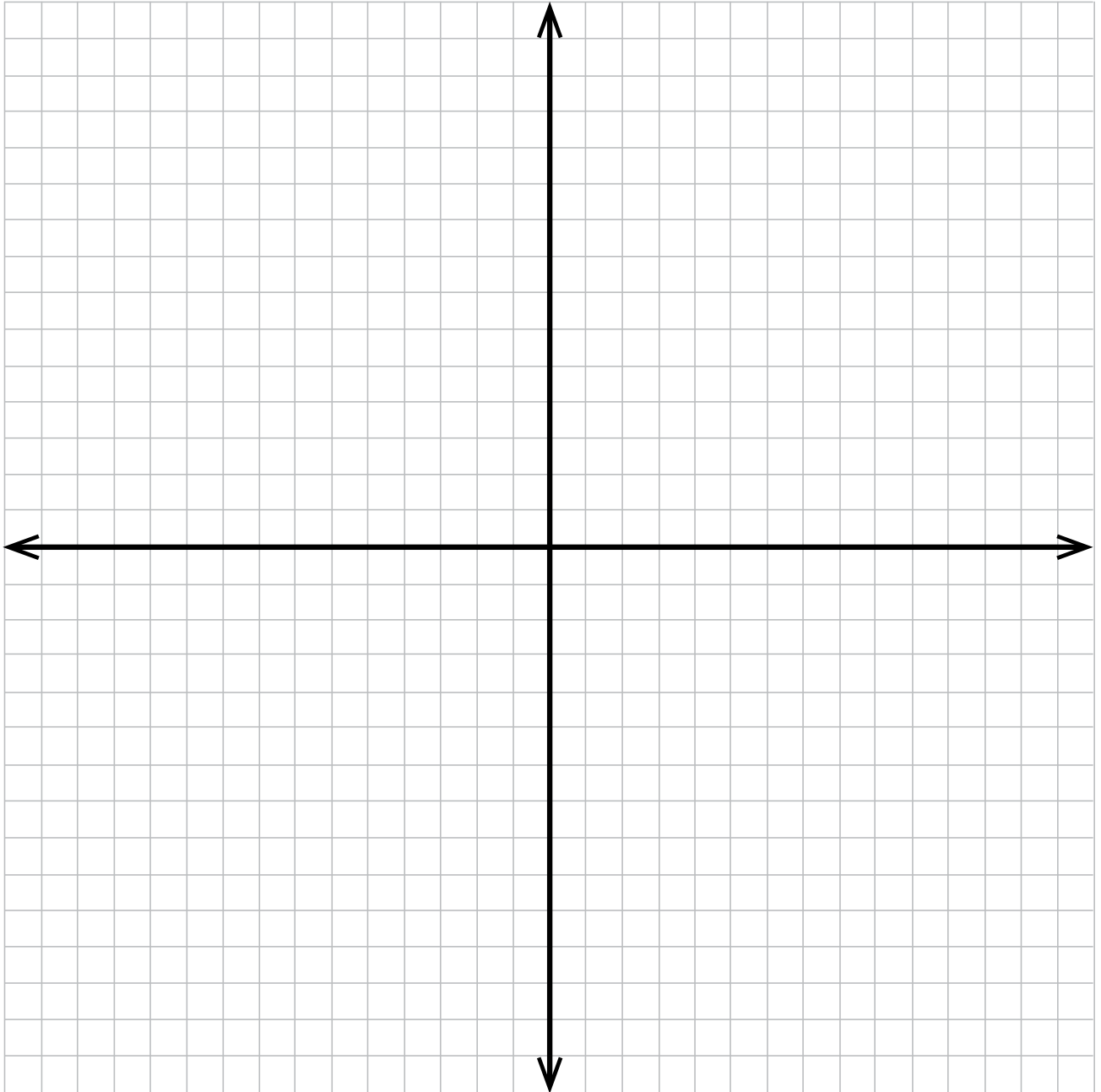
16. $(-5, -5)$

17. $(-3, 3)$

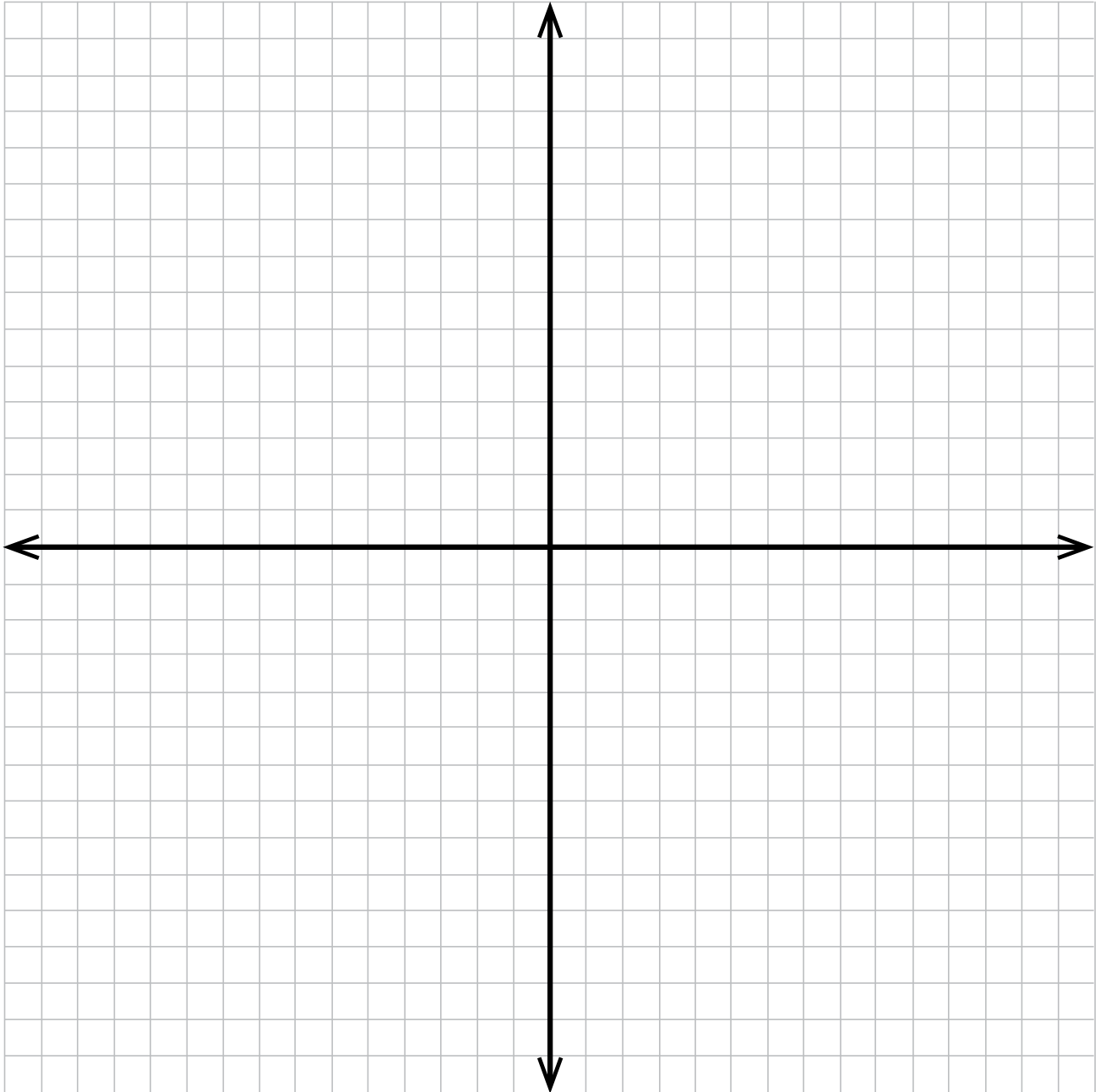
18. $(3, -3)$



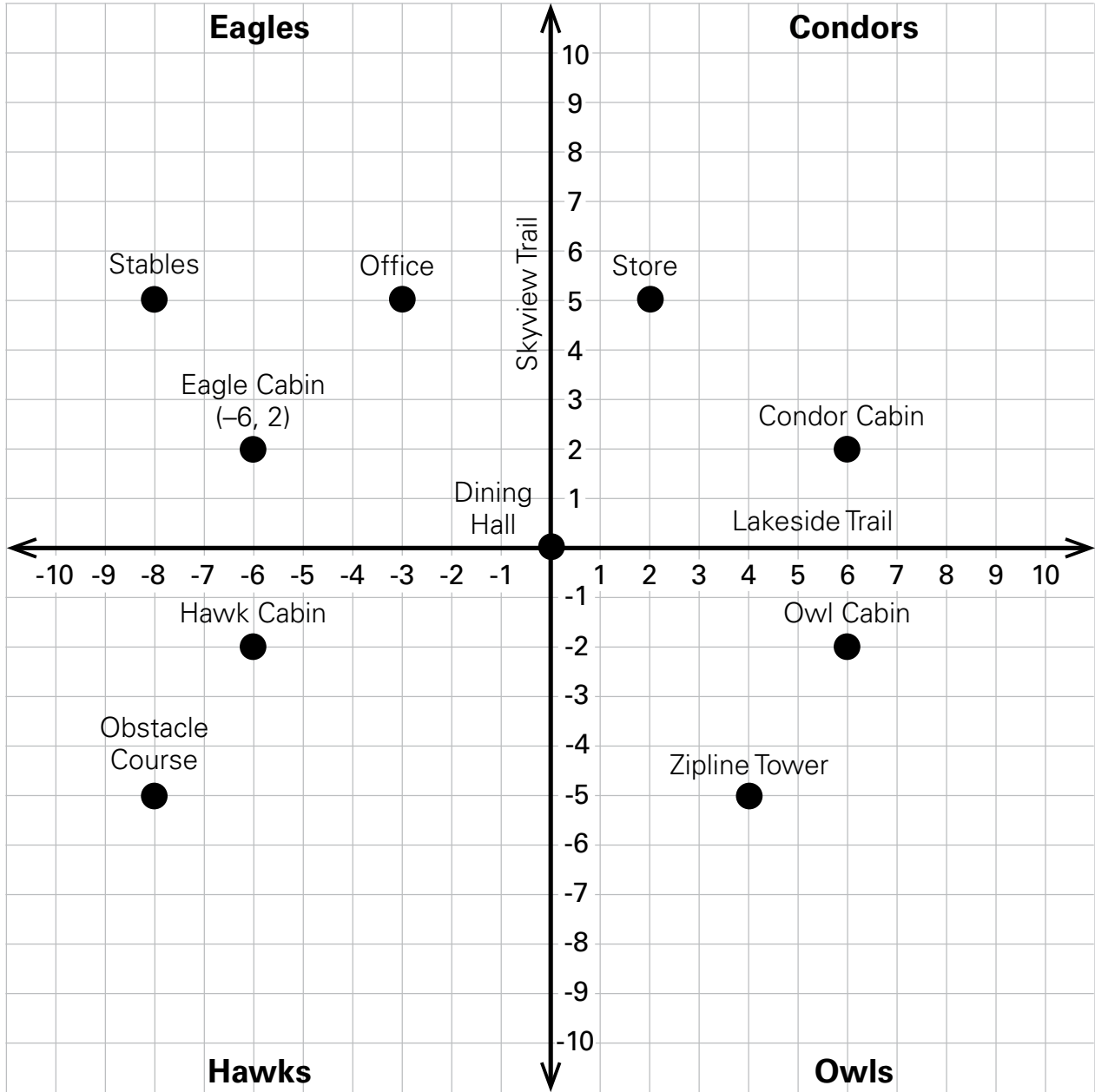
Coordinate Plane



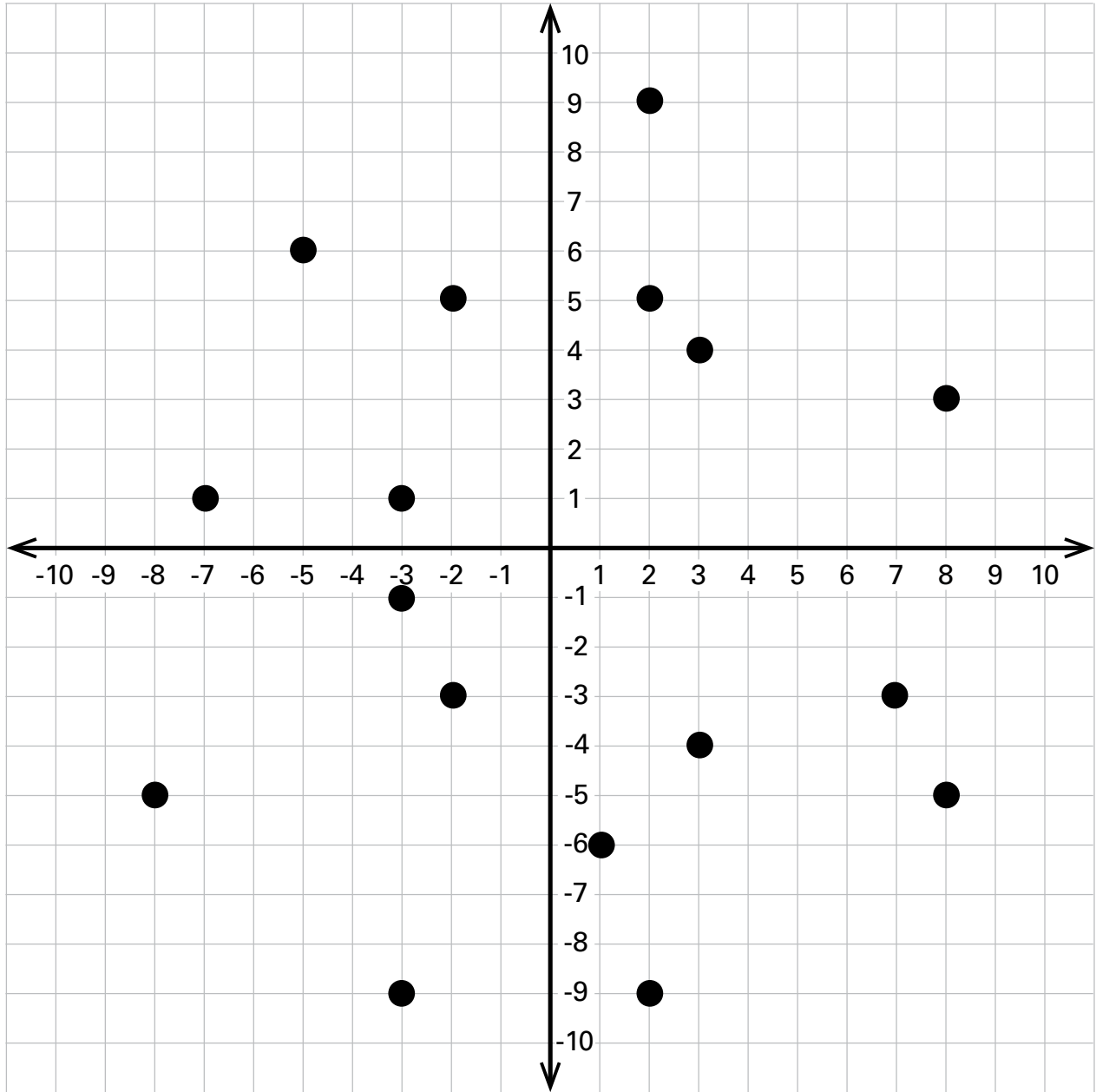
Coordinate Plane



Camp Summerland Map



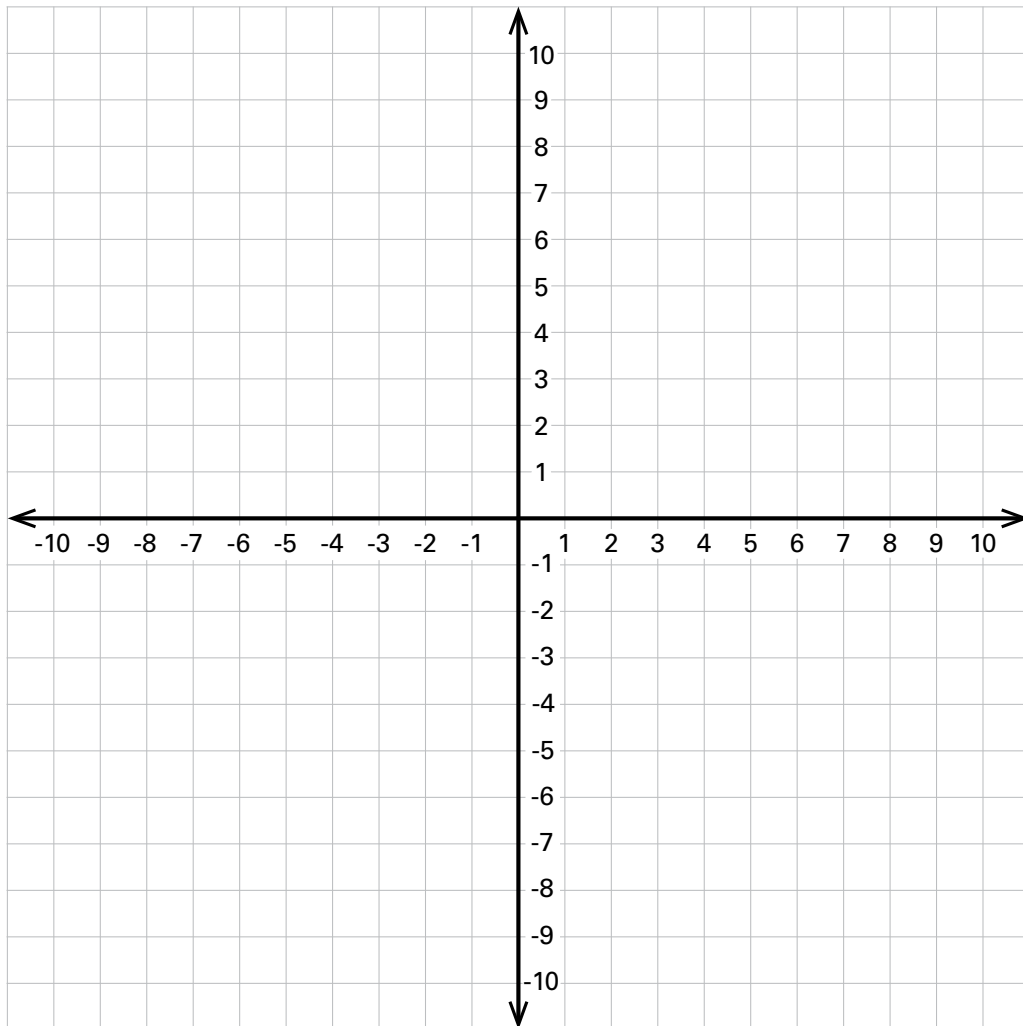
Reflection Search



Birds on the Move

The table shows where Stephanie caught birds. Plot the points on the coordinate plane and determine how far each bird flew.

Bird	First Location	Second location	Distance (in miles)
Crow	Paper factory (3, 6)	Hospital (3, -4)	
Finch	Grade school (-3, -3)	Restaurant (8, -3)	
Gull	College (2, 1)	Landfill (2, 6)	
Falcon	Office tower (-1, -3)	Library (-10, -3)	
Dove	Baseball field (-3, -2)	Stephanie's yard (-3, 9)	
Sparrow	Pool (-6, 6)	Grocery store (-10, 6)	
Hawk	Woods (-4, 8)	High school (-10, 8)	
Duck	Apartment building (10, 5)	Pond (10, 2)	



Bird Search

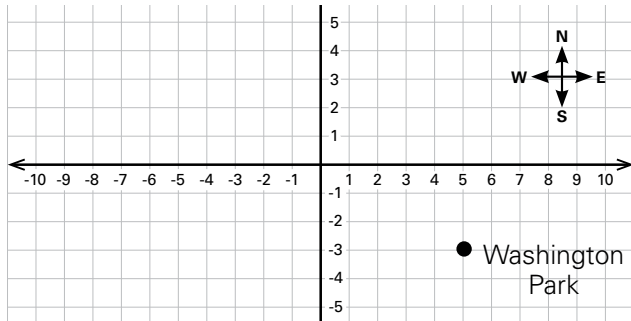
Review the example problem. Then plot the points on a **coordinate plane** and answer the questions.

Example

A heron that Stephanie saw at Washington Park is spotted near a kayak launch **2** miles west of the park. The park is at $(5, -3)$ on the map. What ordered pair describes where the heron was found?

Step 1

Plot the park at $(5, -3)$ on the map.



1 grid square width = 1 mile

Step 2

Determine the direction of the second point.

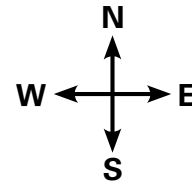
On a map:

north = up

south = down

east = right

west = left



The kayak launch is west of the park, so it is left of the park on the map.

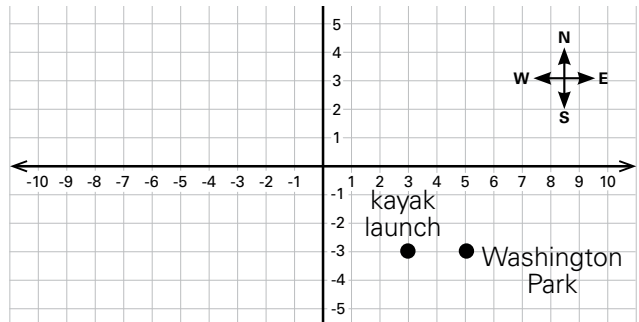
Step 3

Count the given number of units in that direction.

The kayak launch is **2** miles west of the park, so it is **2** units to the left.

Step 4

Plot the point and write the ordered pair.



The kayak launch is at $(3, -3)$ on the map.

Stephanie bands many birds at Blue Harbor. Blue Harbor is at $(-3, -3)$ on the map.

- An osprey flew 4 miles north of the harbor. What is the ordered pair for where the osprey was found? _____
- A goose flew 6 miles south of the harbor to a soccer field. What is the ordered pair for the soccer field? _____
- An owl flew 5 miles east of the harbor. What is the ordered pair for where the owl was found? _____
- After he left the soccer field, the goose flew 9 miles north, then 3 miles east. What is the ordered pair for where the goose was found?

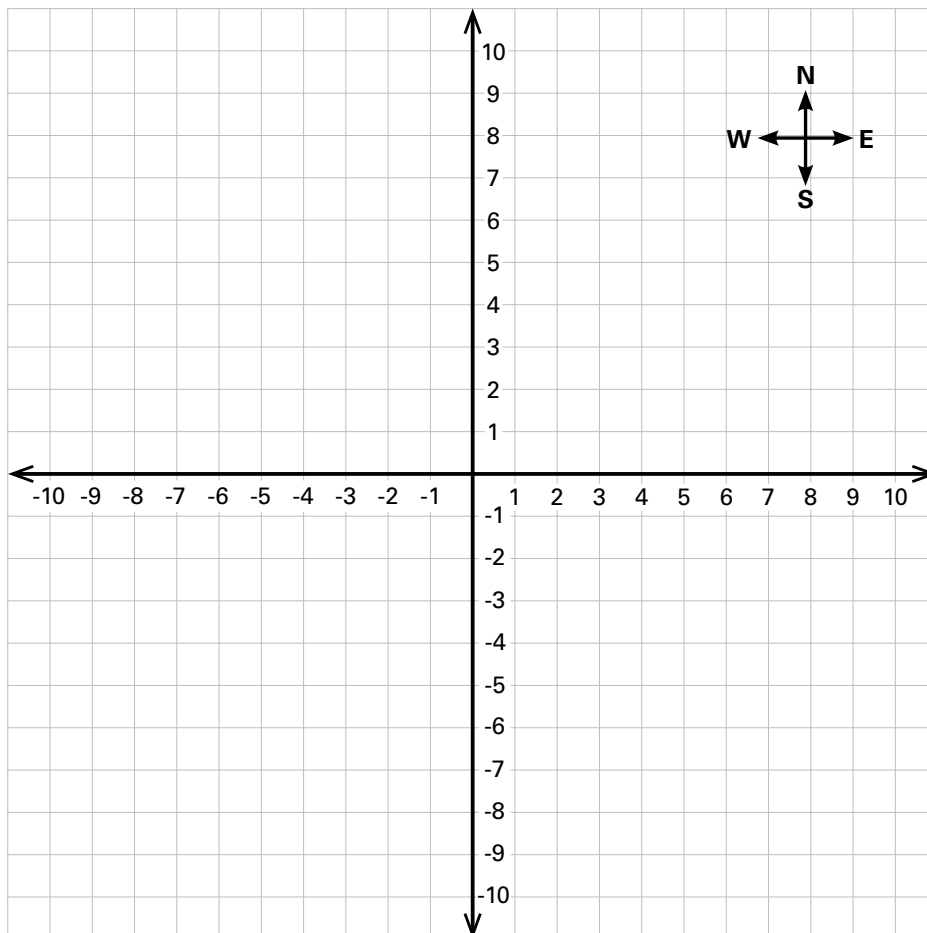
Lesson 8 Exit Ticket

Part 1: Last week Stephanie walked all around town to look for birds. Plot the points on the coordinate plane and determine how far Stephanie walked.

	First Location	Second location	Distance (in miles)
1.	Zoo $(-7, 7)$	Nature center $(-7, -6)$	
2.	Lakefront Trail (start) $(-1, -9)$	Lakefront Trail (end) $(8, -9)$	
3.	Greenhouse $(-4, 4)$	Rose garden $(-4, 6)$	

Part 2: Find the ordered pair for each location described.

- Stephanie found a rare warbler at the rose garden $(-4, 6)$ and followed it 6 miles south to a community park. What is the ordered pair for the community park? _____
- At the arboretum, Stephanie was happy to find a thrush she saw earlier at the nature center $(-7, -6)$. The arboretum is 2 miles north of the nature center. What is the ordered pair for the arboretum? _____



Extra Practice: State Fair

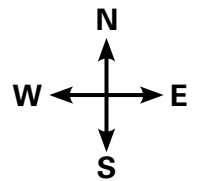
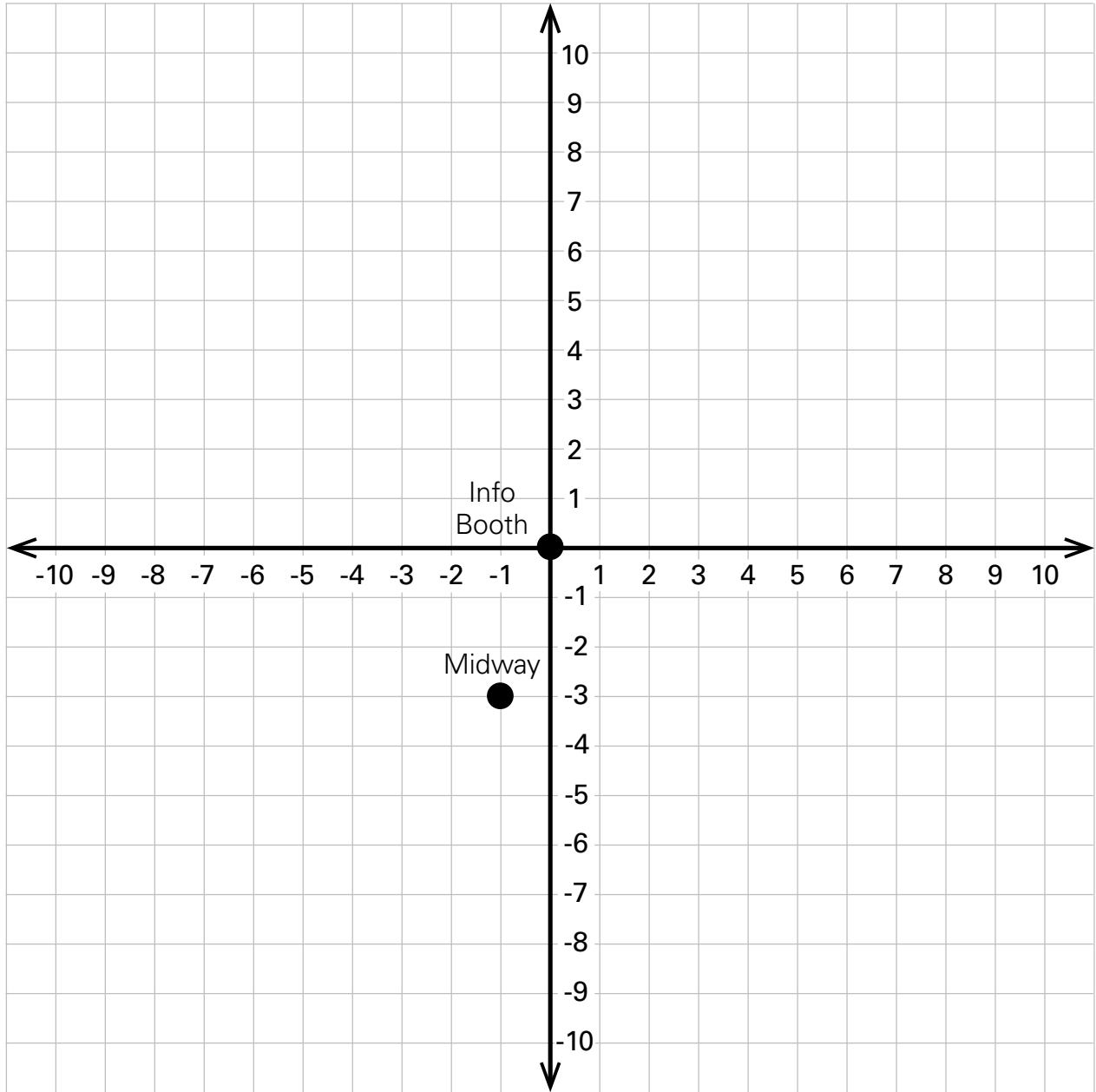
This year the State Fair is offering a special prize for visitors who collect a sticker at certain exhibits. Follow the clues to plot each location on the **State Fairgrounds Map** and answer the questions.

Clues

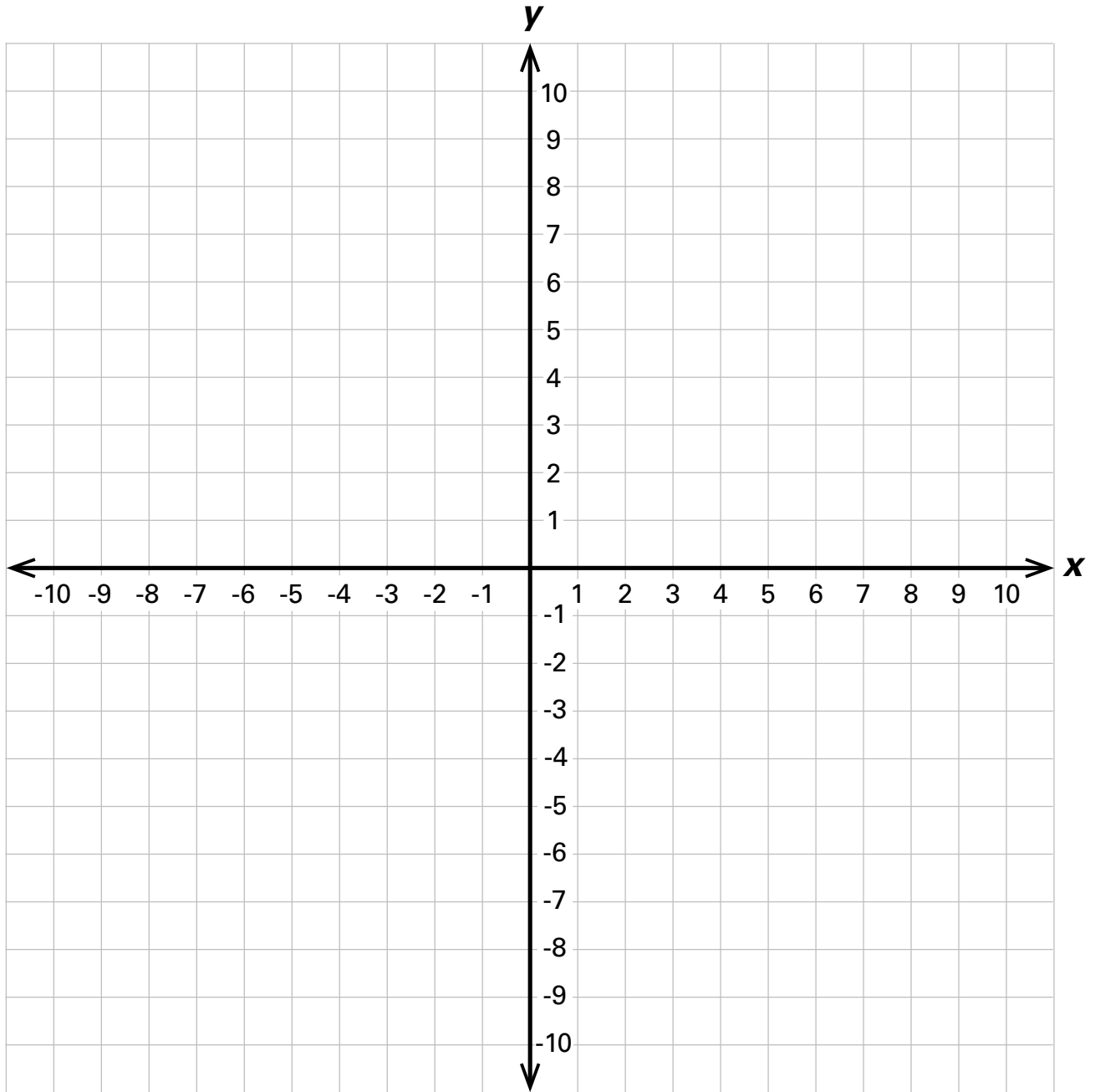
1. The Petting Zoo is 8 units south of the Info Booth on the map.
 - a. Plot the Petting Zoo on the map.
 - b. What is the ordered pair for the Petting Zoo? _____
2. The Livestock Barn is at $(-9, -8)$. The stage for the Battle of the Bands is at $(-9, -3)$.
 - a. Plot the Livestock Barn and the Battle of the Bands stage on the map.
 - b. What is the distance between the Livestock Barn and the Battle of the Bands stage on the map? _____
3. The Pie Contest is 14 units east of the Battle of the Bands stage on the map.
 - a. Plot the Pie Contest on the map.
 - b. What is the ordered pair for the Pie Contest? _____
4. The Future Cars exhibit is at $(5, 4)$. The Art Show is at $(-1, 4)$.
 - a. Plot the Future Cars exhibit and the Art Show on the map.
 - b. What is the distance between the Future Cars exhibit and the Art Show on the map?

5. The Bumper Cars are 2 units west of the Midway on the map.
 - a. Plot the Bumper Cars on the map.
 - b. What is the ordered pair for the Bumper Cars? _____

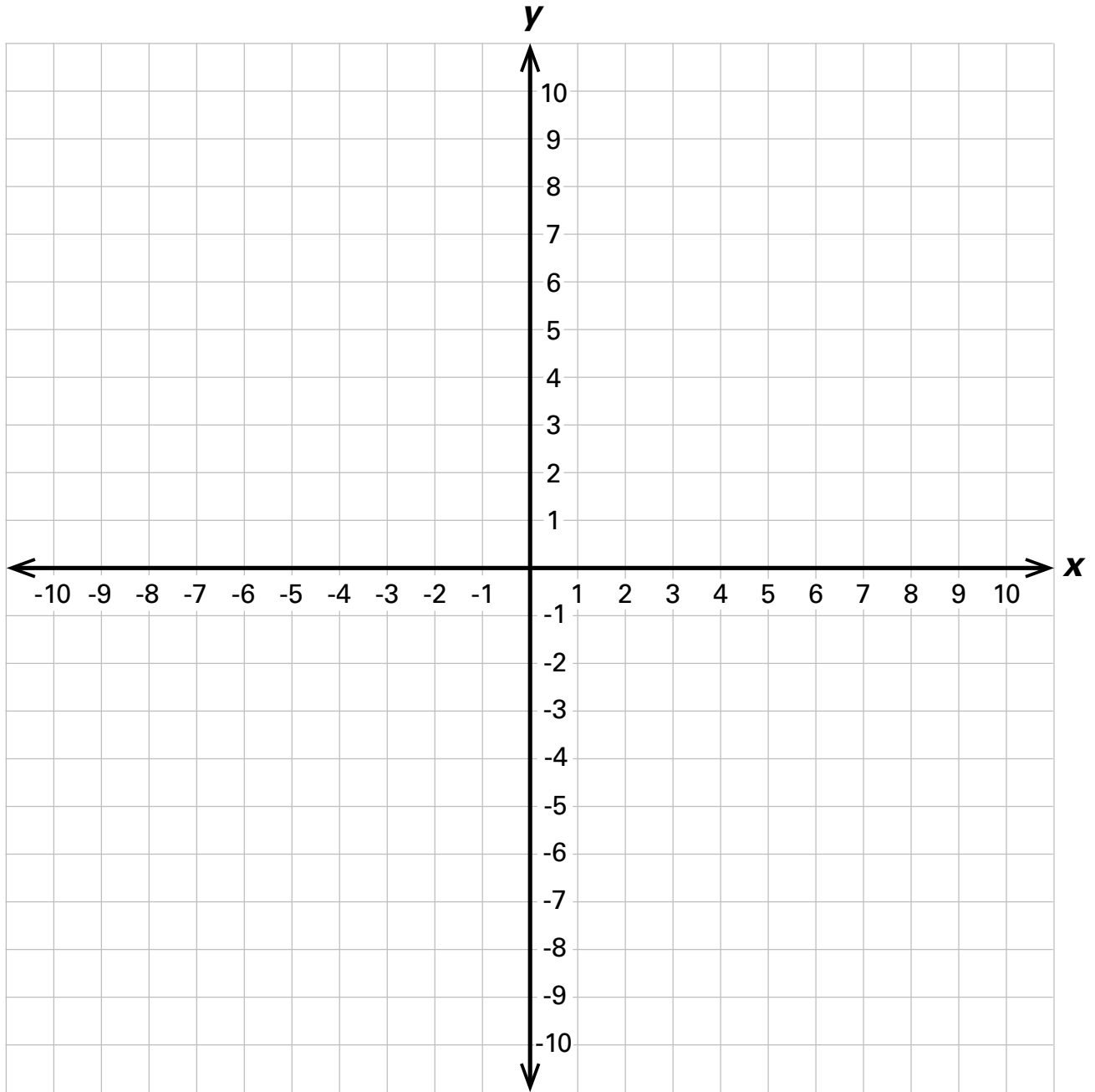
State Fairgrounds Map



Coordinate Plane



Coordinate Plane

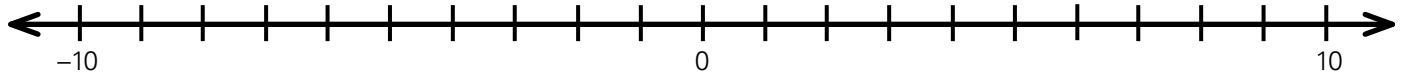


Assessment

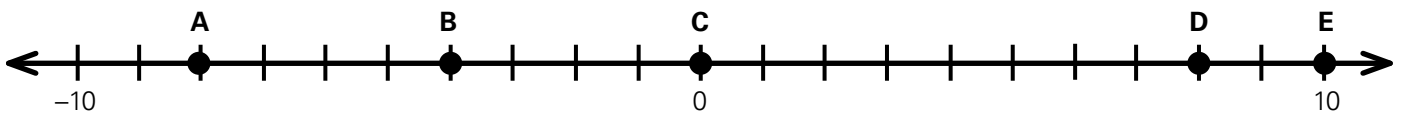
Unit 1 Assessment

1. Plot and label each integer on the number line.

5, -6, -2, 1, -9



2. Which pair of lettered points are opposites? Explain how you know.



3. $-(-3)$

- a. What does the expression mean in words?

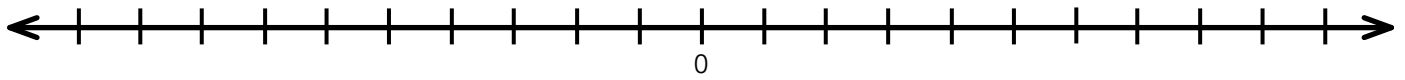
the _____ of _____ 3

- b. Complete the equation:

$-(-3) =$ _____

4. Is the equation true? Use the number line and explain how you know.

$$|4| = |-4|$$



5. The table shows the record low temperatures for 5 counties on the last day of the year. List the temperatures from least to greatest. You can use the number line to help.

_____ °F

_____ °F

_____ °F

_____ °F

_____ °F

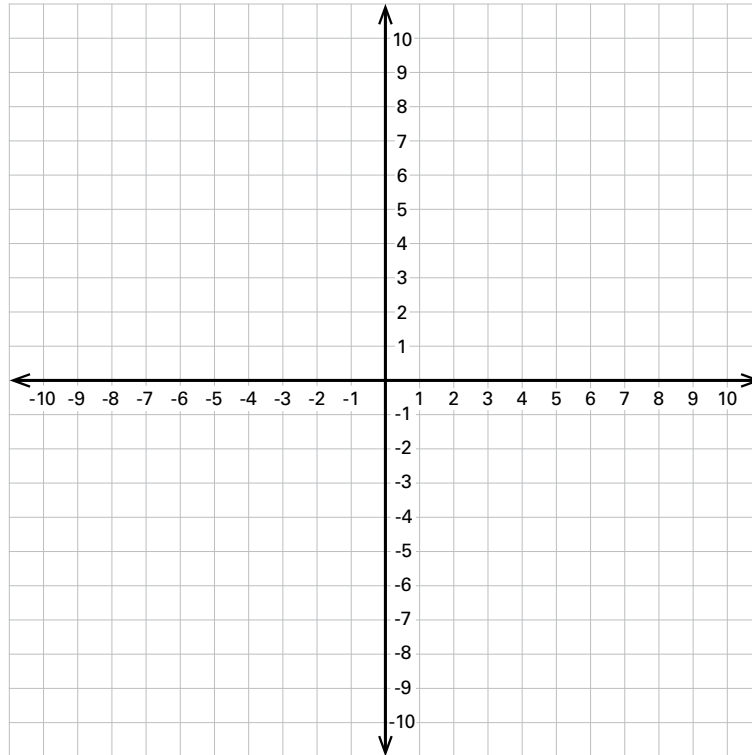
County	Low Temperature (°F)
Davis	-9
Coleman	-5
Rivera	4
Taylor	-2
Kimaro	8



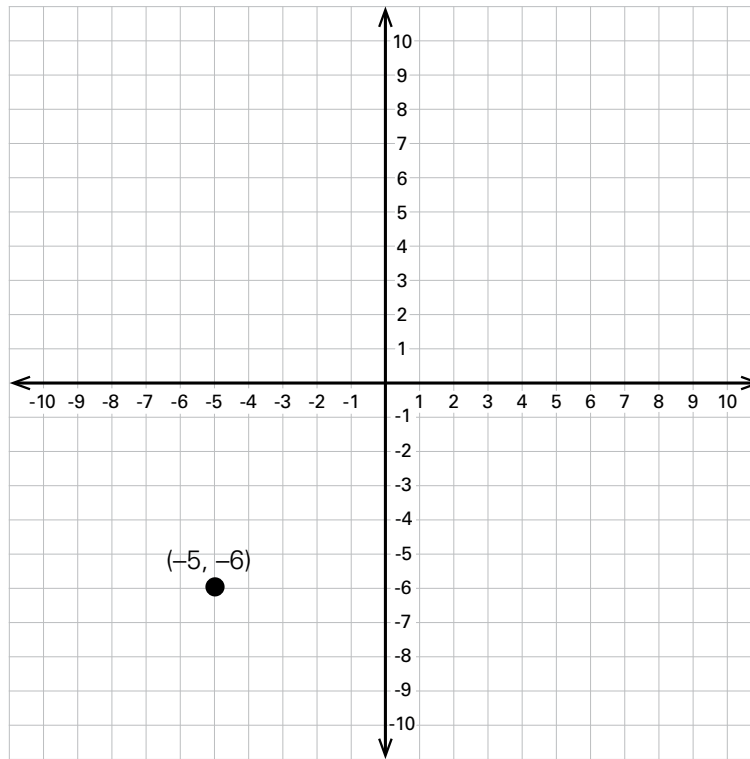
6. Use $>$, $<$, or $=$ to compare the integers. Explain how you decided which symbol to use.

$$-4 \bigcirc -3$$

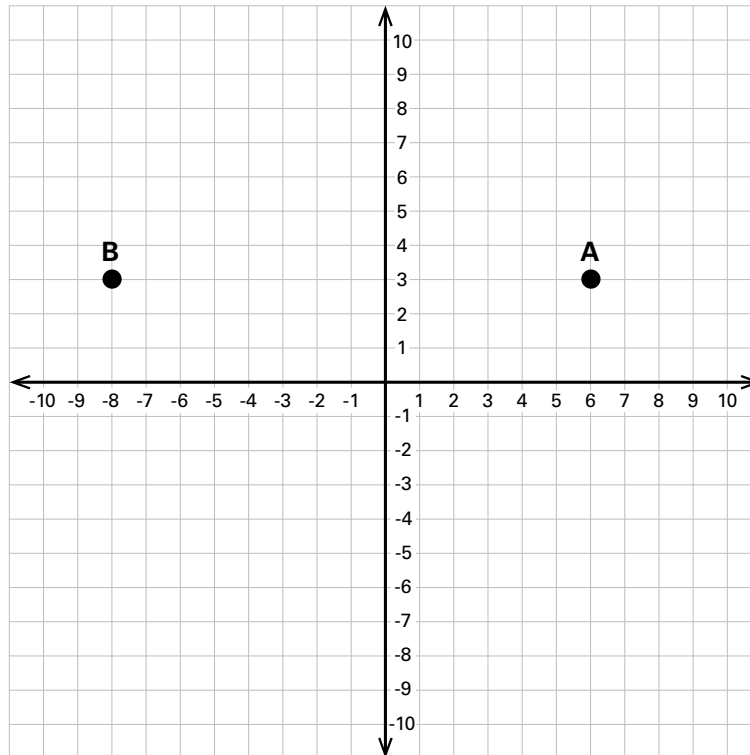
7. Graph each point on the coordinate plane: $(4, 8)$, $(-3, -9)$, $(2, -5)$, $(-1, 7)$.



8. Plot the point that reflects $(-5, -6)$ over the y -axis. What are the reflection's coordinates?

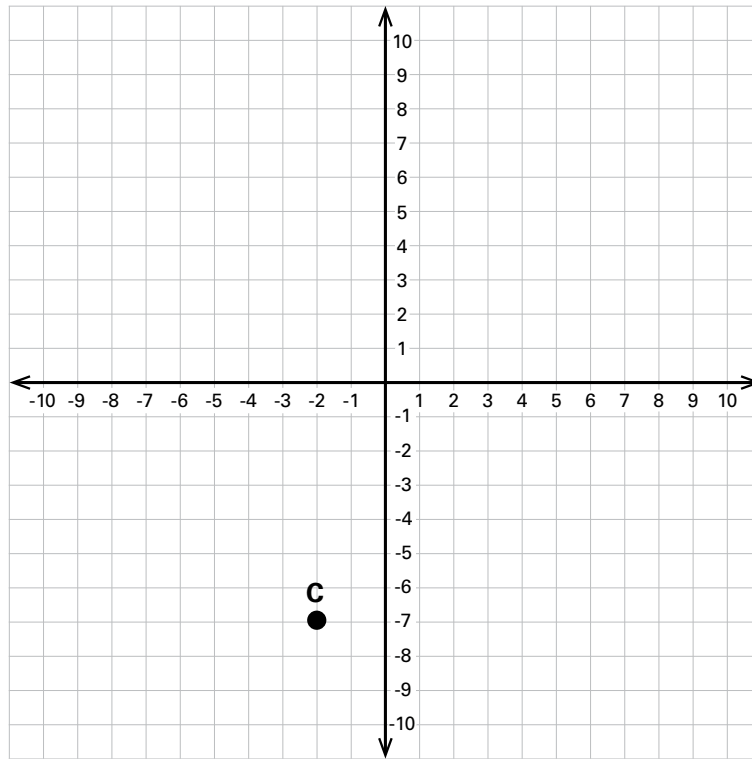


9. Point A and point B are plotted on the coordinate plane.



- a. What is the ordered pair for point A? _____
- b. What is the ordered pair for point B? _____
- c. What is the distance between point A and point B? _____

10. Point C is plotted on the coordinate plane. Point D is 10 units above point C. Plot point D on the coordinate plane. What is its ordered pair? _____



Unit 1 Cumulative Review

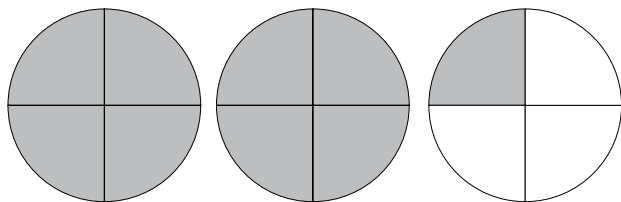
1. What decimal is equal to $\frac{7}{1,000}$?

$$\frac{7}{1,000} = \underline{\hspace{2cm}}$$

2. Find the quotient.

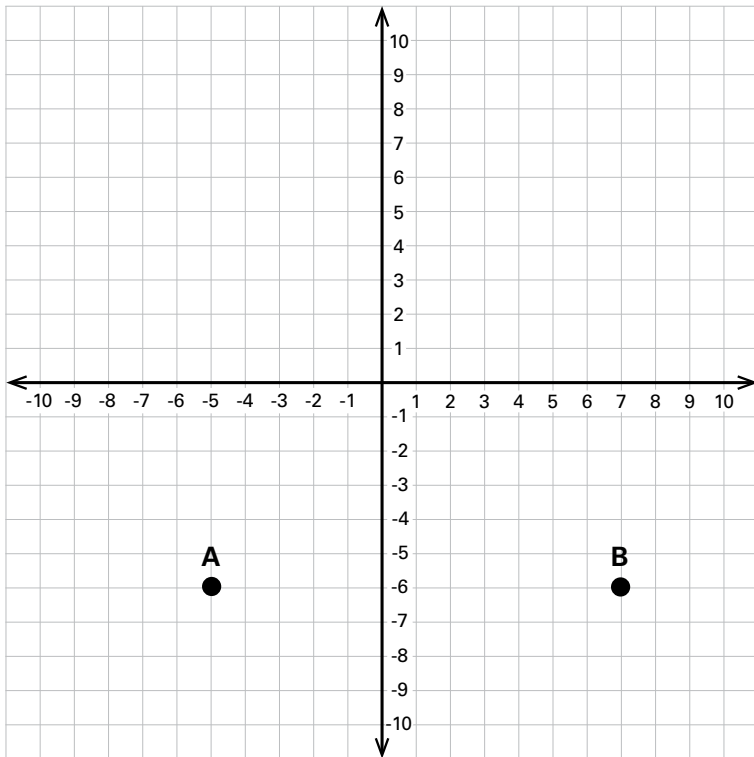
$$\frac{1}{3} \div 2 = \underline{\hspace{2cm}}$$

3. Find the difference.



$$2\frac{1}{4} - 1\frac{1}{2} = \underline{\hspace{2cm}}$$

4. What is the distance between point A and point B?



The distance between A and B is _____.

5. Carolina and Manda are painting their bedroom. Carolina has painted $\frac{3}{8}$ of the bedroom, and Manda has painted $\frac{1}{4}$ of it. What fraction of the bedroom have the sisters painted together? Show your work.

6. Divide.

$$23 \overline{)1288}$$

$$1288 \div 23 = \underline{\hspace{2cm}}$$

7. Complete the equation.

$$-(-14) = \underline{\hspace{2cm}}$$

8. Complete the division pattern.

$$200 \div 0.5 = 400$$

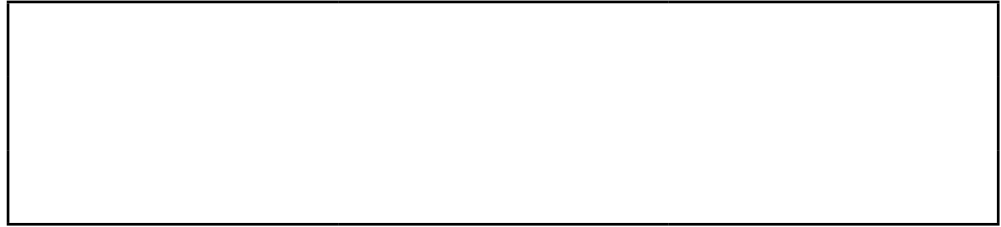
$$20 \div 0.5 = 40$$

$$2 \div 0.5 = 4$$

$$0.2 \div 0.5 = 0.4$$

$$0.02 \div 0.5 = \underline{\hspace{2cm}}$$

9. Multiply 598×246 . You can use an area model to help.



$598 \times 246 =$ _____

10. Carla has \$20. James has 3 times as much money, plus 12 more dollars. How much money does James have?
- a. Draw a tape diagram to illustrate how much money James has.



- b. Write and solve an equation to answer the question.

James has _____ dollars.

11. Multiply. Show your work.

$\frac{4}{5} \times 3\frac{1}{8} =$

12. Jude has $\frac{2}{3}$ of a watermelon. He eats $\frac{5}{9}$ of it. How much watermelon is left?
Write an equation to solve the problem and show your work with a tape diagram.

13. Find the sum. $4.03 + 9.28 =$ _____

14. Multiply. Show your work. $2.5 \times 1.3 =$ _____

How can you use estimation to decide where to put the decimal point?

15. Find the difference. Show your work.

$$\frac{8}{9} - \frac{2}{3} =$$

Unit 2:

Operations with Positive Rational Numbers

Team Up!

Draw factor rainbows for each number. Then use them to complete the sentences.

Justice Middle School has 35 sixth graders, 42 seventh graders, and 56 eighth graders. The principal plans to organize the students in each grade into teams for a Campus Cleanup Day. All teams should have the same number of students. How many students should be on each team?

Factor Rainbows	
35	
42	
56	

1. In this situation, what do each group of factors represent?

Factors of 35: _____

Factors of 42: _____

Factors of 56: _____

2. The common factors of 35, 42, and 56 are _____.

3. The greatest common factor of 35, 42, and 56 is _____.

4. To make the largest teams possible, the principal should put _____ students on each team.

Book Bags

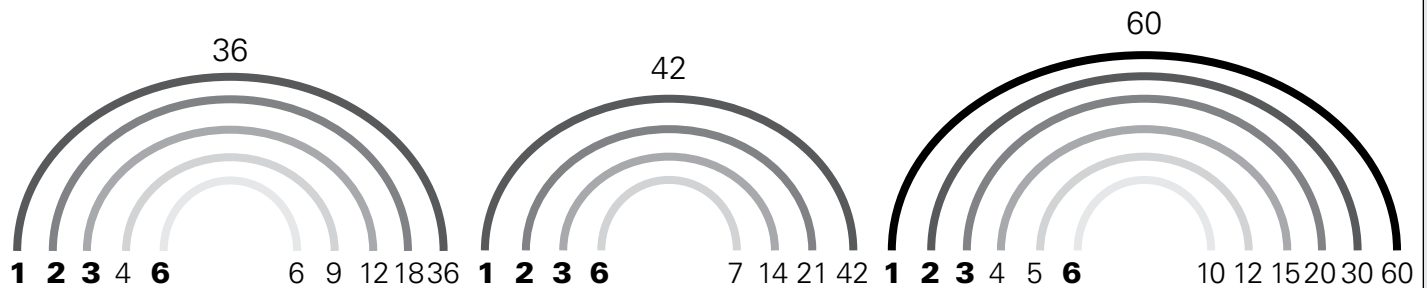
Review the example problem. Then, on a separate piece of paper, draw a **factor rainbow** to show your work and solve the problems.

Example

Martina collects comic books. She has **36** issues of *Dr. Resilient*, **42** issues of *Captain Sensational*, and **60** issues of *Alexi Darkriver*. She plans to store the comic books in zipper bags. She will put only one kind of comic book in each bag. Each bag will hold the same number of issues. What is the greatest number of comic books Martina can put in each bag?

Step 1

Draw factor rainbows to show the factors of **36**, **42**, and **60**. Circle the common factors in all three numbers.



Step 2

Write a comparison using the common factors to find the greatest common factor.

$$6 > 3 > 2 > 1$$

The greatest common factor is **6**.

Step 3

Use the GCF to answer the question.

Martina can put **6** comic books in each zipper bag.

1. Martina's brother Javier also collects comic books. He has 30 issues of *Dr. Resilient*, 45 issues of *Captain Sensational*, and 75 issues of *Alexi Darkriver*. He plans to use the same storage plan as Martina. How many comic books can Javier put in each bag?

Javier can put _____ books in each zipper bag.

2. Javier's friend Raja collects comic books from different countries. He has 32 comic books from Brazil, 48 from Iraq, and 80 from Japan. He plans to use the same storage plan as Martina. How many comic books can Raja put in each bag?

Raja can put _____ books in each zipper bag.

Lesson 10 Exit Ticket

Part 1: Draw **factor rainbows** and find the GCF for each group of numbers.

1. The GCF of 8, 24, and 68 is _____.

2. The GCF of 18, 36, and 63 is _____.

Part 2: Draw **factor rainbows** and use the GCF to solve the problem.

3. Coach Ripley starts a dodgeball club. The sign-up sheet shows 14 sixth graders, 56 seventh graders, and 84 eighth graders. He needs to make teams for each grade level, with as many kids as possible on each team, and the same number of kids on each team. How many kids can he put on each team?

He can put _____ kids on each team.

Extra Practice

Read each description. Then, on a separate piece of paper, draw **factor rainbows** to find the common factors of the numbers described. Label the statement that follows each description either *True* or *False*. Use the GCF to explain your conclusions.

1. The director of a summer camp is organizing campers into cabins. All the campers in a cabin should be the same age, and all the cabins should have the same number of campers. There are 32 eight-year-olds, 36 nine-year-olds, and 40 ten-year-olds.

The greatest number of campers that the director can put in a cabin is 8 campers.

How do you know? _____

2. Mr. Mingus, Ms. Parker, and Ms. Davis are sixth-grade teachers. Mr. Mingus has 24 students, Ms. Parker has 30 students, and Ms. Davis has 36 students. The teachers are taking their students on a field trip. The students will travel in vans. All the students in a van should be from the same class, and all the vans should have the same number of students.

The greatest number of students that can go in each van is 6 students.

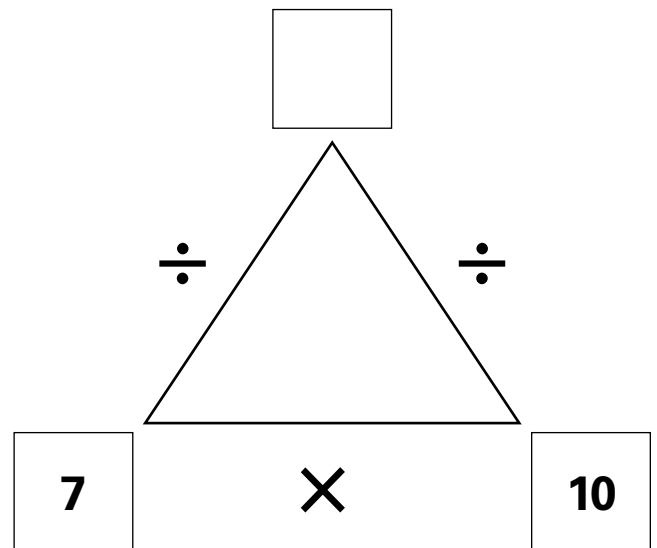
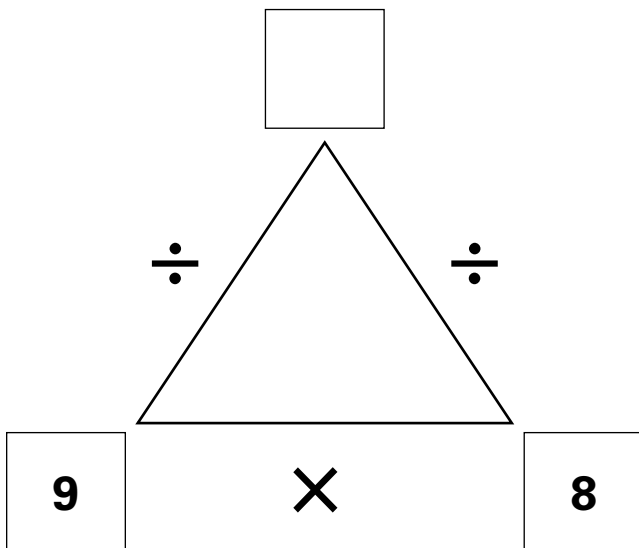
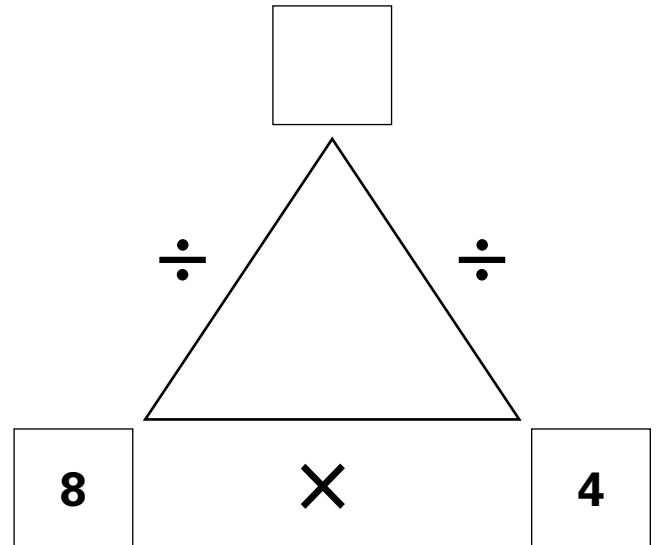
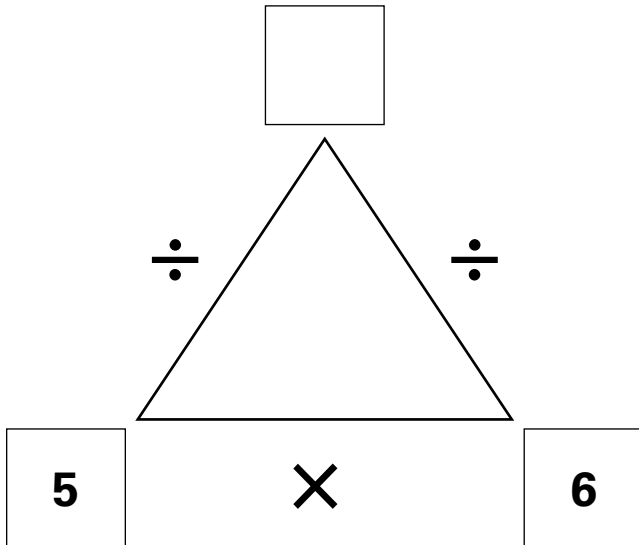
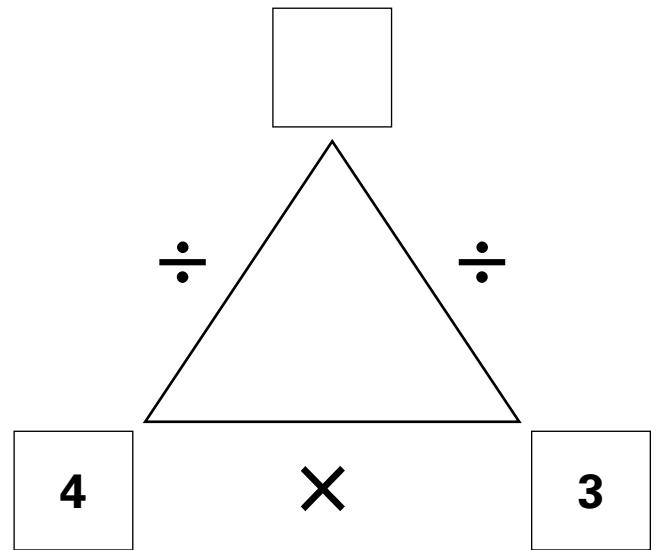
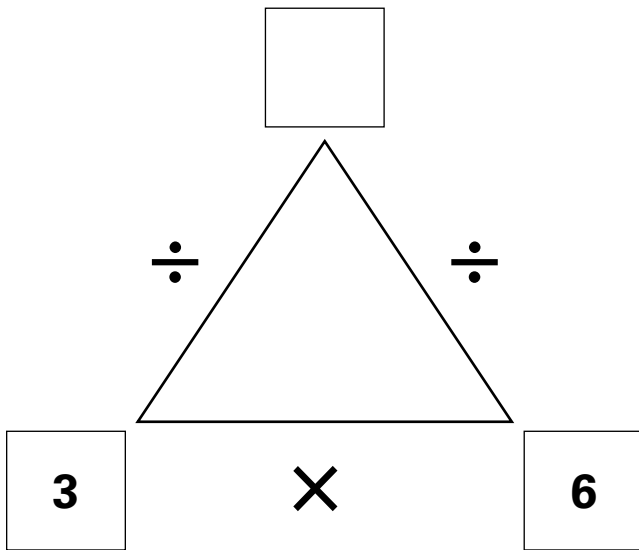
How do you know? _____

3. A choreographer plans to have dancers stand in circles to start their performance. There are 21 dancers in red costumes, 35 dancers in purple costumes, and 42 dancers in white costumes. The choreographer wants all dancers in a circle to be wearing the same color costume and each circle must have the same number of dancers.

The greatest number of dancers that the choreographer can put in each circle is 3.

How do you know? _____

Number Triangles



Bingo Card

B	I	N	G	O
		FREE		

Helping Out

Read the problem and answer the questions. Use **square tiles** to make **arrays** that model the situation.

The service club collects 24 shirts and 40 coats for the Community Clothes Closet. Ruth is in charge of packing the clothes in boxes. She puts only shirts or only coats in each box. She packs the same number of items in each box and the greatest possible number of items in each box.

1. What are the factors of 24 and 40?

24: _____

40: _____

2. What is the GCF of 24 and 40? _____

3. How many items does Ruth pack in each box? _____

4. Make a rectangular array with *red* tiles to model the boxes of shirts that Ruth packs. What multiplication expression represents the total number of shirts arranged in boxes?

5. Make a rectangular array with *blue* tiles to model the boxes of coats that Ruth packs. What multiplication expression represents the total number of coats arranged in boxes?

6. Write an addition expression to represent the boxes of shirts and coats.

7. Combine your rectangular arrays to model all the boxes of clothes that Ruth packs. Write a multiplication equation to represent combining the boxes of shirts and coats.

8. What is the total number of shirts and coats that Ruth packs?

Book Drive

Review the example problem. Find the GCF and use the distributive property to answer the questions.

Example

The club's book drive brings in **45** fiction books and **63** nonfiction books. We put only fiction or only nonfiction in each carton. We pack the same number of books in each carton and put the greatest possible number of books in each carton. How many books should we pack in each carton? How many books are we sending?

Step 1

Find the GCF of **45** and **63** to find the number of books in each carton.

Factors of **45**: 1, 3, 5, 9, 15, 45

Factors of **63**: 1, 7, 9, 63

The GCF is 9.

We put 9 books in each carton.

Step 2

Use the GCF to factor each addend.

$$45 = 9(5)$$

$$63 = 9(7)$$

Step 3

Use the distributive property to write a multiplication expression.

$$9(5 + 7)$$

Step 4

Solve for the total number of books.

$$9(12) = 108$$

The total number of books is **108**.

1. James leads a book drive at his school. They collect 42 fiction books and 77 nonfiction books. James puts the books in cartons the same way that our service club did. How many books go in each carton? How many total books are there? Use the GCF and the distributive property and show your work.

There are _____ books in each carton. James's book drive collects _____ books.

2. Roger is donating books. He has 54 picture books and 90 chapter books. Roger will use as few boxes as possible and pack the same number of books in each carton. Each carton will have one genre. How many books go in each carton? How many total books are there? Use the GCF and the distributive property and show your work.

There are _____ books in each carton. Roger donates _____ books.

Lesson 11 Exit Ticket

Read the problem. Use **square tiles** to model the problem with **arrays**. Use the GCF and the distributive property to answer the questions.

1. Represent $48 + 12$ using the distributive property.

What is the GCF? _____

Write a multiplication equation using the distributive property to show the sum.

2. Represent $12 + 27$ using the distributive property.

What is the GCF? _____

Write a multiplication equation using the distributive property to show the sum.

3. Represent $42 + 28$ using the distributive property.

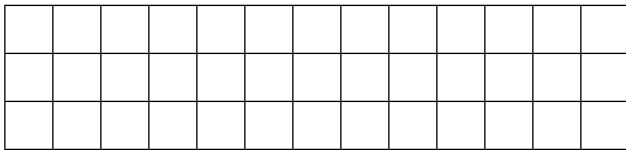
What is the GCF? _____

Write a multiplication equation using the distributive property to show the sum.

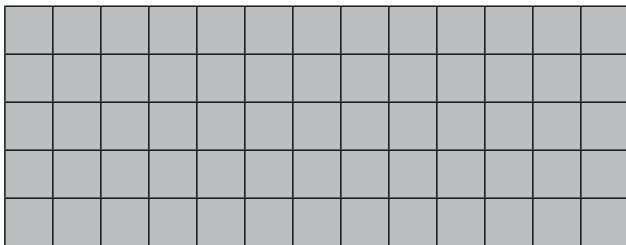
Extra Practice: Word Problem

Use the arrays shown to write a word problem that can be represented by the distributive property. Then, trade with a classmate and solve. Show your work.

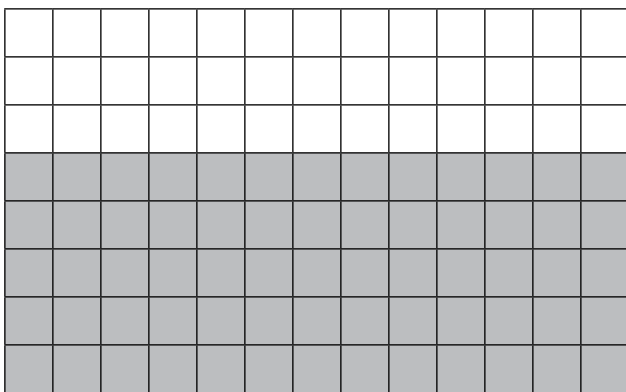
Word Problem



$_____ \times _____$



$_____ \times _____$



$_____ + _____$

$_____ (\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$

Triple-Quiz Day

Use **Mr. Jackson's Number Lines** to model the problem and answer the questions.

Mr. Jackson gives his students a math quiz every 2 days, a spelling quiz every 3 days, and a social studies quiz every 4 days. Today, his students had to do all three quizzes! How many days will it be until Mr. Jackson's students have all three quizzes on the same day again?

1. Write the multiples from your models.

2: _____

3: _____

4: _____

2. What are the common multiples? _____

3. What is the least common multiple? _____

4. How many days will it be until Mr. Jackson's students have all three quizzes on the same day?

Training Trio

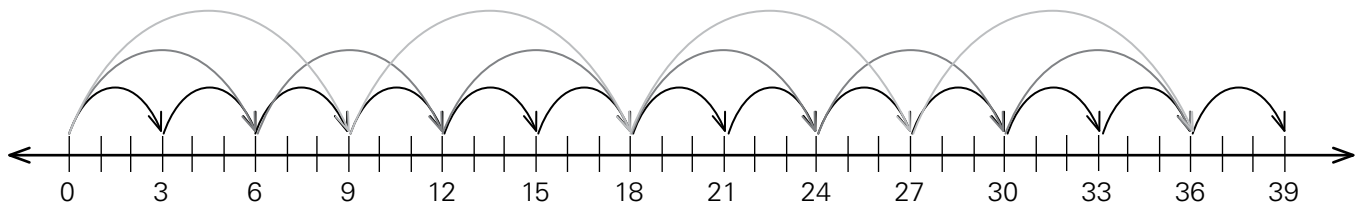
Review the example problem. Then, use **Coach Marrs's Number Lines** to find the multiples and answer the questions.

Example

Coach Marrs has her tennis players run laps every **3** days, weight train every **6** days, and practice a match every **9** days. Today, the players had to do all three. How many days will it be until Coach Marrs has her players do all three activities on the same day again?

Step 1

Use a number line to model skip-counting by **3**, **6**, and **9**. Use a different color for each pattern.



Step 2

Use the number line models to list the multiples of **3**, **6**, and **9**.

Multiples of **3**: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39

Multiples of **6**: 6, 12, 18, 24, 30, 36

Multiples of **9**: 9, 18, 27, 36

Step 3

Find the common multiples. The least multiple is the LCM.

The common multiples from the models are 18 and 36. The LCM is 18, because $18 < 36$.

It will be 18 days until Coach Marrs has her players do all three activities on the same day again.

1. The schedule changes so players run laps every 2 days, weight train every 4 days, and practice a match every 5 days. How many days until they do all three on the same day?

It will be _____.

2. The schedule changes so players run laps every 2 days, weight train every 3 days, and practice a match every 7 days. How many days until they do all three on the same day?

It will be _____.

Lesson 12 Exit Ticket

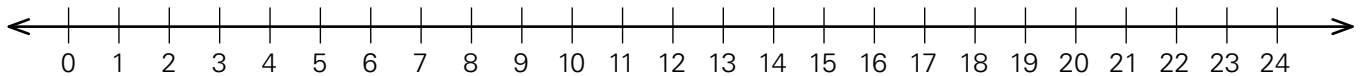
Make number line models. Then answer the questions.

As long as she keeps her grades up, Jamie's parents let her download her favorite podcast every 3 weeks, a new game every 4 weeks, and a new movie every 6 weeks. Today was extra special because Jamie got to download her podcast, a game, and a movie on the same day!

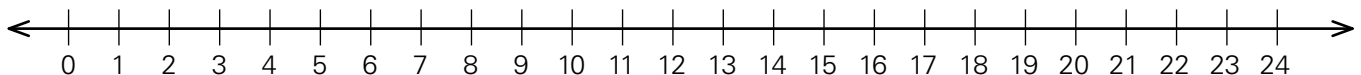
1. Use the number line to model how often Jamie downloads the podcast.



2. Use the number line to model how often Jamie downloads a game.



3. Use the number line to model how often Jamie downloads a movie.



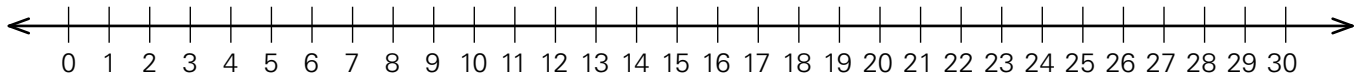
4. What are the common multiples of 3, 4, and 6? _____
5. What is the LCM of 3, 4, and 6? _____
6. Jamie has to wait _____ weeks to be able to download a podcast, a game, and a movie on the same day.

Extra Practice: Tri Hard!

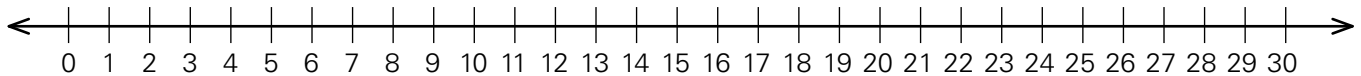
The table shows Victoria's training schedule for an upcoming triathlon. Use the table to answer the questions.

Victoria's Training Schedule	
Running	Every 6 days
Swimming	Every 3 days
Bicycling	Every 5 days

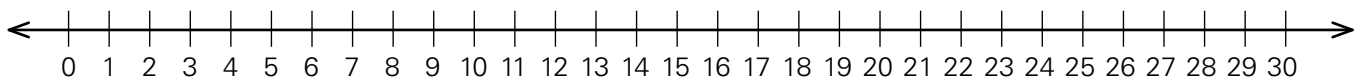
1. Use the number line below to model how often Victoria runs.



2. Use the number line below to model how often Victoria swims.



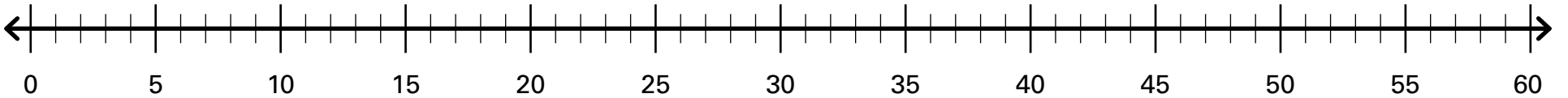
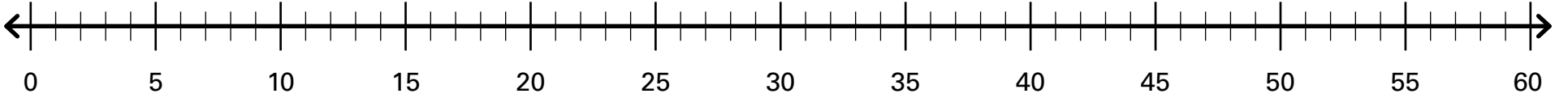
3. Use the number line below to model how often Victoria bikes.



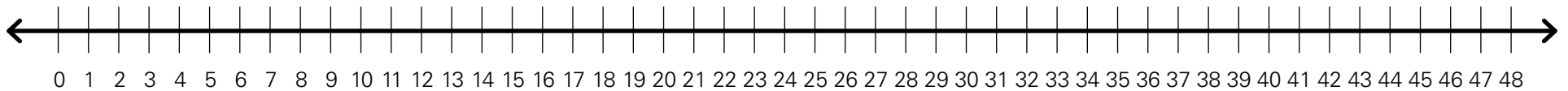
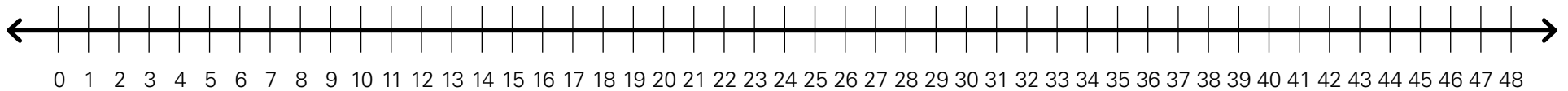
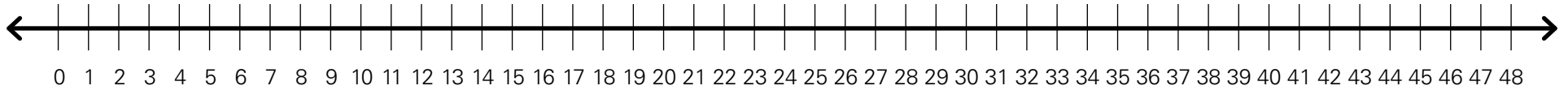
4. What is the LCM of 6, 3, and 5? _____

5. How many days will it be until Victoria runs, swims, and rides on the same day?

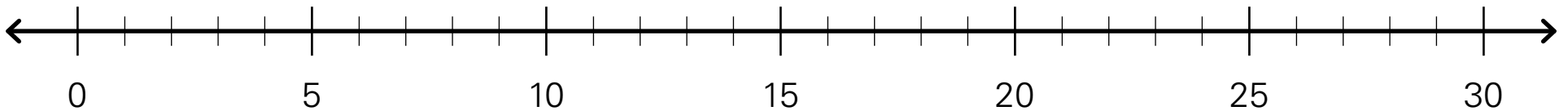
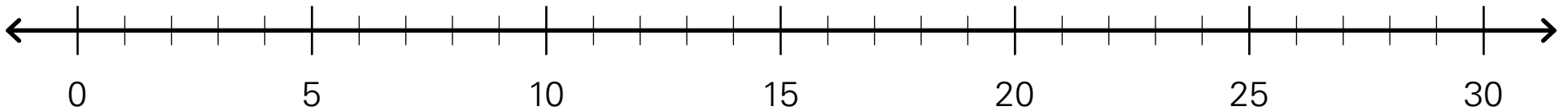
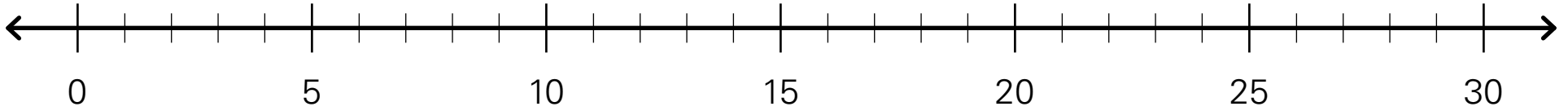
Number Lines to 60



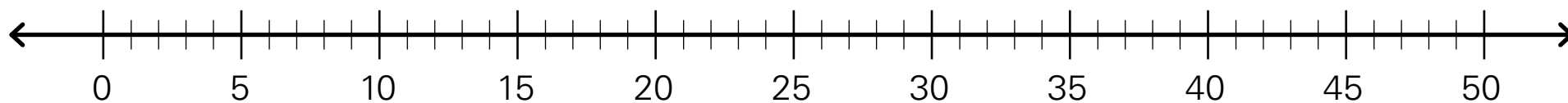
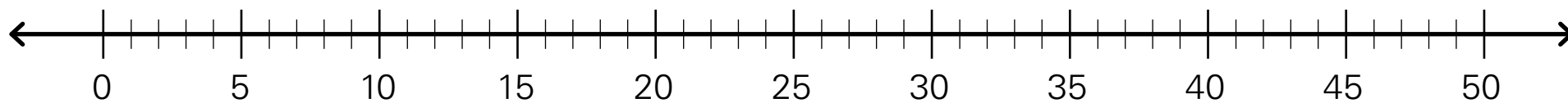
Number Lines to 48



Mr. Jackson's Number Lines



Coach Marris's Number Lines



Engineering a Future

Part 1: Model addition or subtraction with **place value disks** or **drawings** and fill in the missing lengths.

1. Mali, LaQuita, and Nolan each cut pipes into two pieces. They record the lengths in a spreadsheet, but some lengths are deleted by accident.

Student	Length of Whole Pipe (cm)	Length of Piece 1 (cm)	Length of Piece 2 (cm)
Mali	55.46		13.08
LaQuita		33.14	19
Nolan	39.3	18.25	

Part 2: Use the standard algorithm to add or subtract and answer the questions.

2. Rick's pipe is 42.65 cm long. After he cuts it, one of the pieces is 21.16 cm. What is the length of the other piece?

	Tens	Ones	Tenths	Hundredths
○			•	
			•	
			•	

The length of the other piece of pipe is _____ cm.

3. Jackson has two pipes. One is 69.13 cm long and the other is 22.90 cm long. What is the combined length of the pipes?

	Tens	Ones	Tenths	Hundredths
○			•	
			•	
			•	

The combined length of the pipes is _____ cm.

Wired Up

Review the example problem. Then complete the additional problems. Estimate the sum or difference and use the standard algorithm to add or subtract. Show your work.

Example

Solve $36.15 - 23.2$.

Step 1

Round the decimals and estimate an answer.

36.15 rounds to 36 .

23.2 rounds to 23 .

Estimate: $36 - 23 = 13$

Step 2

Set up an algorithm to solve the problem. Remember to line up the decimal points. Use a placeholder 0 if needed.

$$\begin{array}{r} 36.15 \\ - 23.20 \\ \hline \end{array}$$

Step 3

Regroup if needed.

$$\begin{array}{r} ^5 ^{11} \\ 36.15 \\ - 23.20 \\ \hline \end{array}$$

Step 4

Compare the answer to the estimate to check that the answer is reasonable.

$$\begin{array}{r} ^5 ^{11} \\ 36.15 \\ - 23.20 \\ \hline 12.95 \end{array}$$

12.95 is close to 13.

1. $64.52 - 23.18$

Estimate: _____

Solution: _____

Is your answer reasonable?

2. $35.86 + 22.07$

Estimate: _____

Solution: _____

Is your answer reasonable?

3. $86 - 44.2$

Estimate: _____

Solution: _____

Is your answer reasonable?

4. $16.8 + 53$

Estimate: _____

Solution: _____

Is your answer reasonable?

Lesson 13 Exit Ticket

Part 1: Use **place value disks** or **drawings** to solve the problem.

1. Ms. Howard's 3D printer is ready to use! Mali prints a tube that is 18.43 cm long. When Mali cuts the tube into two pieces, one of the pieces is 5.19 cm long. What is the length of the other piece?

The length of the other piece is _____ cm.

Part 2: Use the standard algorithm to solve the problem.

2. Nolan prints a tube that is 26.02 cm long. After he cuts it into two pieces, one of the pieces is 15.2 cm long. How many centimeters long is the other piece?

The other piece is _____ cm long.

Part 3: Use the standard algorithm to solve. Estimate and show your work.

3. Sunita also prints a tube. When she cuts the tube into two pieces, the pieces are 14.75 cm long and 5.07 cm long. How long was the tube before she cut it?

I estimate that the piece was _____ cm long.

The original piece was _____ cm long.

Is your answer reasonable? _____

Extra Practice:

Cash Among Friends

The table shows how much money each friend earned and spent this week. Use the table to answer the questions. Choose a strategy to help you add or subtract.

Friend	Money earned	Money Spent
Kingston	\$21.67	\$16.79
Ava	\$40.10	\$24.77
James	\$43.35	\$10.58
Brooklyn	\$21.04	\$19.33
Jeremiah	\$34.86	\$26.97

1. Who had the most money left at the end of the week? How much money did they have?

_____ had the most money left. They had _____.

2. How much money did Kingston and Brooklyn earn all together?

They earned _____ all together.

3. At the end of the week, Jeremiah gives Ava \$3.22 of the money he has left. How much will each person have at the end of the week?

Jeremiah will have _____.

Ava will have _____.

4. If James and Kingston combine the money they have left at the end of the week and buy Brooklyn a basketball ticket for \$35, how much money will they have left?

They will have _____ left.

Place Value Charts

	Tens	Ones		Tenths	Hundredths
○			•		
			•		
<hr/>					
			•		

	Tens	Ones		Tenths	Hundredths
○				•	
				•	
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				•	

	Tens	Ones		Tenths	Hundredths
○			•		
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	Tens	Ones		Tenths	Hundredths
○				•	
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	Tens	Ones		Tenths	Hundredths
○			•		
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	Tens	Ones		Tenths	Hundredths
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	Tens	Ones		Tenths	Hundredths
○			■		
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	Tens	Ones		Tenths	Hundredths
○				■	
				■	
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				■	

Decimal Place Value Mat (Hundredths)

Tens	Ones		Tenths	Hundredths
		.		
		.		

Wood Workshop

Find the area using number strings.

1. Juana cut a desktop that was 1.2 meters long and 1.1 meters wide. What is the area of her desktop?

$$1.2 \times 1.1$$

$$12 \times 11 = \underline{\hspace{2cm}}$$

$$1.2 \times 11 = \underline{\hspace{2cm}}$$

$$1.2 \times 1.1 = \underline{\hspace{2cm}}$$

The area of the tabletop is $\underline{\hspace{2cm}}$.

2. Hugo cut a shelf 2.3 feet long and 0.5 feet wide. What is the area of his shelf?

The area of the shelf is $\underline{\hspace{2cm}}$.

3. Darla cut a piece of wood 1.6 inches long and 0.3 inches wide. What is the area of the piece?

The area of the piece of wood is $\underline{\hspace{2cm}}$.

Tabletops

Review the example problem. Then, estimate the area of each rectangle and find the exact area using the standard algorithm.

Example

Nora's tabletop is **3.2** feet long and **2.28** feet wide. What is the area of the tabletop?

Step 1

Round each decimal and multiply to find an estimate.

3.2 rounds down to **3**.

2.28 rounds down to **2**.

$$3 \times 2 = 6$$

The area is about 6 square feet.

Step 2

Stack the decimal numbers without decimal points. Multiply using the standard algorithm.

$$\begin{array}{r} 2 \\ 1 \\ \hline 228 \\ \times 32 \\ \hline 456 \\ +6840 \\ \hline 7296 \end{array}$$

Step 3

Compare the product to the estimate to decide where to put the decimal point.

The estimate is 6.

The decimal point goes after the ones place, since 7.296 is about 6, while 72.96 and 729.6 are not.

The exact area of the tabletop is 7.296 square feet.

1. 2.15×2.7 is about _____. 2. 4.15×2.2 is about _____. 3. 7.9×9.23 is about _____.

$$\begin{array}{r} 215 \\ \times 27 \\ \hline \end{array}$$

$$\begin{array}{r} 415 \\ \times 22 \\ \hline \end{array}$$

$$\begin{array}{r} 923 \\ \times 79 \\ \hline \end{array}$$

$2.15 \times 2.7 = \underline{\hspace{2cm}}$

$4.15 \times 2.2 = \underline{\hspace{2cm}}$

$7.9 \times 9.23 = \underline{\hspace{2cm}}$

4. 3.6×9 is about _____. 5. 5.4×1.83 is about _____. 6. 6×8.74 is about _____.

$$\begin{array}{r} 36 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ \times 183 \\ \hline \end{array}$$

$$\begin{array}{r} 874 \\ \times 6 \\ \hline \end{array}$$

$3.6 \times 9 = \underline{\hspace{2cm}}$

$5.4 \times 1.83 = \underline{\hspace{2cm}}$

$6 \times 8.74 = \underline{\hspace{2cm}}$

Lesson 14 Exit Ticket

Part 1: Estimate and use a number string to solve. Then answer the question.

1. A wood block is cut for a rubber stamp that's 1.2 inches on each side. What is the area of the stamp?

a. Estimated area: _____

b. Complete a number string to find the exact area.

c. The area of the stamp is _____.

d. Is the area reasonable based on your estimate? Why? _____

Part 2: Estimate and use the standard algorithm to solve. Use your estimate to place the decimal point in your solution.

2. The bottom of a jewelry box is 12.5 cm long and 16.5 cm wide.

a. Estimated area: _____ square cm.

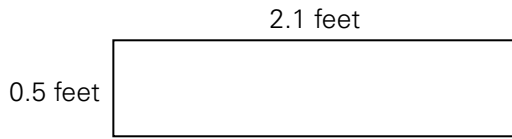
b. Multiply:

c. Place the decimal point using your estimate. The area is _____ square cm.

Extra Practice: Find the Area

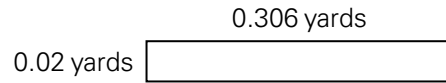
Use the given method to find the area of each rectangle. Show your work.

1. Method: number strings



The estimated area is _____ square feet.

2. Method: number strings

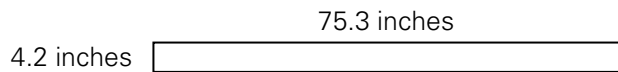


The estimated area is _____ square yards.

The area is _____ square feet.

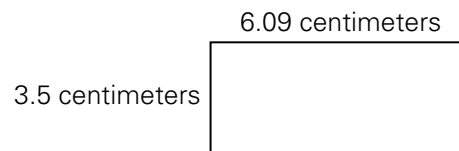
The area is _____ square yards.

3. Method: standard algorithm



The estimated area is _____ square inches.

4. Method: standard algorithm

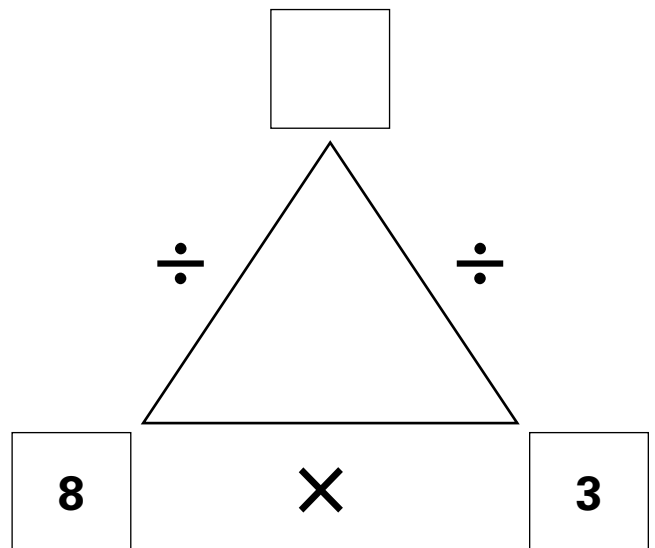
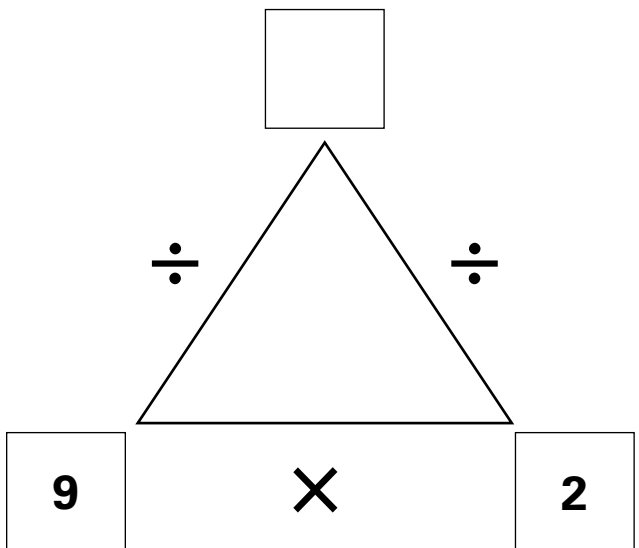
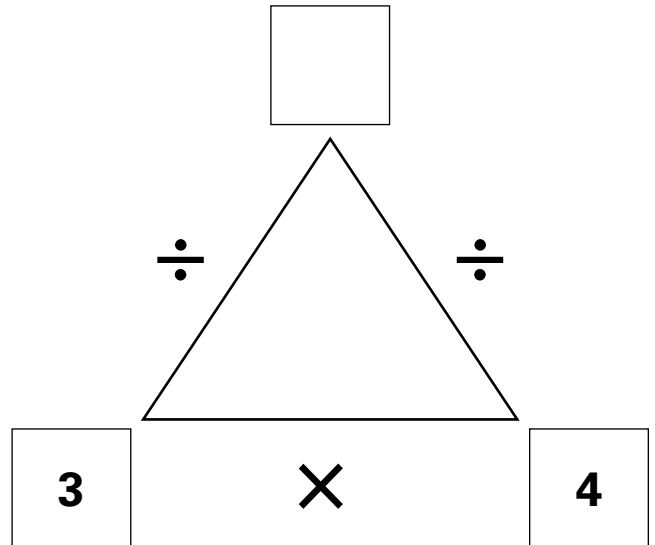
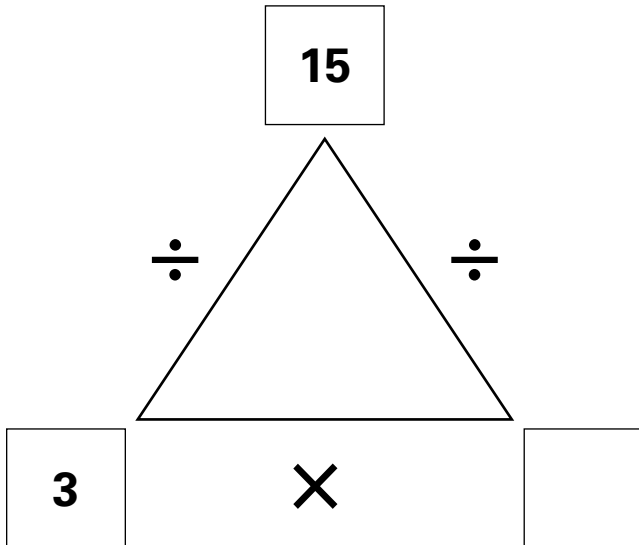
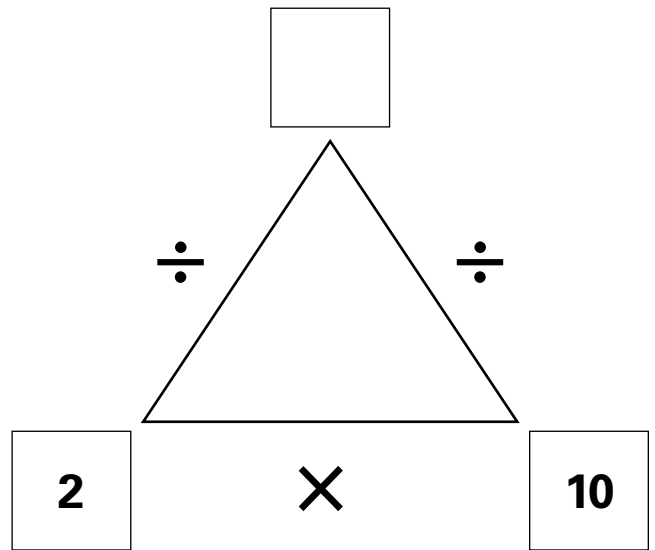
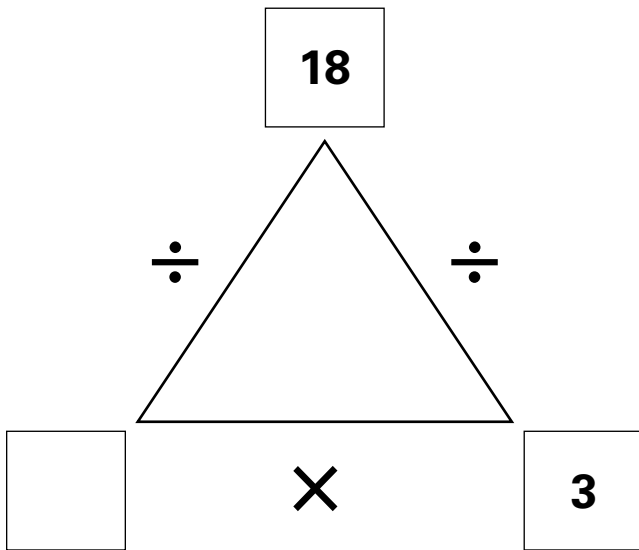


The estimated area is _____ square centimeters.

The area is _____ square inches.

The area is _____ square centimeters.

Number Triangles



Robot Rally

Estimate each team member's share of the cost. Then, use number strings to find the exact share.

- 1.** Seven of the team members spend \$8.40 to build another robot for their team's entry to the Robot Rally. How much is each person's equal share of the cost?

- a.** Estimated cost per person: _____ dollar(s)
- b.** Complete the number strings to find the exact cost.

The exact cost per person is _____ dollar(s).

- 2.** Miki, Halah, Jake, Dwayne, and Jackson spend \$5.50 to build their robot. How much is each person's equal share of the cost?

- a.** Estimated cost per person: _____ dollar(s)
- b.** Complete the number strings to find the exact cost.

The exact cost per person is _____ dollar(s).

- 3.** The team gets a deal on one of the parts they use for robots. They pay \$1.21 for a pack of 11 metal bolts. What does each bolt cost?

- a.** Estimated cost per bolt: _____ dollar(s)
- b.** Complete the number strings to find the exact cost.

The exact cost per bolt is _____ dollar(s).

Rally Time

Review the example problem. Then, use long division to answer the questions.

Example

Our robot Dizzy finished an obstacle course in **4.2** minutes. There are **3** obstacles in this course. What is Dizzy's average time per obstacle?

Step 1

Estimate the average time per obstacle.

4.2 rounds to 4.

Change **3** obstacles to 4 to make compatible numbers.

The average time per obstacle is minutes divided by number of obstacles.

$$4 \div 4 = 1$$

The estimated average time per obstacle is 1 minute.

Step 2

Use long division to divide. Divide the numbers without decimals.

$$\begin{array}{r} 14 \\ 3 \overline{)42} \\ \underline{-30} \\ 12 \\ \underline{-12} \\ 0 \end{array}$$

Step 3

Use your estimate to place the decimal in the quotient.

1 is close to 1.4, not 0.14, or 14.

Dizzy averages 1.4 minutes per obstacle.

1. $7.2 \div 2$ is about _____. 2. $4.8 \div 3$ is about _____. 3. $26.46 \div 9$ is about _____.

$$2 \overline{)72}$$

$$3 \overline{)48}$$

$$9 \overline{)2646}$$

$$7.2 \div 2 = \underline{\hspace{2cm}}$$

$$4.8 \div 3 = \underline{\hspace{2cm}}$$

$$26.46 \div 9 = \underline{\hspace{2cm}}$$

4. $8.5 \div 5$ is about _____. 5. $14.4 \div 6$ is about _____. 6. $34.51 \div 7$ is about _____.

$$5 \overline{)85}$$

$$6 \overline{)144}$$

$$7 \overline{)3451}$$

$$8.5 \div 5 = \underline{\hspace{2cm}}$$

$$14.4 \div 6 = \underline{\hspace{2cm}}$$

$$34.51 \div 7 = \underline{\hspace{2cm}}$$

Lesson 15 Exit Ticket

Part 1: Estimate, then use a number string to divide. Show your work.

A team split the cost of some lemonades at the Robot Rally. The lemonades cost \$10.80, split across 9 people—the team members and their coach. How much did each person pay?

1. Team Titans: Lemonades cost: \$10.80 for 9 people.
 - a. Estimated cost per person: _____ dollar(s)
 - b. Complete the number string to find the exact cost.

The exact cost per person is _____ dollar(s).

Part 2: Estimate, then use long division to divide. Show your work.

2. Robotic Raiders: Lunch cost: \$9.68 for 4 team members.
 - a. Estimated cost per member: _____ dollars
 - b. Find the exact cost using long division.

The exact cost per person is _____ dollars.

Extra Practice: Wildlife Rescue!

Use the given method to divide. Show your work.

Amounts of Available Food	
<ul style="list-style-type: none">• Frogs (7.2 pounds)• Fruit (109.2 pounds)	<ul style="list-style-type: none">• Medium-size rodents (13.2 pounds)• Live prey (63.2 pounds)

An animal rescue group saved a large number of animals from a forest fire. The volunteers made a list of foods they have on hand until more food can be brought in.

1. The volunteers start by feeding the medium-size rodents to 12 coyotes. They split the food evenly. How many pounds of food will each coyote get?

My estimate is _____ pound(s) per coyote. The coyotes will each get _____ lbs.	My number string:
---	-------------------

2. Four bobcat cubs arrive. The volunteers named them Kiki, Muffin, Mouse, and Bee. The volunteers feed them the live prey. How many pounds of food will each cub get?

My estimate is _____ pound(s) per cub. The cubs will each get _____ lbs.	My long division:
---	-------------------

3. Five owls—Fred, Matilda, Hootie, Fluff, and Kitty—split the frogs. How much food does each owl get? Choose your own method to solve.

Each owl gets _____ lbs.

Bridge Challenge

Read each problem. Use equivalent expressions and long division to solve.

1. Next we must build a big bridge. Anisa set the chairs 23 meters apart. Since 1 yard equals 0.92 meters, we need to solve $23 \div 0.92$ to find out how many yards apart the chairs are.

Estimate: 23 is about _____. 0.92 is about _____.

The chairs are about _____ yards apart.

Divide: Use a power of 10 to write an equivalent expression with a whole-number divisor. Then use long division to divide. Show your work.

$23 \div 0.92 =$ _____

The chairs are _____ yards apart.

Check: Is your answer reasonable? How do you know?

2. Anisa and her brother Garrett decide to build a HUGE bridge. They took the chairs out to the school's sports field and set them 115 meters apart. How many yards apart are the chairs?

Estimate: 115 is about _____. 0.92 is about _____.

The chairs are about _____ yards apart.

Divide: Use a power of 10 to write an equivalent expression with a whole-number divisor. Then use long division to divide. Show your work.

$115 \div 0.92 =$ _____

The chairs are _____ yards apart.

Check: Is your answer reasonable? How do you know?

Paper and Straws

Review the example problem. Then divide to convert the grams to ounces. Show your work.

Example

Skylar and Omar are working on the bridge-building challenge too. They use 2,268 grams of paper and straws in their bridge. There are 28.35 grams in one ounce, so their teacher tells them to divide **2,268** by **28.35** to find out how many ounces of paper and straws are in their bridge. How many ounces is that?

Step 1

Use a power of 10 to write an expression with a whole-number divisor that is equivalent to **$2,268 \div 28.35$** .

To make **28.35** a whole number, multiply it by 100. Multiply **2,268** by the same factor.

$$2,268,00 \div 28,35$$

$$\mathbf{2,268 \div 28.35 = 226,800 \div 2,835}$$

Step 2

Use long division to solve the equivalent expression.

$$\begin{array}{r} 80 \\ 2835 \overline{)226800} \\ \underline{-226800} \\ 00 \\ \underline{-0} \\ 0 \end{array}$$

Skylar and Omar use 80 ounces of paper and straws.

1. Sergei and Bella divide 1,701 grams by 28.35 to see how many ounces of paper and straws they have.

Write an equivalent expression:

Use long division to divide:

Sergei and Bella use _____ ounces of paper and straws.

2. Tai and Jen divide 3,402 by 28.35 to see how many ounces of paper and straws they have.

Write an equivalent expression:

Use long division to divide:

Tai and Jen use _____ ounces of paper and straws.

Lesson 16 Exit Ticket

Read each problem. Then fill in the blanks and answer the questions.

1. Nora and Emilio build a bridge in the STEM challenge. Their bridge is 889 centimeters long. How many inches long is Nora and Emilio's bridge? Divide by 2.54 to find out.

Estimate: 889 is about _____.

2.54 is about _____.

The bridge is about _____ inches long.

Divide: Use powers of 10 to write an equivalent expression with a whole-number divisor. Then use long division to divide. Show your work.

$889 \div 2.54 =$ _____

The bridge is _____ inches long.

Check: Is your answer reasonable? How do you know?

2. Nora and Emilio use 3,969 grams of paper and straws to build their bridge. How many ounces do they use? Divide by 28.35 to find out.

Estimate: 3,969 is about _____. 28.35 is about _____.

The paper and straws weigh about _____ ounces.

Divide: Use powers of 10 to write an equivalent expression with a whole-number divisor. Then use long division to divide. Show your work.

$3,969 \div 28.35 =$ _____

The paper and straws weigh _____ ounces.

Check: Is your answer reasonable? How do you know?

Extra Practice: Divide and Conquer

Part 1: Estimate each quotient. Then match each expression to the likeliest quotient based on your estimate.

$2,210 \div 3.4$

1,010

$4,646 \div 4.6$

125

$159 \div 7.95$

20

$112 \div 0.896$

650

Part 2: Check your answers from Part 1 by using long division to find each quotient. Show your work.

$2,210 \div 3.4$

$4,646 \div 4.6$

$159 \div 7.95$

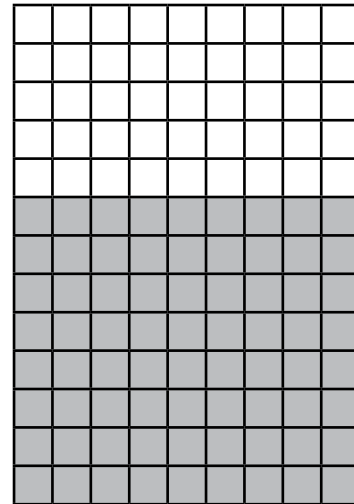
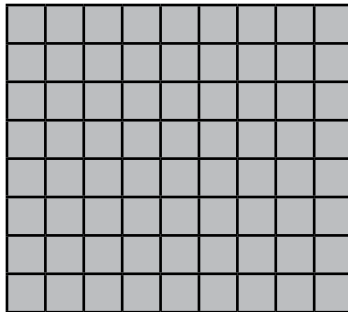
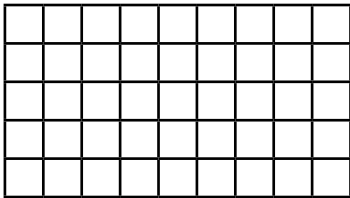
$112 \div 0.896$

Assessment

Unit 2 Assessment

1. Soledad prints 8 garden photos, 12 pet photos, and 20 photos of her friends to display in rows on her bedroom wall. Soledad wants each row to have the same number of photos and to be photos of the same subject—garden, pets, or friends.
- a. What are the common factors of 8, 12, and 20? _____
- b. What is the greatest number of photos Soledad can put in each row? _____

2. Rewrite the expression $45 + 72$ as the sum of two products. Then factor out the GCF and use the distributive property to complete the equation.



$$(\quad \times \quad) + (\quad \times \quad) = \quad (\quad + \quad)$$

3. Complete the number lines for each number to find the multiples.

Multiples of 2 ←————→

Multiples of 4 ←————→

Multiples of 5 ←————→

What is the LCM? _____

4. Add $48.91 + 30.67$. Show your work.

$$48.91 + 30.67 = \underline{\hspace{2cm}}$$

Explain any regrouping you did. _____

5. Aretta has some ribbon that is 85.42 centimeters long. She cuts the ribbon into two pieces. One of the pieces is 21.39 centimeters long. What is the length of the other piece? Show your work.

The other piece is _____ centimeters long.

Explain any regrouping you did. _____

6. Estimate the product of 1.2×0.8 . Then find the actual product. Show your work.

Estimated product: _____
Actual product: _____

7. Estimate the product 72.4×5.1 . Then find the actual product. Show your work.

Estimated product: _____
Actual product: _____

8. Tessa buys a package of 9 beads for \$1.44.

a. Estimate the price per bead: _____ cents

b. Find the price per bead. Show your work.

c. What is the price per bead? The price per bead is _____.

9. Estimate the quotient $224.1 \div 27$. Then find the actual quotient. Show your work.

Estimated quotient: _____

Actual quotient: _____

10. Estimate the quotient $6,278 \div 17.2$. Then find the actual quotient. Show your work.

Estimated quotient: _____

Actual quotient: _____



Unit 2 Cumulative Review

1. Multiply 472×563 .

$$472 \times 563 = \underline{\hspace{2cm}}$$

2. Kari has $\frac{1}{2}$ of a bag of popcorn. She shares the popcorn equally between herself and 2 friends. What fraction of the bag of popcorn does each person get?

Each person will get a bag of popcorn.

3. Add. $\frac{3}{4} + \frac{3}{8} = \underline{\hspace{2cm}}$

4. Ms. Richards has 24 desks in her classroom. Each row fits $\frac{1}{4}$ of her students. How many desks are in each row?

Ms. Richards has desks in each row.

5. What is the least common multiple (LCM) of 2, 3, and 5?

The LCM of 2, 3, and 5 is _____.

6. Divide. $845 \div 13 =$ _____

7. Convert to fraction form and multiply. $6.5 \times 3.42 =$ _____

8. Subtract. $\frac{11}{12} - \frac{3}{4} =$ _____

9. Petra writes the expression $9 - 2(3)$. What is the value of Petra's expression? Show your work.

The value of Petra's expression is _____.

10. Treyvon earns \$31.20 by babysitting for 4 hours. How much money does Treyvon earn per hour?

Treyvon earns _____ per hour.

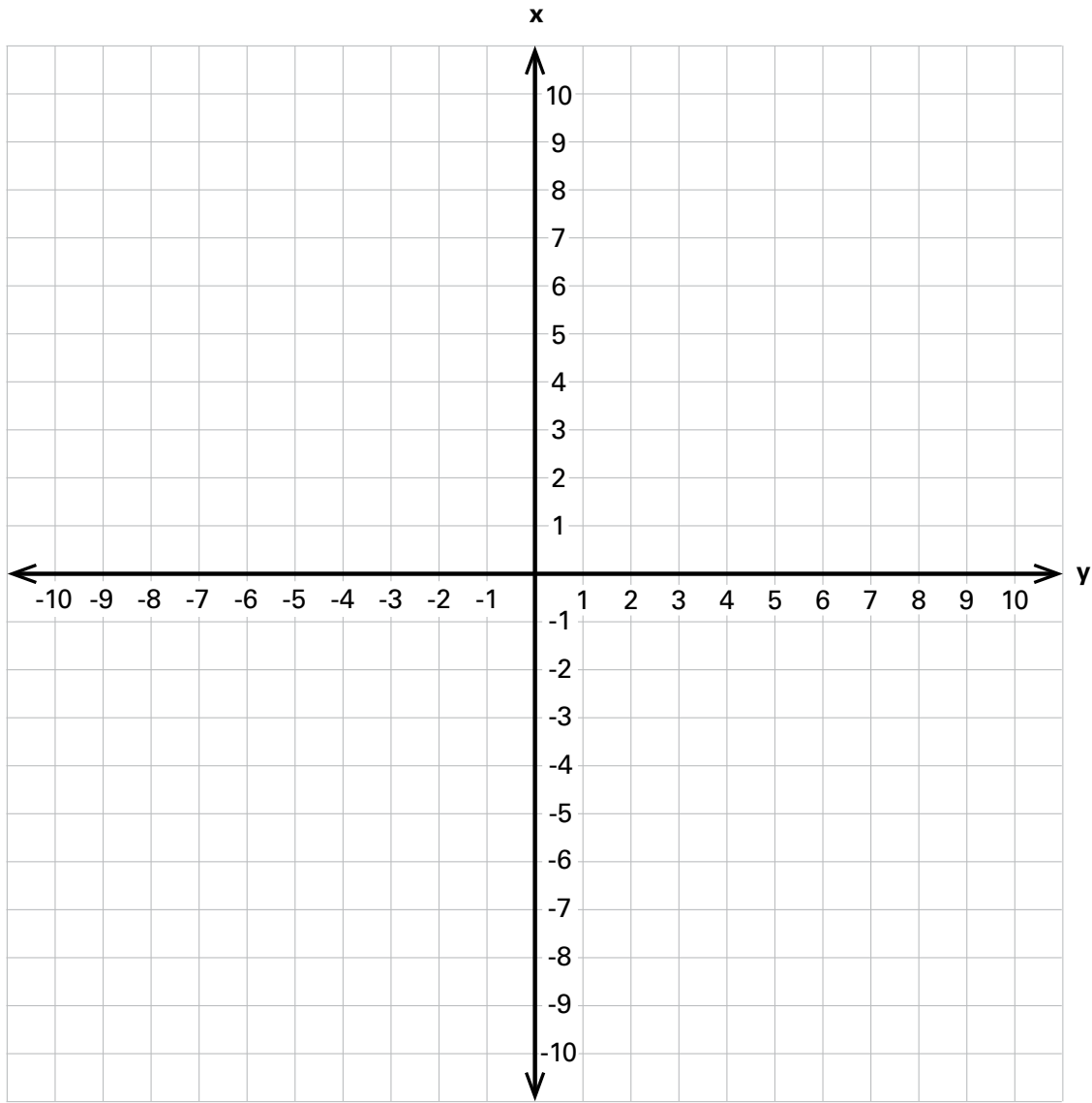
11. Multiply. $\frac{5}{12} \times \frac{18}{35} =$ _____

12. Estimate 23.04×5.6 . Then multiply by stacking and compare the actual product to your estimate. Show your work.

Estimated product: _____
Actual product: _____

13. Solve. $|-4| =$ _____

14. Graph each point on the coordinate plane: $(-5, 3)$, $(2, -4)$, $(-1, -3)$, $(6, 8)$.



15. Add. $1\frac{1}{4} + 1\frac{2}{3} =$ _____

Unit 3:

Division with Fractions

Helping Hands

Use **fraction tiles** to model the problem. Then, answer the questions.

1. Dharma also volunteers at the soup kitchen. I left her with $\frac{3}{5}$ of a pound of cocoa mix for next week. It takes $\frac{1}{10}$ of a pound of mix to make a mug of cocoa. How many mugs of cocoa can Dharma make?

$$\frac{\text{Whole}}{\text{Whole}} \div \frac{\text{Size of Groups}}{\text{Size of Groups}} = \frac{\text{Number of Groups}}{\text{Number of Groups}}$$

Dharma can make _____ mugs of cocoa.

2. Serena helps at the soup kitchen too. She has $\frac{4}{6}$ of a pound of lemonade powder. It takes $\frac{1}{12}$ of a pound of powder to make a glass of lemonade. How many glasses of lemonade can Serena make?

$$\frac{\text{Whole}}{\text{Whole}} \div \frac{\text{Size of Groups}}{\text{Size of Groups}} = \frac{\text{Number of Groups}}{\text{Number of Groups}}$$

Serena can make _____ glasses of lemonade.

3. Gianna subs at the soup kitchen when someone is unable to make it. She has $\frac{5}{6}$ of a pound of sports drink powder. It takes $\frac{1}{6}$ pound of powder to make a glass of sports drink. How many glasses of sports drink can Gianna make?

$$\frac{\text{Whole}}{\text{Whole}} \div \frac{\text{Size of Groups}}{\text{Size of Groups}} = \frac{\text{Number of Groups}}{\text{Number of Groups}}$$

Gianna can make _____ glasses of sports drink.

4. Greg finds crackers to give out at the soup kitchen with the tomato soup. He has $\frac{3}{4}$ of a package of crackers and decides to give each person $\frac{1}{8}$ of a package. How many people can Greg give a full serving of crackers to?

$$\frac{\text{Whole}}{\text{Whole}} \div \frac{\text{Size of Groups}}{\text{Size of Groups}} = \frac{\text{Number of Groups}}{\text{Number of Groups}}$$

Greg can give _____ people a serving of crackers.

Breakfast Bowls

Part 1: Use **fraction tiles** to model the problem. Then, write the division equation and answer the questions.

1. Serena has $\frac{8}{10}$ pound of oatmeal to serve at the soup kitchen. It takes $\frac{1}{5}$ pound of oatmeal to fill a bowl. How many bowls of oatmeal can Serena fill?

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

Serena can make $\underline{\quad}$ bowls of oatmeal.

2. Dharma has $\frac{6}{8}$ pound of grits to serve at the soup kitchen. It takes $\frac{1}{4}$ pound of grits to fill a bowl. How many bowls of grits can Dharma fill?

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

Dharma can fill $\underline{\quad}$ bowls of grits.

3. Billy plans on making mini-quiches. It takes $\frac{8}{12}$ of a cup of whisked eggs to make one dozen mini-quiches. If Billy has $\frac{1}{3}$ cup of whisked eggs, how many dozen mini-quiches can he make?

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

Billy can make $\underline{\quad}$ dozen mini-quiches.

Part 2: Use **fraction tiles** to model the problem. Then, answer the division equation.

4. $\frac{3}{4} \div \frac{1}{12} = \underline{\quad}$

5. $\frac{2}{4} \div \frac{1}{8} = \underline{\quad}$

6. $\frac{2}{4} \div \frac{1}{2} = \underline{\quad}$

7. $\frac{4}{10} \div \frac{1}{5} = \underline{\quad}$

8. $\frac{2}{3} \div \frac{1}{6} = \underline{\quad}$

9. $\frac{9}{12} \div \frac{1}{4} = \underline{\quad}$

10. $\frac{4}{5} \div \frac{1}{10} = \underline{\quad}$

11. $\frac{4}{6} \div \frac{1}{3} = \underline{\quad}$

Lesson 18 Exit Ticket

Use **fraction tiles** to model the problem. Then, write the division equation and answer the questions.

1. Dharma finds a block of cheese in the refrigerator. It is $\frac{3}{4}$ of a pound. If she uses $\frac{1}{8}$ of a pound of cheese in each sandwich, how many sandwiches can she make?

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

Dharma can make $\underline{\quad}$ sandwiches.

2. We have a stockpot that we can fill $\frac{10}{12}$ full if we want to leave the lid on as it simmers. Serena found a chili recipe that calls for 1 jalapeno for every $\frac{1}{6}$ pot. How many jalapenos do we need?

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

We need $\underline{\quad}$ jalapenos.

Extra Practice: Matching

Part 1: Use **fraction tiles** to model the problem. Complete the equation, then match it to the scenario it represents.

1. $\frac{3}{5} \div \frac{1}{10} =$ _____

2. $\frac{5}{6} \div \frac{1}{12} =$ _____

3. $\frac{4}{4} \div \frac{1}{12} =$ _____

4. $\frac{8}{10} \div \frac{1}{5} =$ _____

5. $\frac{4}{6} \div \frac{1}{3} =$ _____

A. The number of inches in $\frac{5}{6}$ of a foot.

B. The number of $\frac{1}{5}$ yard pieces in $\frac{8}{10}$ of a yard of ribbon.

C. The number of $\frac{1}{10}$ -mile trips that Casey makes to travel $\frac{3}{5}$ mile.

D. The number of servings when $\frac{4}{6}$ of a pie is cut into pieces that are each $\frac{1}{3}$ of a whole pie.

E. The number of $\frac{1}{12}$ -sized pieces in 1 whole candy bar.

Part 2: Complete the equations. Use **fraction tiles** to model the problems.

6. $\frac{6}{12} \div \frac{1}{8} =$ _____

7. $\frac{4}{5} \div \frac{1}{10} =$ _____

8. $\frac{3}{4} \div \frac{1}{12} =$ _____

9. $\frac{5}{6} \div \frac{1}{12} =$ _____

10. $\frac{3}{9} \div \frac{1}{3} =$ _____

11. $\frac{4}{6} \div \frac{1}{12} =$ _____

12. $\frac{3}{5} \div \frac{1}{10} =$ _____

13. $\frac{2}{8} \div \frac{1}{12} =$ _____

14. $\frac{6}{8} \div \frac{1}{4} =$ _____

15. $\frac{6}{12} \div \frac{1}{4} =$ _____

Sunshine Day Camp

Part 1: Use the tape diagram to model the problem. Then, write a related division and multiplication equation to represent the tape diagram.

1. Beto is a counselor at Sunshine Day Camp. He has a $\frac{2}{3}$ -pound bag of popcorn to make snacks for his campers. If he gives each camper $\frac{1}{9}$ of a pound of popcorn, how many campers can Beto make snacks for?

$\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$

He can make snacks for _____ campers.

Part 2: Solve the following division equations by drawing a tape diagram.

2. $\frac{3}{5} \div \frac{1}{10} = \underline{\quad}$

3. $\frac{3}{4} \div \frac{1}{8} = \underline{\quad}$

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

5. $\frac{6}{8} \div \frac{1}{4} = \underline{\quad}$

Beads for All

Review the example problem. Then, write the related multiplication and division equations to model the problem. Draw a **tape diagram** to solve.

Example

Campers are making ID bracelets. Beto plans to give each camper $\frac{1}{12}$ of a pound of beads to make their bracelet. How many campers can Beto give beads to if he has a jar with $\frac{4}{6}$ of a pound of beads?

Step 1

Write a division equation to represent the problem:

$$\frac{4}{6} \div \frac{1}{12} = n$$

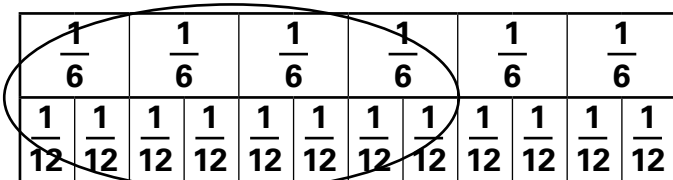
Step 2

Write a related multiplication equation:

$$\frac{1}{12} \times n = \frac{4}{6}$$

Step 3

Draw a tape diagram showing a whole made of $\frac{1}{12}$ parts and $\frac{1}{6}$ parts. Circle the dividend: $\frac{4}{6}$.



Step 4

Count the number of $\frac{1}{12}$ parts it takes to make $\frac{4}{6}$. Substitute the value of n in the division equation to find the solution.

It takes 8 of the $\frac{1}{12}$ parts to make $\frac{4}{6}$.

So, $n = 8$, and $\frac{4}{6} \div \frac{1}{12} = 8$.

Beto can give beads to 8 campers.

- How many campers can Beto give beads to if the jar has $\frac{5}{8}$ of a pound of beads and he gives each camper $\frac{1}{16}$ pound of beads?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \qquad \underline{\quad} \times \underline{\quad} = \underline{\quad} \qquad \underline{\quad} \text{ campers}$$

- How many campers can Beto give strings to if he has a string that is $\frac{4}{5}$ of a yard and each individual string for a key chain is $\frac{1}{10}$ of a yard long?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \qquad \underline{\quad} \times \underline{\quad} = \underline{\quad} \qquad \underline{\quad} \text{ campers}$$

- Beto finds a jar of glass beads that weighs $\frac{2}{3}$ of a pound. He divides the beads into small bowls, each with $\frac{1}{12}$ of a pound. How many bowls can he fill?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \qquad \underline{\quad} \times \underline{\quad} = \underline{\quad} \qquad \underline{\quad} \text{ bowls}$$

Lesson 19 Exit Ticket

Read each problem. Write the related equations and draw a tape diagram. Then, answer the question.

1. Susana has $\frac{4}{5}$ of a cup of flour. How many biscuits can she make if it takes $\frac{1}{15}$ of a cup of flour to make 1 biscuit?

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

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

_____ biscuits

2. Susana also has $\frac{5}{6}$ of a cup of sugar. How many cookies can she make if it takes $\frac{1}{12}$ cup of sugar to make 1 cookie?

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

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

_____ cookies

Extra Practice: Tape Diagram Division

Write the division and multiplication equations that each tape diagram represents.

1.

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	

Division equation: _____

Multiplication equation: _____

2.

$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$
$\frac{1}{6}$			$\frac{1}{6}$			$\frac{1}{6}$			$\frac{1}{6}$		

Division equation: _____

Multiplication equation: _____

3.

$\frac{1}{3}$					$\frac{1}{3}$					$\frac{1}{3}$				
$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$

Division equation: _____

Multiplication equation: _____

4.

$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$
$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$		

Division equation: _____

Multiplication equation: _____

Tape Diagrams

Tape Diagrams

Back-to-School Night

Part 1: Complete the tape diagram and write an equation to model the problem.

1. Zachary brought lemonade to offer visitors at Back-to-School night. The pitcher holds $\frac{2}{3}$ of a liter and each cup holds $\frac{2}{9}$ of a liter. How many cups can he fill from a full pitcher?

$$\frac{\text{Whole}}{\text{Size of Groups}} \div \frac{\text{Size of Groups}}{\text{Number of Groups}} = \frac{\text{Number of Groups}}{\text{Size of Groups}}$$

Zachary can fill _____ cups with lemonade.

Part 2: Use a **tape diagram** to model the problem. Then complete the equation.

2. $\frac{4}{5} \div \frac{2}{10} = \underline{\hspace{2cm}}$

3. $\frac{5}{7} \div \frac{2}{14} = \underline{\hspace{2cm}}$

4. $\frac{6}{8} \div \frac{3}{12} = \underline{\hspace{2cm}}$

5. $\frac{3}{4} \div \frac{2}{8} = \underline{\hspace{2cm}}$

Sand and Science

Review the example problem. Then, write an equation to match the problem and draw a **tape diagram** to solve.

Example

On Back-to-School Night, Ms. Ray, the science teacher, does a demonstration that uses $\frac{2}{12}$ of a pound of sand. If she has a bag with $\frac{4}{6}$ of a pound of sand, how many times can she do the demonstration?

Step 1

Identify the dividend (whole) and its denominator. Divide the top tape into the number of pieces the denominator shows.

$$\text{Dividend: } \frac{4}{6}$$

$$\text{Denominator: } 6$$

The top tape will have six $\frac{1}{6}$ -parts.

Step 2

Identify the divisor (how much in each group) and its denominator. Divide the bottom tape into the number of pieces the denominator shows.

$$\text{Divisor: } \frac{2}{12}$$

$$\text{Denominator: } 12$$

The bottom tape will have twelve $\frac{1}{12}$ -parts.

Step 3

Count the number of groups of the divisor it takes to make the dividend.

$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$

It takes 4 of the groups of $\frac{2}{12}$ to make $\frac{4}{6}$. So, $\frac{4}{6} \div \frac{2}{12} = 4$. Ms. Ray can do the demonstration 4 times.

- How many times can Ms. Ray do the demonstration if she has $\frac{8}{10}$ of a pound of sand and one demonstration requires $\frac{4}{15}$ of a pound?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \quad \underline{\quad} \text{ times}$$

- How many times can Ms. Ray's assistant, Mr. Chan, do the demonstration if he has $\frac{4}{5}$ of a pound of sand and one demonstration requires $\frac{2}{20}$ of a pound of sand?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \quad \underline{\quad} \text{ times}$$

Lesson 20 Exit Ticket

Complete a tape diagram to model the expression. Then complete the equation.

1. $\frac{5}{6} \div \frac{3}{18}$

$$\frac{5}{6} \div \frac{3}{18} = \underline{\hspace{2cm}}$$

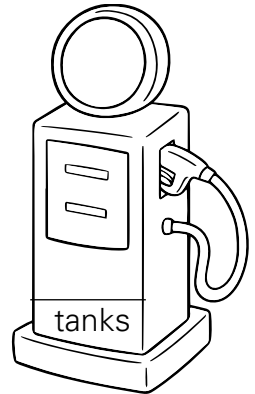
2. $\frac{2}{3} \div \frac{3}{9}$

$$\frac{2}{3} \div \frac{3}{9} = \underline{\hspace{2cm}}$$

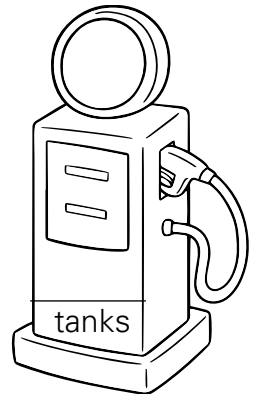
Extra Practice: Fill It Up

Solve each of the following division problems using a tape diagram. Write the answer to each problem in the gas tank.

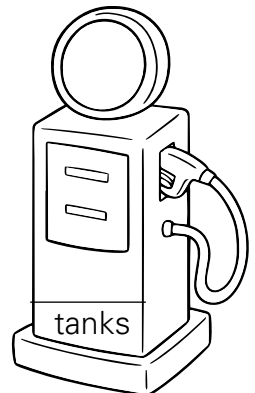
1. This tank has $\frac{3}{4}$ of a gallon left. It is divided into smaller $\frac{3}{12}$ -gallon tanks. How many $\frac{3}{12}$ -gallon tanks will it fill?



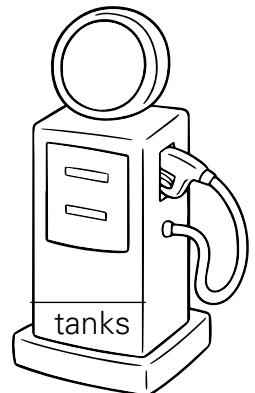
2. This tank has $\frac{4}{5}$ of a gallon left. It is divided into smaller $\frac{8}{20}$ -gallon tanks. How many $\frac{8}{20}$ -gallon tanks will it fill?



3. This tank has $\frac{5}{7}$ of a gallon left. It is divided into smaller $\frac{5}{14}$ -gallon tanks. How many $\frac{5}{14}$ -gallon tanks will it fill?



4. This tank has $\frac{3}{4}$ of a gallon left. It is divided into smaller $\frac{2}{8}$ -gallon tanks. How many $\frac{2}{8}$ -gallon tanks will it fill?



Tape Diagrams

Tape Diagrams

Wildlife Rescue

Interpret the problem to identify the dividend, divisor, and quotient. Then use the **keep-change-flip algorithm** to solve.

1. Tyrell and Akira have $\frac{3}{4}$ of a cup of bird food. If they give the baby birds $\frac{5}{8}$ of a cup at each feeding, how many times can they feed the birds before they run out of food?

The whole, or dividend, is _____.

The number of groups is _____.

The divisor, or the size of each group is _____.

_____ \div _____ = _____ Tyrell and Akira can feed the birds _____ time(s).

2. Tyrell and Akira have $\frac{7}{8}$ of a cup of formula for a baby fox. If they give the baby fox $\frac{2}{5}$ of a cup at each feeding, how many times can they feed the fox before they run out of formula?

The whole, or dividend, is _____.

The number of groups is _____.

The divisor, or the size of each group is _____.

_____ \div _____ = _____ Tyrell and Akira can feed the fox _____ time(s).

3. Tyrell and Akira have $\frac{5}{6}$ of a liter of filtered water. They fill each bowl in the raccoon room with $\frac{2}{8}$ of a liter of water. How many water bowls do they fill?

The whole, or dividend, is _____.

The number of groups is _____.

The divisor, or the size of each group is _____.

_____ \div _____ = _____ Tyrell and Akira can fill _____ bowl(s).

Dinnertime for Owls

Review the example problem. Then, use the keep-change-flip algorithm to solve each problem. Show your work and write your answer as a mixed number in lowest terms.

Example

Tyrell also helps feed an adult owl at the Wildlife Rescue Center. The owl gets $\frac{2}{5}$ of a cup of food at each feeding. Can Tyrell feed the owl 3 times if he has $\frac{7}{10}$ of a cup of food?

Step 1

Review the division equation:

$$\frac{7}{10} \div \frac{2}{5} = n.$$

Step 2

Write a new equation using the keep-change-flip rule.

$$\frac{7}{10} \times \frac{5}{2} = n$$

Step 3

Find the value of n by multiplying.

$$\frac{7}{10} \times \frac{5}{2} = \frac{35}{20} = 1 \frac{15}{20} = 1 \frac{3}{4}$$
$$n = 1 \frac{3}{4}$$

1. $\frac{9}{10} \div \frac{2}{5} =$ _____

2. $\frac{8}{12} \div \frac{2}{5} =$ _____

3. $\frac{8}{10} \div \frac{2}{3} =$ _____

4. $\frac{7}{11} \div \frac{5}{10} =$ _____

5. $\frac{5}{6} \div \frac{1}{2} =$ _____

6. $\frac{9}{10} \div \frac{1}{3} =$ _____

7. $\frac{7}{9} \div \frac{2}{3} =$ _____

8. $\frac{1}{2} \div \frac{2}{9} =$ _____

9. $\frac{5}{9} \div \frac{3}{5} =$ _____

10. $\frac{4}{5} \div \frac{2}{5} =$ _____

Lesson 21 Exit Ticket

Part 1: Interpret the problem to identify the dividend, divisor, and quotient. Then use the keep-change-flip algorithm to solve. Show your work.

1. The Wildlife Rescue Center has $1\frac{1}{12}$ of an acre of land to use for deer habitat. Each deer needs $\frac{2}{8}$ of an acre. How many deer can the center put in the habitat?

The whole, or dividend, is _____.

The number of groups is _____.

The divisor, or the size of each group is _____.

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

The center can put _____ deer in the habitat.

Part 2: Use the keep-change-flip algorithm to solve. Show your work and complete the equations. Write the quotient as a mixed number in lowest terms.

2. $\frac{7}{8} \div \frac{5}{12} =$ _____

3. $\frac{8}{9} \div \frac{2}{3} =$ _____

4. $\frac{6}{9} \div \frac{2}{7} =$ _____

Extra Practice: Ice Cream Scoops

Part 1: Use the keep-change-flip algorithm to determine how many customers will receive a free scoop of ice cream. Circle the customers who will receive the extra scoop.

1. Micki is the manager of an ice cream shop. She plans to offer a free scoop of a new flavor of ice cream to the first customers that enter the ice cream shop. The shop has $1\frac{5}{16}$ of a gallon of the new flavor and a scoop of ice cream is $\frac{3}{10}$ of a gallon. How many customers will receive a free scoop of ice cream? Show your work.



2. Micki is trying to get rid of the flavor Chocolate Chunk so she can replace it with Minty Madness. She plans to offer a free scoop of Chocolate Chunk to the first customers that enter the ice cream shop. The shop has $\frac{5}{6}$ of a gallon of Chocolate Chunk and a scoop of ice cream is $\frac{2}{9}$ of a gallon. How many customers will receive a free scoop of ice cream? Show your work.



3. Roberto is passing out ice cream to his friends, and he wants to figure out how many friends he can give ice cream to. He has $\frac{8}{9}$ gallon of ice cream and a scoop of ice cream is $\frac{2}{12}$ gallon. How many friends can he give a scoop of ice cream to? Show your work.



Keep-Change-Flip

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep-Change-Flip

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

Keep	Change	Flip	

At the Movies

Part 1: Write a division equation to represent the problem. Convert the mixed numbers to improper fractions and solve. Show your work.

1. Carina needs to put $3\frac{1}{4}$ cups of popcorn kernels into the machine to make a batch of popcorn. The scoop holds $2\frac{1}{4}$ cups of kernels. How many scoops of kernels will Carina have to put into the machine?

Equation: _____ = s

Carina will have to put _____ scoops of popcorn kernels into the machine.

Part 2: Show the work you use to convert the mixed numbers to improper fractions and solve. Check your work using a **tape diagram**.

2. $3\frac{1}{3} \div 2\frac{4}{5} =$ _____

3. $7\frac{1}{2} \div 2\frac{2}{5} =$ _____

4. $6\frac{2}{7} \div 1\frac{3}{5} =$ _____

5. $4\frac{2}{4} \div 2\frac{2}{3} =$ _____

Soda

Review the example problem. Then, use the keep-change-flip algorithm to solve each problem.

Example

Georgia uses $4\frac{1}{2}$ liters of syrup to fill the soda machine. The syrup comes in $1\frac{2}{5}$ -liter bottles. How many bottles of syrup does Georgia need to fill the soda machine?

Step 1

Write a division equation to represent the problem:

$$4\frac{1}{2} \div 1\frac{2}{5} = n.$$

Step 2

Convert the mixed numbers to improper fractions.

$$4\frac{1}{2} = \frac{(4)(2)}{2} + \frac{1}{2} = \frac{9}{2} \quad 1\frac{2}{5} = \frac{(1)(5)}{5} + \frac{2}{5} = \frac{7}{5}$$

Step 3

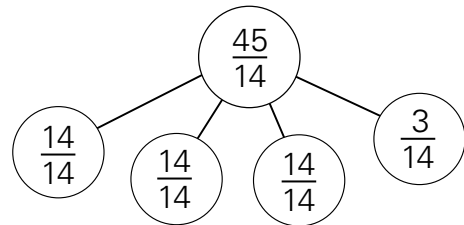
Use the keep-change-flip algorithm to multiply.

$\frac{9}{2}$	\div	$\frac{7}{5}$
Keep	Change	Flip
$\frac{9}{2}$	\times	$\frac{5}{7}$

$$\frac{9}{2} \times \frac{5}{7} = \frac{45}{14}$$

Step 4

Convert the quotient to a mixed number.



Georgia needs $3\frac{3}{14}$ bottles to fill the machine.

1. $4\frac{1}{3} \div 3\frac{1}{4} =$ _____

2. $6\frac{7}{8} \div 2\frac{1}{2} =$ _____

3. $2\frac{5}{8} \div 1\frac{3}{8} =$ _____

4. $4\frac{5}{6} \div 2\frac{2}{3} =$ _____

Lesson 22 Exit Ticket

Part 1: Solve using the keep-change-flip algorithm. Show your work. Write the quotient as a mixed number.

1. $2\frac{3}{4} \div 1\frac{2}{8} = \underline{\hspace{2cm}}$

2. $4\frac{2}{3} \div 2\frac{1}{2} = \underline{\hspace{2cm}}$

Part 2: Solve using a tape diagram.

1. $2\frac{3}{4} \div 1\frac{1}{8} = \underline{\hspace{2cm}}$

Extra Practice: Keep-Change-Flip

Part 1: Use the keep-change-flip algorithm to solve the equations. Show your work.

1. $3\frac{2}{3} \div 2\frac{3}{4} = n$

2. $4\frac{3}{5} \div 3\frac{7}{10} = n$

3. $6\frac{1}{3} \div 2\frac{7}{9} = n$

4. $5\frac{5}{8} \div 2\frac{1}{2} = n$

5. $6\frac{1}{3} \div 3\frac{1}{3} = n$

6. $8\frac{4}{5} \div 4\frac{6}{10} = n$

7. $5\frac{3}{8} \div 2\frac{1}{4} = n$

8. $3\frac{1}{3} \div 1\frac{3}{6} = n$

Part 2: Select one problem to use a tape diagram to check your work.

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Tape Diagrams

Tape Diagrams

Buzzy Buzz Fest

Read the problem and answer the questions.

Carmella and Renzo need volunteers to work at the Buzzy Buzz Fest information booth. They need 1 volunteer at the booth at all times during the festival. If the festival lasts for $3\frac{2}{3}$ hours and each volunteer's shift is $\frac{4}{6}$ of an hour, how many volunteers do they need?

1. What division equation represents this problem?

Use the variable n for the quotient.

2. Rewrite the equation by converting the mixed number to an improper fraction.

3. Draw a **tape diagram** to represent the problem. What is your estimate of the value of n ?

4. Use the keep-change-flip algorithm to find the value of n .

How do you know this value of n is reasonable?

5. How many volunteers do Carmella and Renzo need for the information booth? Explain.

Sweet Lemonade

Review the example problem. Then, solve the problems. Show your work.

Example

At Buzzy Buzz Fest, Maria sells honey-sweetened lemonade. A pitcher holds $3\frac{9}{10}$ liters of lemonade and each cup holds $\frac{2}{5}$ liter. How many cups can Maria fill from one pitcher?

Step 1

Interpret the problem.

The total amount of lemonade the pitcher can hold is $3\frac{9}{10}$ of a liter. This is the whole, or dividend.

The amount of lemonade that can go in each cup is $\frac{2}{5}$ of a liter. This is the size of each group, or the divisor.

The number of cups is the number of groups, or the quotient.

Step 2

Use equations and the keep-change-flip algorithm to solve.

$$3\frac{9}{10} \div \frac{2}{5} = n \quad \frac{39}{10} \div \frac{2}{5} = n \quad \frac{39}{10} \times \frac{5}{2} = n \quad \frac{195}{20} = n \quad 9\frac{15}{20} = n \quad 9\frac{3}{4} = n$$

Step 3

Interpret the quotient.

Maria can fill 9 full cups of lemonade. She will have some lemonade left over, but it is not enough to fill another cup.

1. Maria also sells lemonade in extra-large Buzzy Buzz Fest mugs. If she has a pitcher with $4\frac{1}{2}$ liters of lemonade and each mug holds $1\frac{1}{4}$ liters, how many mugs can Maria fill?

Maria can fill _____ mugs.

2. Maria is giving away free samples of strawberry lemonade. If she has a pitcher with $5\frac{4}{5}$ liters of lemonade, and each sample cup holds $\frac{3}{5}$ liters, how many free samples can Maria give away?

Maria can give away _____ free samples.

Lesson 23 Exit Ticket

Part 1: Read the problem. Then answer the questions and solve. Show your work.

1. Rosa is making keychains to sell at the festival. Every keychain needs $1\frac{1}{2}$ capfuls of resin. Rosa has $5\frac{5}{6}$ capfuls of resin. How many keychains can she make?

a. What equation represents this problem? Use n for the unknown quantity. _____

b. Use the keep-change-flip algorithm to solve the equation.

$n =$ _____

c. How many keychains can Rosa make to sell? Explain. _____

2. Rosa also makes necklaces. Each necklace needs $\frac{3}{5}$ yards of string. She has a total of $\frac{9}{10}$ of a yard of string. How many necklaces can she make?

a. What equation represents this problem? Use n for the unknown quantity. _____

b. Use the keep-change-flip algorithm to solve the equation.

$n =$ _____

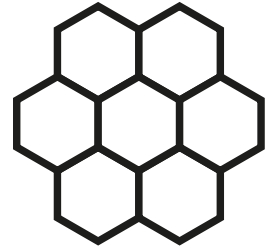
c. How many necklaces can Rosa make to sell? Explain. _____

Part 2: Model one of the problems from Part 1 with a **tape diagram** to check your work.

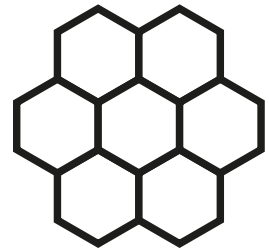
Extra Practice: What's the Buzz About?

Part 1: Read the problem. Write an equation and solve using the algorithm. Then, write your answer in the honeycomb.

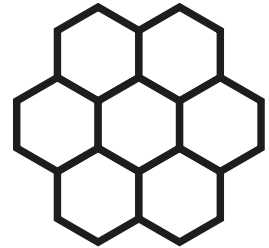
Caleb does demonstrations of beekeeping skills at Buzzy Buzz Fest. Each demonstration is $1\frac{7}{8}$ hours long. If the festival lasts for $5\frac{3}{4}$ hours, how many times can Caleb present his demonstration?



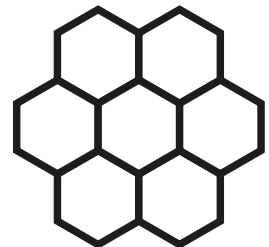
Caleb is filling jars of honey. Each jar can fit $1\frac{2}{3}$ pounds of honey. If Caleb has $6\frac{5}{6}$ pounds of honey, how many jars can he fill?



The hives produced $8\frac{3}{4}$ jars of honey this week. If each hive produced $1\frac{1}{4}$ jars, how many hives are there?



It takes $1\frac{2}{3}$ ounces of honey to make a piece of honey candy. If Caleb has $9\frac{1}{6}$ ounces of honey, how many pieces of candy can he make?



Part 2: Use the tape diagram to check one of your solutions from Part 1.

Tape Diagrams

Tape Diagrams

Assessment

Unit 3 Assessment

1. Use the tape diagram to divide. $\frac{3}{4} \div \frac{1}{8} =$ _____

2. Florian has $\frac{6}{9}$ of a cup of cornmeal. How many pans of cornbread can he make if it takes $\frac{1}{3}$ of a cup of cornmeal to make 1 pan? Write a related division and multiplication equation to model the problem. Use n to represent the unknown quantity. Then, use the tape diagram to solve.

Division equation: _____

Multiplication equation: _____

How many pans of cornbread can Florian make? _____

3. Use the tape diagram to divide. $\frac{2}{3} \div \frac{2}{15} =$ _____

4. Divide. Show your work. $\frac{3}{7} \div \frac{2}{3} =$ _____

5. Solve for n . Show your work. $\frac{5}{12} \div \frac{3}{4} = n$ $n =$ _____

6. Solve for n . Show your work. $\frac{9}{10} \div \frac{3}{4} = n$ $n =$ _____

7. Troy has a summer job working at a shaved ice stand. He needs to scoop out $4\frac{1}{6}$ cups of shaved ice to fill a customer's order. If Troy's ice scoop holds $1\frac{2}{3}$ cups, how many scoops will he need to fill the order? Show your work.

Troy will need _____ scoops of shaved ice to fill the order.

8. Divide. Show your work. $6\frac{1}{8} \div 1\frac{2}{5} =$ _____

9. Solve for n . Show your work. $5\frac{5}{6} \div 2\frac{1}{10} = n$ $n =$ _____

10. Rowan has $6\frac{1}{2}$ packages of ramen noodles. She is making a recipe that uses $1\frac{1}{4}$ packages of ramen for each person's lunch. Model the situation using a tape diagram. Then answer the question.

How many people will get Ramen for lunch? Will there be any Ramen left over? Explain.



Unit 3 Cumulative Review

1. Estimate the quotient of $286 \div 3.25$. Then, use long division to find the actual quotient. Show your work.

Estimate:

Divide:

$$286 \div 3.25 = \underline{\hspace{2cm}}$$

2. Divide using whatever model is appropriate. Show your work.

$$42.4 \div 0.8 = \underline{\hspace{2cm}}$$

3. Divide. Show your work.

$$4 \frac{7}{8} \div 2 \frac{3}{5} = \underline{\hspace{2cm}}$$

4. Divide. Show your work.

$$1,458 \div 54 = \underline{\hspace{2cm}}$$

5. List the factors of 16, 32, and 48. What is the greatest common factor of 16, 32, and 48?

factors of 16: _____

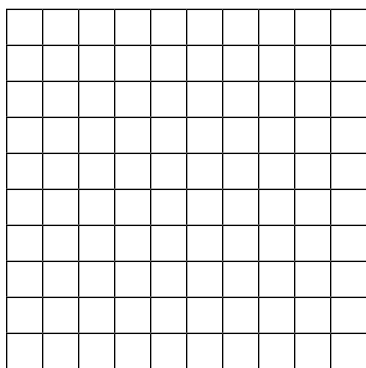
factors of 32: _____

factors of 48: _____

The greatest common factor of 16, 32, and 48 is _____.

6. Multiply using the following 10×10 grid.

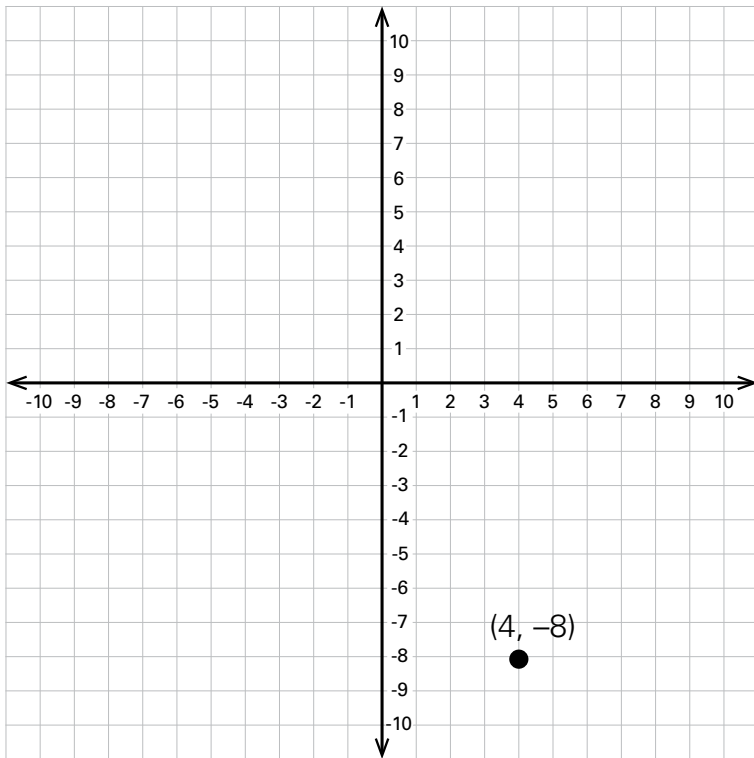
$0.3 \times 0.2 =$ _____



7. Anwar plans to paint his desk. He finds two cans of paint in his garage. One can has $1\frac{1}{2}$ quarts of paint and the other has $1\frac{3}{8}$ quarts of paint. How much paint does Anwar have?

Anwar has _____ quarts of paint.

8. The ordered pair $(4, -8)$ is plotted on the coordinate plane.

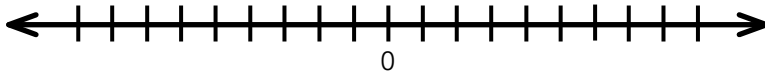


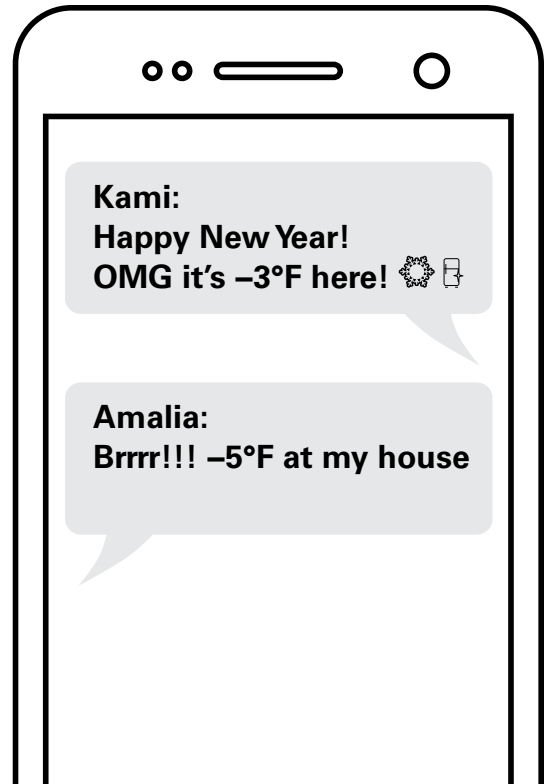
- a. What is the ordered pair for the reflection of $(4, -8)$ over the y-axis? _____
- b. Plot and label the reflection.

9. Multiply. Show your work. $\frac{2}{5} \times \frac{3}{10} =$ _____

10. On New Year's Day, Kami texts her friend Amalia.

Who has the colder temperature: Kami or Amalia?
Use the number line and absolute value to explain your answer.





11. Add. Show your work. $\frac{3}{10} + \frac{2}{5} =$ _____

12. Frederica is a chef. She can peel an apple in $\frac{1}{3}$ of a minute! How many apples can she peel in 6 minutes? Show your work.

She can peel _____ apples in 6 minutes.

13. Simplify the expression. Show your work.

$$3(4 - 1) + 8 = \underline{\hspace{2cm}}$$

14. Subtract. Show your work.

$$\frac{8}{9} - \frac{2}{3} = \underline{\hspace{2cm}}$$

15. Jenny and Ahra went to Pizza Garden last night. Jenny was given $\frac{5}{7}$ of the cheese pizza. She gave $\frac{1}{3}$ of her pizza to a friend. How much of the whole pizza does Jenny have left?

Jenny has of the pizza left.