

Unit 1:

Addition and Subtraction with Integers

Student Book

Catapult Learning™

©2021 Catapult Learning, LLC

Catapult Learning, LLC
1-800-841-8730

www.catapultlearning.com

All rights reserved. No part of this publication, in whole or part, except those pages marked specifically with permission for reproduction may be reproduced in any form, or by any means, or stored in a database or retrieval system, without prior written permission from the publisher.

Printed in the United States of America.

Hometown Helpers

Model the addends with **counters**. Then add and answer the questions.

Shane and Eliana have also signed on to be Hometown Helpers. Shane offers lawn services, and Eliana offers pet care.

- 1.** This week Shane earned \$20 raking a neighbor's leaves. Unfortunately, he broke his rake and had to buy a new one. Shane spent \$15 on his new rake. What is Shane's overall profit?

- a.** Has Shane made money or lost money overall? How do you know?

- b.** What addition equation models the problem? _____

- 2.** Eliana starts her week by spending \$12 on two new leashes. On Tuesday, she spends \$7 on dog treats. What is Eliana's overall profit?

- a.** Has Eliana made money or lost money overall? How do you know?

- b.** What addition equation models the problem? _____

- 3.** The following week, Eliana spends \$5 on cat toys. Then, she earns \$19 for pet-sitting a neighbor's cat. What is Eliana's overall profit that week?

- a.** Has Eliana made money or lost money overall? How do you know?

- b.** What addition equation models the problem? _____

Deep Freeze

Part 1: Use **counters** to model each problem. Then write an addition equation to solve.

To reward themselves for all the hard work they've been doing on the Hometown Helpers app, Shane and Eliana are going to reward themselves by going to a football game! But Shane doesn't want to go if it's too cold, so Eliana is keeping track of the temperature.

1. On Thursday it is 0 degrees at dawn. Throughout the day the temperature rises 8 degrees. Overnight the temperature drops 3 degrees. What is the temperature Friday morning?

Equation: _____

The temperature is _____ degrees Friday morning.

2. Saturday it is 0 degrees at dawn. Throughout the day the temperature rises 2 degrees. Overnight the temperature drops 8 degrees. What is the temperature Sunday morning?

Equation: _____

The temperature is _____ degrees Sunday morning.

3. Monday it is 0 degrees at dawn. Throughout the day the temperature drops 4 degrees. Overnight the temperature rises 3 degrees. What is the temperature Tuesday morning?

Equation: _____

The temperature is _____ degrees on Sunday morning.

Part 2: Use **counters** to find each sum.

4. $-7 + 15 =$ _____

5. $3 + (-8) =$ _____

6. $10 + (-4) =$ _____

7. $-13 + 4 =$ _____

8. $-11 + 20 =$ _____

9. $8 + (-16) =$ _____

10. $-10 + (-15) =$ _____

11. $-5 + (-16) =$ _____

12. $-1 + 20 =$ _____

13. $-3 + (-14) =$ _____

14. $8 + (-9) =$ _____

15. $-2 + 3 =$ _____

Lesson 1 Exit Ticket

Part 1: Model the addends with **counters**. Then add and answer the questions.

1. Shane earns \$15 for trimming a neighbor's bushes. Then, he spends \$9 on flyers for his business. What is Shane's overall profit?

- a. Has Shane made money or lost money overall? How do you know?

- b. What addition equation models the problem? _____

2. Eliana spends \$4 on a bottle of fish food. Later in the week, she earns \$11 for feeding a neighbor's fish for a few days. What is Eliana's overall profit?

- a. Has Eliana made money or lost money overall? How do you know?

- b. What addition equation models the problem? _____

Part 2: Use **counters** to model each problem. Then write an addition equation to solve.

3. The temperature in the morning is 0 degrees. By noon, the temperature warms up 13 degrees. By midnight, the temperature drops 15 degrees. What is the temperature at midnight?

Equation: _____

The temperature is _____ at midnight.

4. The next day, the temperature in the morning is 0 degrees. By noon, the temperature drops 6 degrees. By midnight, the temperature warms up 12 degrees. What is the temperature at midnight?

Equation: _____

The temperature is _____ at midnight.

Extra Practice: Fore!

The table shows the scores of each golfer on two holes of golf. Use **counters** to model each player's score after Hole 2. Then write an equation to show the addition.

	Golf Scores		
			Equation
Binh	2 under par	3 under par	
Jill	1 over par	2 over par	
Antonio	3 over par	3 under par	
Alex	par	2 under par	
Sam	1 under par	2 over par	
Christopher	2 under par	2 under par	
Jennifer	1 over par	3 over par	
Amy	3 under par	1 over par	
Jeff	3 under par	1 under par	
Claire	2 over par	par	

River Records

As a river researcher, Bram needs to keep track of the water level over the course of the summer season. The table shows the water level for the rivers in May and how the water level has changed by September.

River	Water Level in May Relative to Normal (feet)	Water Level Drop by September
Shady Oak	-7	2 feet
Big Lizard	-5	-5 feet
Blue	4	8 feet
Lazy S	-6	7 feet
Rio Verde	10	-3 feet

Write the subtraction and addition expressions to model each river's water level change. Then, use **counters** to model the integers and find the water level in September.

Team Member	Subtraction Expression	Addition Expression	Water Level in September Relative to Normal (feet)
Shady Oak			
Big Lizard			
Blue			
Lazy S			
Rio Verde			

How can you use addition to find the difference between two integers? Give an example.

Research Funds

Model the problems with **counters**. Then answer the questions.

Bram is sometimes gone for days doing his research, so he has to shop for food and other materials. He must keep close track of the money he spends and receives because his research is funded by a university.

1. For one trip the university grants him a \$10 budget for food. Bram ends up spending \$16 on food.
 - a. What subtraction expression models the problem? _____
 - b. Rewrite the subtraction expression as an addition expression. _____
 - c. What integer represents Bram's money after buying food for the trip? _____
 - d. How much money does Bram have, compared to 0? _____

2. After another trip, Bram goes over budget and must put \$12 on a credit card. After looking at his receipts, the university agrees to take away \$8 of the debt.
 - a. What subtraction expression models the problem? _____
 - b. Rewrite the subtraction expression as an addition expression. _____
 - c. What integer represents Bram's money after the university takes away some of his debt?

 - d. How much money does Bram have, compared to 0? _____

3. Before his last trip of the year, Bram is \$4 in debt. During the trip, he spends another \$10.
 - a. What subtraction expression models the problem? _____
 - b. Rewrite the subtraction expression as an addition expression. _____
 - c. What integer represents how much money Bram has after the trip? _____
 - d. How much money does Bram have, compared to 0? _____

Lesson 2 Exit Ticket

Part 1: Bram and the members of his research team need to buy equipment to test the quality of the water they research. The table shows how much money each team member had to start with and how much money they spent on equipment.

Team Member	Available Money (dollars)	Money Spent (dollars)
Bram	3	7
Leah	-9	-2
Alan	4	10

1. Write the subtraction and addition expressions to model each person's change in available money. Then, use **counters** to model the integers and find the amount of money after buying equipment.

Team Member	Subtraction Expression	Addition Expression	Available Money after Buying Equipment (dollars)
Bram			
Leah			
Alan			

Part 2: Model the problem with **counters**. Then answer the questions.

2. A new river, the Silver Snake, has been added to Bram's list, and he needs to calculate its water level. In May the water level was 3 feet below normal, and in September, the water level had dropped an additional 6 feet.
 - a. What subtraction expression models the problem? _____
 - b. Rewrite the subtraction expression as an addition expression. _____
 - c. What integer represents the river's water level in September relative to the normal level?

 - d. What is the river's water level in September, compared to its usual water level?

Extra Practice: Basket Battle

Part 1: Carly and Jayden play a game shooting baskets. Every time a player makes a basket, they earn 5 points. Every time a player misses a basket, they lose 3 points. The tables show each player's score at the beginning of a round, and how many points they lose in the round. Model the problem with **counters** and complete the tables to show each player's score at the end of the round.

	Beginning of Round 2	Points Lost in Round 2	Score at the End of Round 2
Carly	-10	1	
Jayden	7	10	

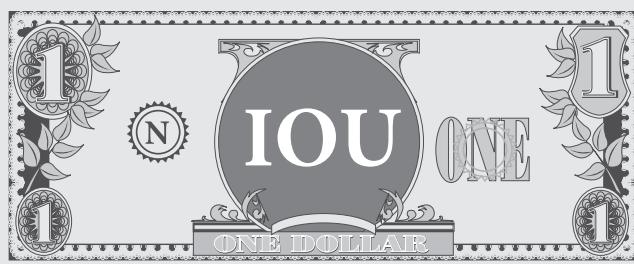
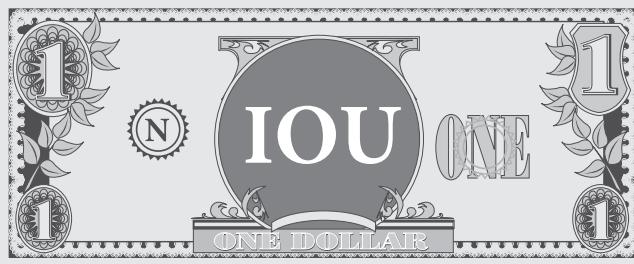
	Beginning of Round 4	Points Lost in Round 4	Score at the End of Round 4
Carly	-3	-9	
Jayden	-10	-4	

	Beginning of Round 6	Points Lost in Round 6	Score at the End of Round 6
Carly	-2	3	
Jayden	4	7	

Part 2: Jaxon and Isla are playing the same game. Isla writes subtraction expressions to keep track of her score. Turn each subtraction expression into an addition equation and use **counters** to find the sum.

Round	Subtraction Expression	Addition Equation
2	$1 - (-6)$	
4	$9 - 10$	
6	$-3 - 2$	
8	$-10 - (-7)$	





Early or Late?

Model the addition on **integer number lines**. Then answer the questions.

1. This morning, Stephen is 7 minutes ahead of his usual schedule for going to school. Then, he decides to check his email and loses 12 minutes.
 - a. Write an addition and subtraction equation to model the problem.
Addition: _____ Subtraction: _____

 - b. Which way did you move to add on the number line? Why?

2. Keiko woke up for school 10 minutes late. By skipping her regular sit-down breakfast and grabbing a protein bar to eat on her way, Keiko gained back 14 minutes to her schedule.
 - a. Write an addition and subtraction equation to model the problem.
Addition: _____ Subtraction: _____

 - b. Which way did you move to add on the number line? Why?

3. Miles was running 5 minutes late for school because he had to help his little brother finish his homework. Then the bus got stuck behind a train and was 4 minutes behind schedule.
 - a. Write an addition equation and a subtraction equation to model the problem.
Addition: _____ Subtraction: _____

 - b. Which way did you move to add on the number line? Why?

Temperature Changes

Review the example problem. Then use **integer number lines** to add and subtract.

Example

When Stephen leaves for school this morning the temperature is 8° above zero. During the day, a storm comes in, and by the time Stephen leaves school the temperature has dropped 11° . What is the temperature at the end of the school day?

Step 1

Write an addition expression and a subtraction expression to model the problem.

$$8 + (-11)$$
$$8 - 11$$

Step 2

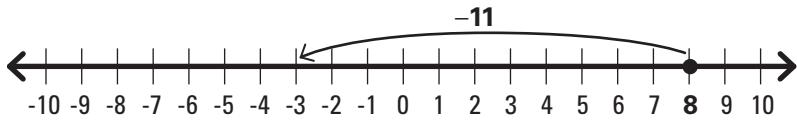
Use the addition expression to find the answer. Plot a point on the number line to show the first addend.



Step 3

Determine whether you will add a positive or negative integer. Move to the right to add a positive integer. Move to the left to add a negative integer.

The temperature dropped 11° , so you need to add -11 .



Step 4

The number you land on is the sum and difference.

$$8 + (-11) = -3$$
$$8 - 11 = -3$$

The temperature at the end of the school day is -3° , or 3° below 0.

1. A few days later the temperature before school is 5° below 0. During the day the temperature rises 14° . What is the temperature at the end of the day? Write the addition and subtraction equations that model the problem.

Addition: _____

Subtraction: _____

2. When Stephen goes to bed the temperature is 1° below 0. The temperature decreases by 12° overnight. What is the temperature when Stephen wakes up?

Addition: _____

Subtraction: _____

Lesson 3 Exit Ticket

Use **integer number lines** to add and subtract.

Ellie wakes up for school 12 minutes late. She loses another 6 minutes looking for her library book.

1. Write an addition equation and a subtraction equation to model the problem.

Addition: _____

Subtraction: _____

2. Which way did you move to add on the number line? Why?

When Malik leaves for school the temperature is 10° below zero. By the end of the school day, the temperature has risen by 7° .

3. Write an addition equation and a subtraction equation to model the problem.

Addition: _____

Subtraction: _____

4. Which way did you move to add on the number line? Why?

Abigail loses \$1 at school. Then she takes a \$5 raffle ticket from Grayson and says she'll pay him for it later. How much money does Abigail have now?

5. Write an addition equation and a subtraction equation to model the problem.

Addition: _____

Subtraction: _____

6. Which way did you move to add on the number line? Why?

Extra Practice: Game Play

Part 1: Use the game board at right to answer the questions.

Gabe and Melanie play a game. In the game each player starts in the middle of the board. There are 10 numbered spaces above the starting space and 10 numbered spaces below the starting space. On Gabe's first turn, he moves up from start to space 8. On his second turn, he moves down 12 spaces.

1. Explain how to use the game board to find which space Gabe is on at the end of his second turn. _____

2. What space is Gabe on at the end of his second turn? _____

3. Write an addition equation and a subtraction equation to model the problem.

Addition: _____

Subtraction: _____

Part 2: Match the pairs of expressions.

4.

$$-8 + 6 =$$

$$8 + 6 =$$

-1

$$8 - 6 =$$

$$8 + (-6) =$$

-2

$$8 - (-6) =$$

$$-8 - 6 =$$

-3

$$-8 + (-6) =$$

$$-8 - (-6) =$$

-4

5.

$$13 + (-4) =$$

$$-13 + (-4) =$$

-5

$$13 + 4 =$$

$$13 - 4 =$$

-6

$$-13 - 4 =$$

$$-13 + 4 =$$

-7

$$-13 - (-4) =$$

$$13 - (-4) =$$

-8

-9

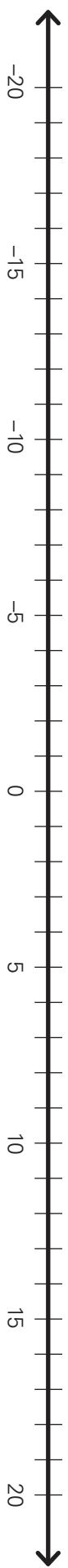
-10

10
9
8
7
6
5
4
3
2
1
start
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10

Integer Number Lines



Integer Number Lines



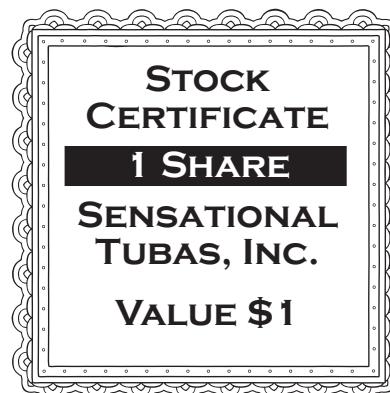
Integer Number Lines



Integer Number Lines



Stock Certificates



Jessie's Job

Use integer addition rules to find the sums and answer the questions.

1. On Tuesday Jessie stayed late at work and earned an extra \$15. Before she left work, she bought several watermelons for \$18.

- a. How do you know whether the integers in the problem are positive or negative?

- b. Which integer in the problem has a greater absolute value? _____

- c. Will you add or subtract the absolute values? Why? _____
-

- d. Write an addition equation to model the problem. _____

- e. What does the sum tell you about how much money Jessie has on Tuesday?

2. Doug works at Ronnie's as well. He usually works the same number of hours each week, but last week he left early on Wednesday, so he was missing \$12 from his paycheck. Plus, Thursday was a holiday, so he didn't earn the \$48 he usually earns for his Thursday shift.

- a. How do you know whether the integers in the problem are positive or negative?

- b. Which integer in the problem has a greater absolute value? _____

- c. Will you add or subtract the absolute values? Why? _____
-

- d. Write an addition equation to model the problem. _____

- e. What does the sum tell you about how much money Doug earned this paycheck?

New Shoes

Part 1: Review the example problem. Then use integer addition rules to answer the questions and find the sums.

Example

Jessie needs to buy a new pair of sneakers for work. Looking online, she finds a pair that she wants to buy. Jessie has a \$15 coupon, but she pays \$6 for fast shipping. After combining the coupon and the shipping fee, how much will the coupon save Jessie?

Step 1	Step 2	Step 3	Step 4
<p>Model each amount with an integer and write the addition expression.</p> <p>Coupon: 15</p> <p>Shipping: -6</p> <p>15 + (-6)</p>	<p>Identify which integer addition rule to use to add.</p> <p>Since the integers have different signs, subtract the absolute values. Then take the sign of the integer with the greater absolute value.</p>	<p>Write an absolute value equation to help find the sum.</p> <p> 15 – –6 = 15 – 6 = 9</p>	<p>Determine the sign of the sum.</p> <p> 15 > –6 , so the sum will be positive.</p> <p>15 + (-6) = 9</p> <p>Jessie's coupon will save her \$9 when combined with the shipping fee.</p>

- On a different website, Jessie finds the same sneakers. The shipping fee is only \$4 and she has a \$10 coupon. How much will Jessie's coupon save her on this website? Show your work.

Jessie's coupon will save her \$ _____.

Part 2: Complete each equation.

2. $14 + (-19) =$ _____

3. $-56 + 66 =$ _____

4. $-2 + 23 =$ _____

5. $8 + (-9) =$ _____

6. $-7 + (-1) =$ _____

7. $-6 + 46 =$ _____

8. $-5 + 3 =$ _____

9. $-9 + (-15) =$ _____

10. $-38 + 38 =$ _____

11. $2 + (-10) =$ _____

Lesson 4 Exit Ticket

Part 1: Use integer addition rules to find the sums.

1. Doug cashes his paycheck on Friday. He spends most of his paycheck on food that night. He wants to save the rest for a new computer. On Saturday he spends \$18 on toys for his little sister. Then he loans his friend \$24.

- a. How do you know whether the integers in the problem are positive or negative?

- b. Does Doug save money on Saturday? Show your work and circle your answer.

Doug does / does not save money on Saturday.

Part 2: Complete each equation.

2. $-7 + (-13) =$ _____

3. $92 + (-91) =$ _____

4. $-8 + (-5) =$ _____

5. $-16 + 1 =$ _____

6. $-70 + (-12) =$ _____

7. $13 + (-13) =$ _____

8. $12 + (-6) =$ _____

9. $-45 + (-40) =$ _____

10. $11 + (-9) =$ _____

11. $4 + (-5) =$ _____

Extra Practice:

Bank Account Balance

Part 1: Represent each situation with an integer.

Situation	Integer
Evan gives \$7 to a friend.	
Chelsea earns a \$15 bonus at work.	
Nico has \$18 taken out of his paycheck for income tax.	
Leo spends \$12 on comics.	
Shane deposits \$21 into his bank account.	
Emily finds \$5.	

Part 2: Write and solve an addition equation to find how much money each pair has in all.

1. Evan and Chelsea _____

2. Nico and Leo _____

3. Shane and Emily _____

4. Evan and Nico _____

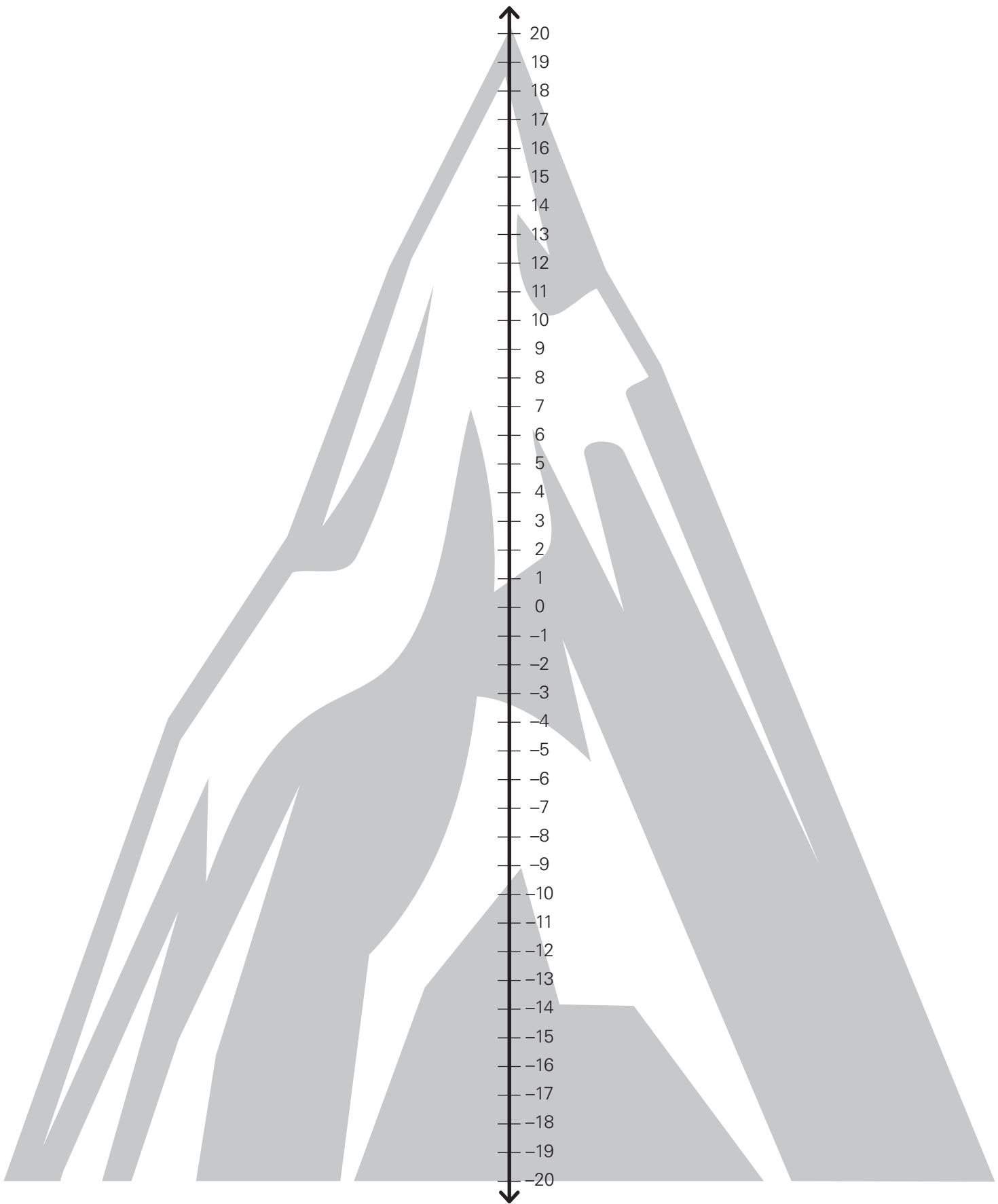
5. Chelsea and Emily _____

6. Leo and Shane _____

7. Evan and Shane _____

8. Nico and Chelsea _____

Mountain Climbers



Icy Blast!

Use integer subtraction and addition rules to solve. Then answer the questions.

1. The air temperature at Dr. Foster's research station at noon is -16°F . The wind chill lowers the temperature 11° . What is the wind chill?

a. Explain how you know whether to add or subtract. _____

- b. Complete the keep-change-change chart. c. The wind chill is _____ $^{\circ}\text{F}$.

keep	change	change

= _____

2. The high temperature at Dr. Foster's research station was -8°F , and the low temperature was -23°F . What was yesterday's temperature range?

a. Explain how you know whether to add or subtract. _____

- b. Complete the keep-change-change chart. c. The temperature range was _____ $^{\circ}\text{F}$.

keep	change	change

= _____

3. The next day at the research station the temperature reaches 4°F , but the temperature drops 22 degrees by midnight. What is the temperature at midnight?

a. Explain how you know whether to add or subtract. _____

- b. Complete the keep-change-change chart. c. The temperature was _____ $^{\circ}\text{F}$ at midnight.

keep	change	change

= _____

Ancient Finds

Part 1: Review the example problem. Then use the keep-change-change rule and integer addition rules to subtract.

Example

Dr. Chavez is working at an archeological site in the desert. The ground at the site is located at 13 feet below sea level. Dr. Chavez digs down 4 feet and finds a pottery bowl. At what elevation is the pottery bowl?

Step 1

Identify the integers and write an expression to model the problem.

Ground: **13** feet below sea level

Bowl: **4** feet lower

Expression: **-13 - 4**

Step 2

Use the keep-change-change rule to convert the subtraction expression into an addition expression.

-13	-	4
keep	change	change
-13	+	-4

The addition expression is
-13 + (-4).

Step 3

Follow the rules for integer addition.

$$\mathbf{-13 + (-4) = -17}$$

The pottery bowl was found 17 feet below sea level.

1. Dr. Chavez starts at the ground, which is 13 feet below sea level. He digs down 6 feet and finds a woven basket. At what elevation is the basket?

keep	change	change
		= _____

The basket was found _____ sea level.

- Part 2:** Use integer subtraction and addition rules to complete each equation.

2. $-17 - (-19) = \underline{\hspace{2cm}}$

3. $-12 - (-11) = \underline{\hspace{2cm}}$

4. $-18 - (-5) = \underline{\hspace{2cm}}$

5. $-20 - 17 = \underline{\hspace{2cm}}$

6. $-6 - (-3) = \underline{\hspace{2cm}}$

7. $18 - (-14) = \underline{\hspace{2cm}}$

8. $11 - (-2) = \underline{\hspace{2cm}}$

9. $-1 - 17 = \underline{\hspace{2cm}}$

10. $8 - (-6) = \underline{\hspace{2cm}}$

11. $14 - 17 = \underline{\hspace{2cm}}$

Lesson 5 Exit Ticket

Part 1: Use the keep-change-change and integer addition rules to subtract. Then answer the questions.

1. Three days ago, the temperature at Dr. Foster's research station at 8 a.m. was -6°F .
The temperature dropped 19° by noon.

a. Explain how you know whether to add or subtract. _____

b. Complete the keep-change-change chart.

keep	change	change
		= _____

c. The temperature was _____ $^{\circ}\text{F}$ by noon.

Part 2: Use integer subtraction and addition rules to complete each equation.

2. $13 - (-18) =$ _____

3. $4 - (-15) =$ _____

4. $20 - (-1) =$ _____

5. $-16 - (-13) =$ _____

6. $1 - 4 =$ _____

7. $19 - (-20) =$ _____

8. $-1 - (-18) =$ _____

9. $-9 - (-17) =$ _____

10. $5 - 11 =$ _____

11. $-6 - 17 =$ _____

Extra Practice: River Sampling

Part 1: Complete each statement with *always*, *sometimes*, or *never*.

1. The difference of a positive integer and a negative integer is _____ positive.
2. A positive integer subtracted from a negative integer is _____ negative.
3. The difference of two positive integers is _____ positive.
4. In the keep-change-change rule, you _____ change the first number in the subtraction equation.

Part 2: Use the keep-change-change rule and integer addition rules to complete the table and answer the questions.

5. The table shows the depth of Rashida's first water sample and how much farther Rashida lowers the sampling container for the second water sample.

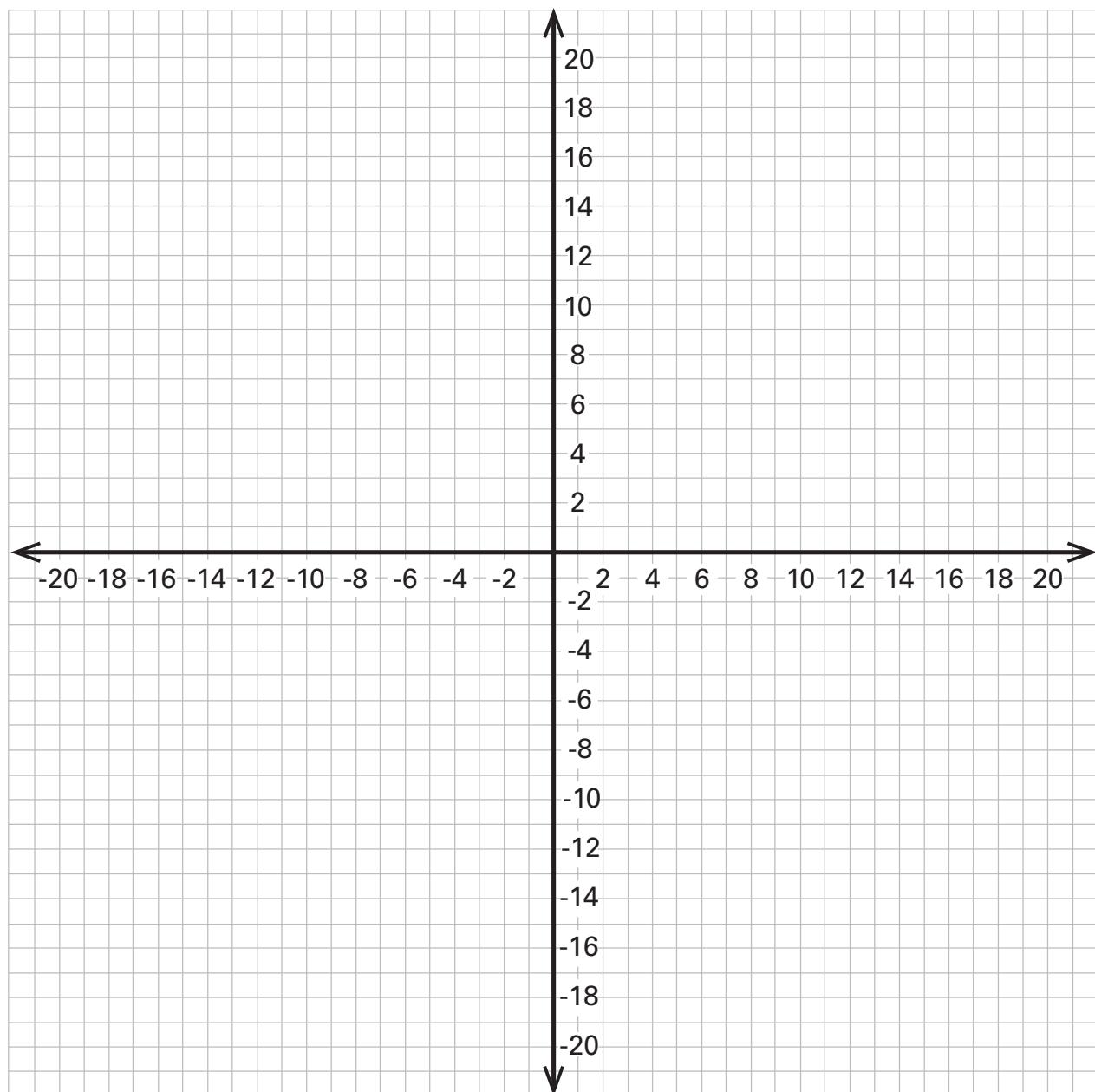
Day	First Water Sample Depth (inches)	Distance Container Lowered (inches)	Subtraction Expression	Second Water Sample Depth (inches)
Monday	-7	8		
Tuesday	-12	6		
Wednesday	-4	19		
Thursday	-9	12		
Friday	-4	16		

Part 3: Use the keep-change-change rule and integer addition rules to complete the equations.

6. $18 - 33 =$ _____
7. $54 - (-69) =$ _____
8. $-11 - (-16) =$ _____
9. $30 - 93 =$ _____
10. $77 - (-80) =$ _____
11. $87 - (-22) =$ _____
12. $-8 - 26 =$ _____
13. $-60 - 36 =$ _____
14. $63 - (-55) =$ _____
15. $45 - (-95) =$ _____
16. $-73 - 39 =$ _____
17. $2 - 33 =$ _____

Graph Now

x	y
11	20
13	18
15	16
17	14
19	12



Equation Match Expressions

$4 - 12$

$-6 - 9$

$-7 - (-8)$

$-4 - 10$

$15 - (-3)$

$-11 - (-16)$

$20 - 12$

$-14 - (-3)$

$-8 - 9$

$12 - 18$

Equation Match Differences

-8

-15

1

-14

18

5

8

-11

-17

-6

Captain Noodles

Plot the integers on an **integer number line** to find the distance between them. Then write related subtraction and addition equations to find the difference.

1. On Wednesday Kai and Phoebe also help look for Captain Noodles. Kai walks 12 blocks north from my house, and Phoebe walks 5 blocks in the opposite direction.

- a. What subtraction equation can you use to find the distance between the two points?

- b. What addition equation can you use to find the distance between the two points?

- c. What distance do Kai and Phoebe cover in their search on Wednesday? _____

2. On Thursday Kai and Phoebe search again. Kai walks 8 blocks south from my house, and Phoebe walks 7 blocks in the opposite direction.

- a. What subtraction equation can you use to find the distance between the two points?

- b. What addition equation can you use to find the distance between the two points?

- c. What distance do Kai and Phoebe cover in their search on Thursday? _____

3. On Friday Vashti and DeSean help me search for Captain Noodles again. They really miss him! Vashti walks 4 blocks south from my house, and DeSean walks 14 blocks in the opposite direction.

- a. What subtraction equation can you use to find the distance between the two points?

- b. What addition equation can you use to find the distance between the two points?

- c. What distance do Vashti and DeSean cover in their search on Friday? _____

Spotted!

Review the example problem. Then write and solve subtraction and addition equations to find the distance between integers.

Example

On Saturday I look for Captain Noodles. When I am 6 blocks south of my house, Phoebe texts that she spotted Captain Noodles! Captain Noodles is 3 blocks from my house in the opposite direction. How far away am I from Captain Noodles?

Step 1	Step 2	Step 3	Step 4
<p>Use the house as the starting point, 0. Determine the integers represented in the problem.</p> <p>My location: -6</p> <p>Captain Noodles's location: 3</p>	<p>Write a subtraction equation to show that the distance is the absolute value of the difference between integers.</p> $ -6 - 3 = d$	<p>Rewrite the subtraction equation as addition of the inverse.</p> $ -6 + (-3) = d$	<p>Use integer addition rules to add. Then find the absolute value of the sum.</p> $ -9 = d$ $9 = d$ <p>Captain Noodles is 9 blocks away.</p>

- I found Captain Noodles! He was 4 blocks north of my house. I need to go to the veterinarian to make sure he isn't hurt. The veterinarian is 8 blocks from my house in the opposite direction. How far away is the veterinarian?

_____ blocks

- Captain Noodles is fine, but very grumpy. From the veterinarian's clinic, I take him to the pet shop to get him a toy. The clinic is 8 blocks south of my house. The shop is 6 blocks from my house in the opposite direction. How far is it to the shop?

_____ blocks

- I drop off Captain Noodles at home so he can take a nap. Then I ride my bike 12 blocks south from my house to where Vashti lives so I can tell her the good news. Phoebe lives 7 blocks south of my house, so I go there next to thank her for spotting Captain Noodles. How far do I ride my bike between Vashti's and Phoebe's houses?

_____ blocks

Lesson 6 Exit Ticket

Part 1: Plot the integers on the number line to find the distance between them. Then write related subtraction and addition equations to find the difference.

- I have a party to celebrate Captain Noodles's return. We play a cat trivia game outside. Everyone starts at the center line in the yard. They take a step forward when they get a question right, and they take a step back when they get a question wrong. Vashti takes 5 steps forward and DeSean takes 5 steps back. How far apart are Vashti and DeSean?



- What subtraction equation can you use to find the distance between the two points?

- What addition equation can you use to find the distance between the two points?

- How far apart are Vashti and DeSean? _____ steps

Part 2: Write and solve subtraction and addition equations to find the distance between integers.

- Kai and Phoebe play the game, too. Kai takes 9 steps back, but Phoebe takes 8 steps forward. How far apart are Kai and Phoebe?

_____ steps

- DeSean and Kai play in the championship cat trivia game. The winner gets a framed photo of Captain Noodles. DeSean is very nervous, and in the first round he takes 15 steps back. Kai takes 2 steps back. How far apart are DeSean and Kai?

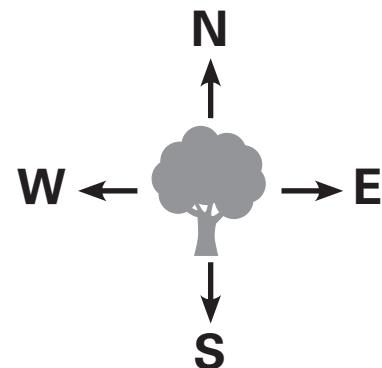
_____ steps

Extra Practice: Snakes

Part 1: Find the distance between each pair of snakes. Use a **number line** to check your work.

Meredith and her mom find many snakes in the forest. The table shows where they find each snake in relation to the oak tree.

water snake	400 feet west of the oak tree
queen snake	200 feet north of the oak tree
brown snake	500 feet east of the oak tree
red-bellied snake	800 feet north of the oak tree
green snake	100 feet south of the oak tree
fox snake	700 feet east of the oak tree



1. How far apart are the water snake and the brown snake? _____
2. How far apart are the queen snake and the red-bellied snake? _____
3. How far apart are the red-bellied snake and the green snake? _____
4. How far apart are the fox snake and the brown snake? _____

Part 2: Match each equation with the correct answer.

$|12 - (-9)| =$ 4

$|-12 - (-9)| =$ 16

$|10 - 6| =$ 3

$|10 - (-6)| =$ 21

Integer Number Lines

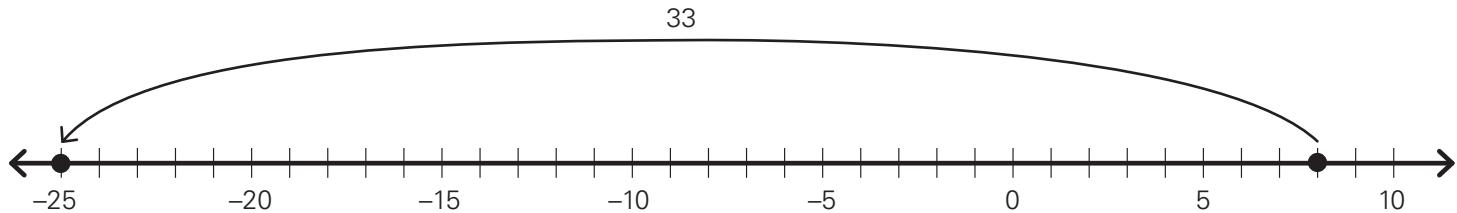


Integer Number Lines



Under the Sea

Part 1: Explain the parts of the number line by answering the questions.



1. Which integer represents the starting point? _____
2. Which integer represents the ending point? _____
3. Which integer represents the distance or change? _____
4. Explain why the equation $8 + 25 = 33$ represents the number line: _____

Part 2: Model and solve each situation with a **vertical number line**. Then write an addition or subtraction equation and solve.

5. On Tuesday, Carter dives to 53 feet below the surface of the ocean to watch a shark. Then he swims up and takes photographs of a school of fish at 36 feet below the surface. How far is the shark from the school of fish?

Equation: _____

The shark is _____ feet from the school of fish.

6. On Thursday, Carter takes a small boat out to a new area of the reef. He jumps in the water from the boat deck 2 feet above the surface of the water. He dives to 45 feet below the surface to observe sea urchins. How far does Carter dive?

Equation: _____

Carter dives _____ feet down from the boat deck.

Carter's Expenses

Review the example problem. Then model the situations with an **open number line** and an equation and choose a tool or strategy to help you solve.

Example

Carter needs to make repairs to his underwater camera. He has a **\$3** credit on his credit card. He spends **\$154** on the repairs. How much money is on Carter's credit card now?

Step 1

Identify the parts of the problem.

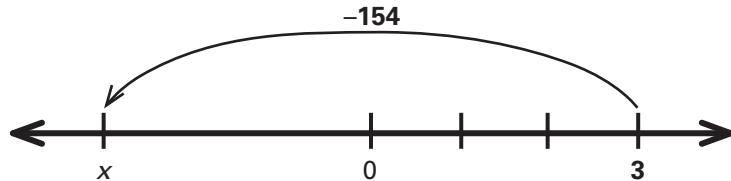
Starting point: **\$3**

Ending point: **x**

Change: **-\$154**

Step 2

Model the problem with a number line.



Step 3

Write an addition or subtraction equation that represents the problem.

$$3 - 154 = x$$

Step 4

Choose an appropriate strategy to solve.

It would take too long to count out 154 yellow counters, so using the integer subtraction rules is more appropriate.

$$3 - 154 = 3 + (-154) = -151$$

Carter has **-\$151** on his card after paying for repairs.

Carter owes his team member Sasha \$58. He pays her back some of what he owes by buying her a cooler that costs \$23. How much does Carter still owe Sasha?

1. Circle the information that is missing from the problem.

starting point

ending point

change

2. Write an addition or subtraction equation that represents the problem. _____

3. Which strategy or tool will you use to solve? Explain why you chose this strategy.

4. What integer represents Carter's money? _____

5. How much does Carter still owe Sasha? _____

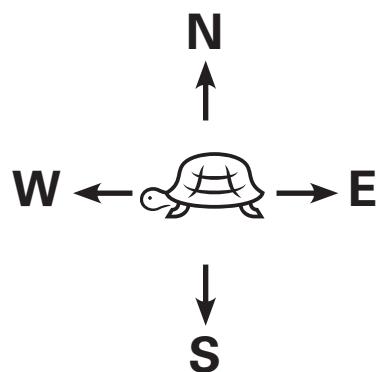
Lesson 7 Exit Ticket

Part 1: Model each situation with an **open number line**. Then write an addition or subtraction equation and solve.

Carter puts a satellite tag on a turtle so he can track her movements.

The turtle swims east of the boat, and then hides on a rock to rest.

From the rock, the turtle swims 199 meters west in a straight line before diving down at a point 164 meters west of the boat. How far is the boat from the rock where the turtle rested?



1. Draw a number line to model the problem.

2. **Equation:** _____

3. The boat is _____ meters from the rock.

Part 2: Model the situation with an **open number line** and an equation and choose a tool or strategy to help you solve.

Carter owes his team member Ricardo \$5. Then Ricardo buys Carter notebooks to record information about the turtles they are tagging. Now Carter owes Ricardo \$13. How much did the notebooks cost?

4. Circle the information that is missing from the problem.

starting point

ending point

change

5. Use a number line to draw a model of the problem.

6. Write an addition or subtraction equation that represents the problem. _____

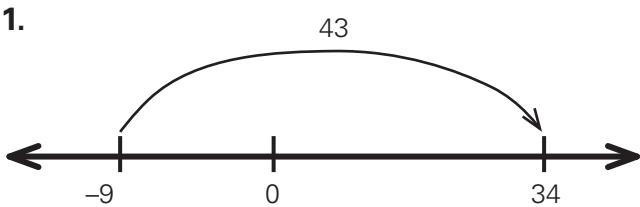
7. Which strategy or tool will you use to solve? Explain why you chose this strategy.

8. How much did the notebooks cost? _____

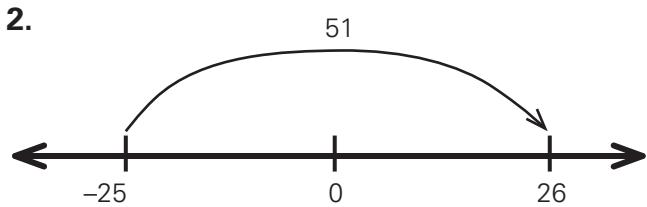
Extra Practice: Stories

Write a real-world problem that can be solved using the number line.

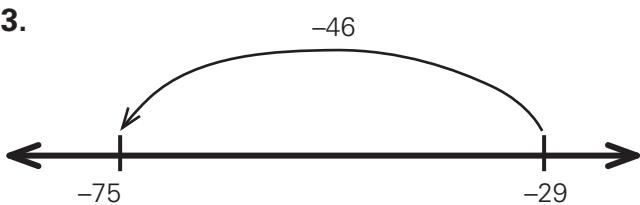
1.



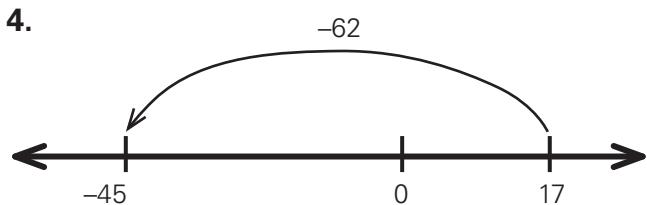
2.



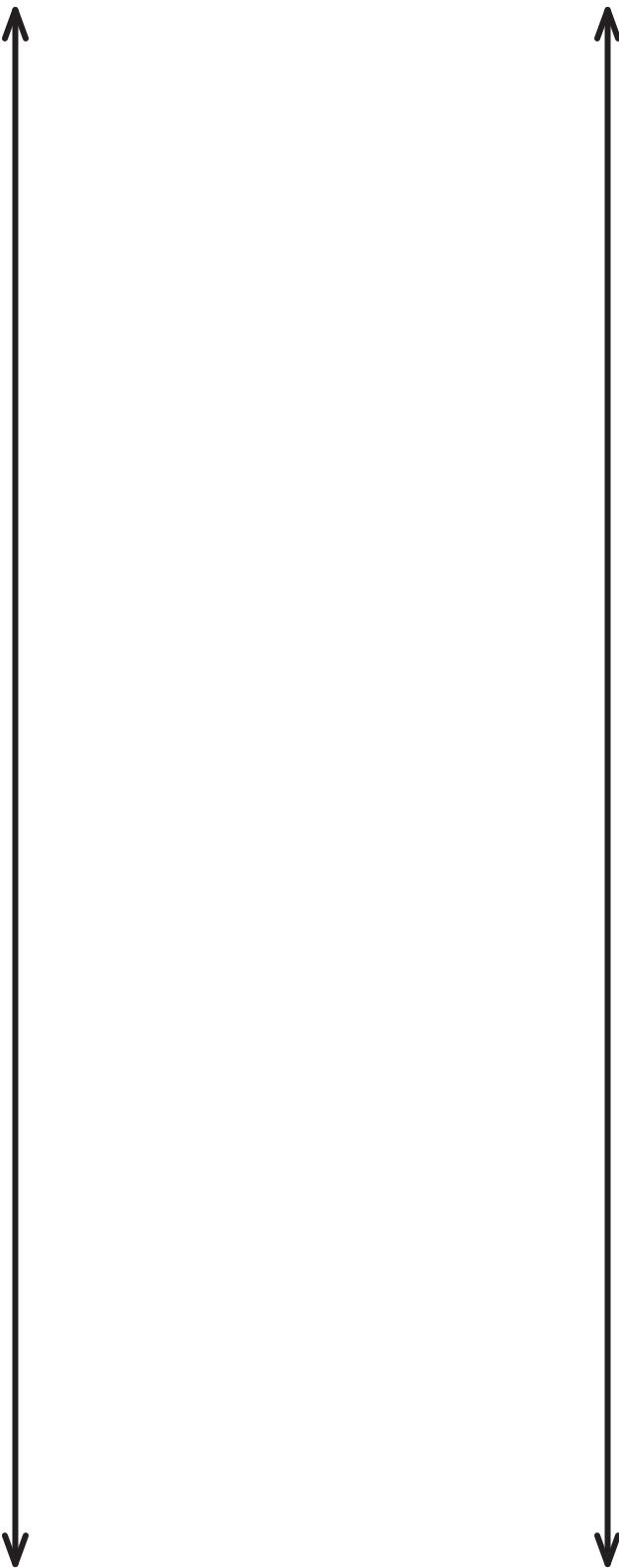
3.



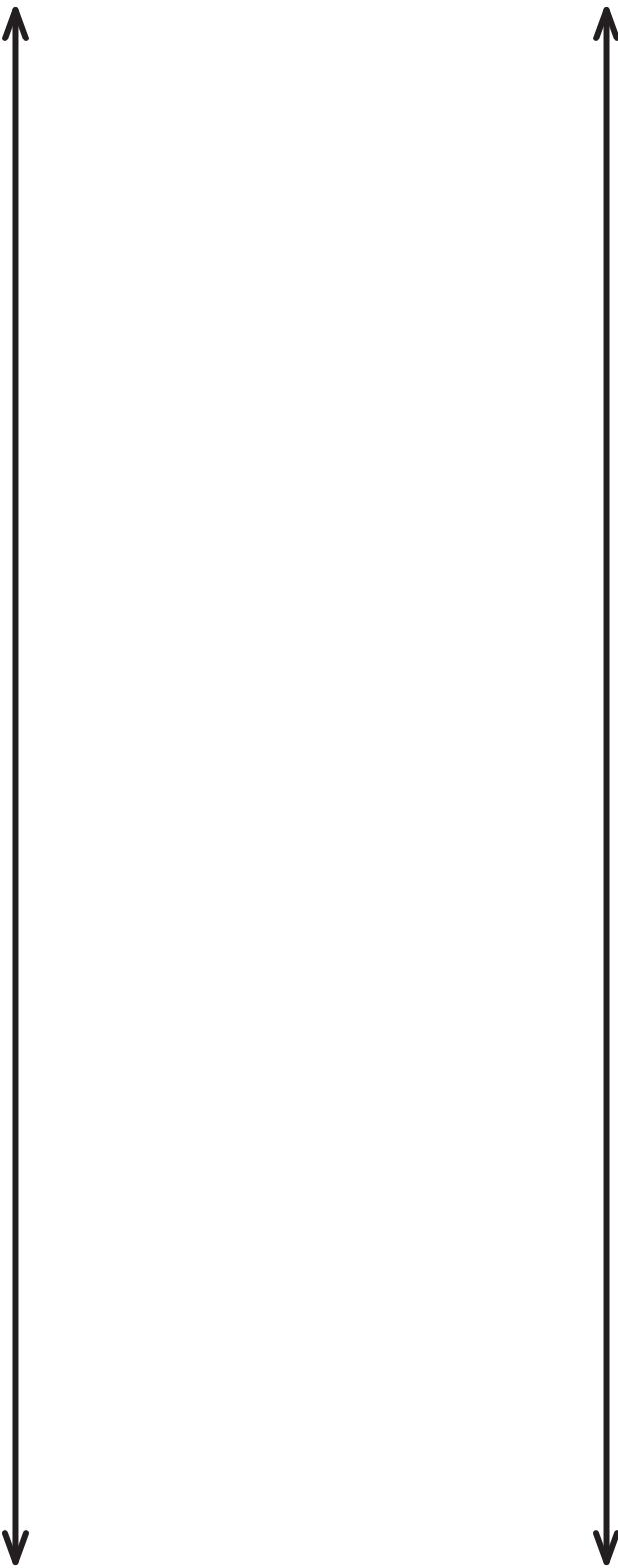
4.



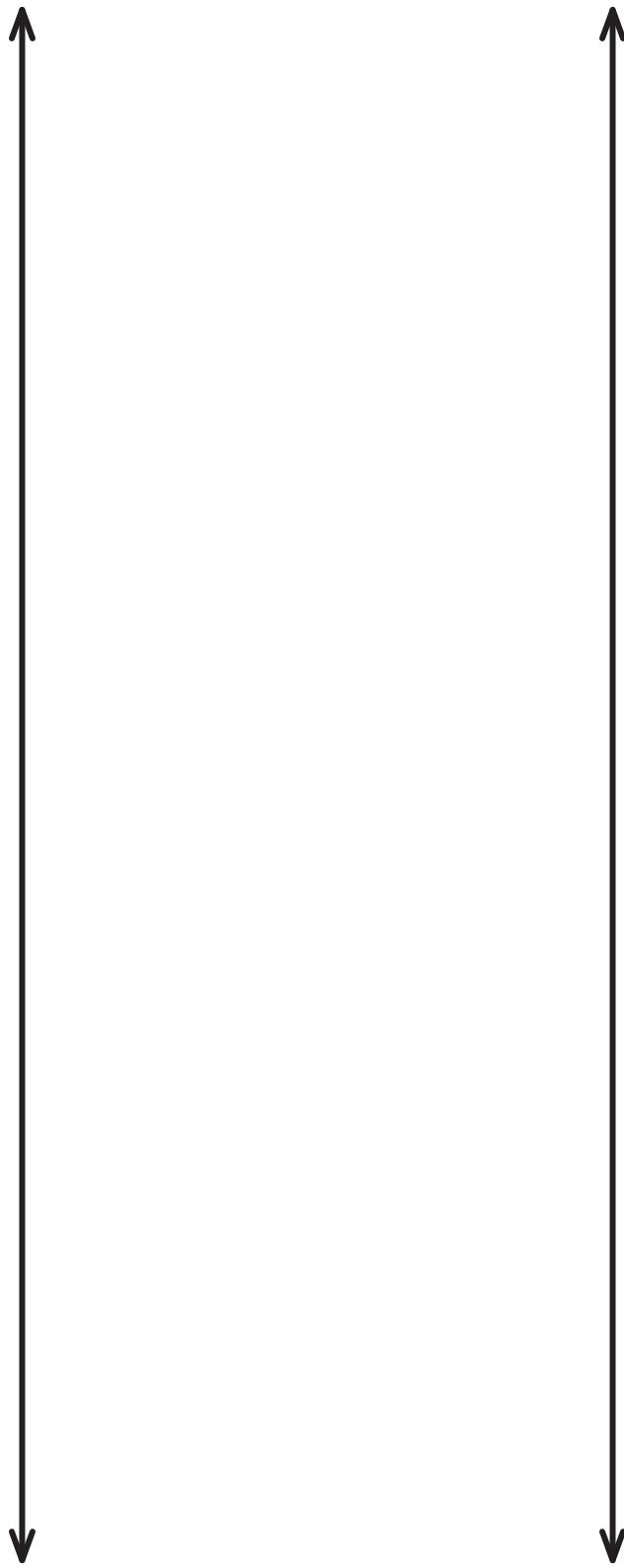
Vertical Open Number Lines



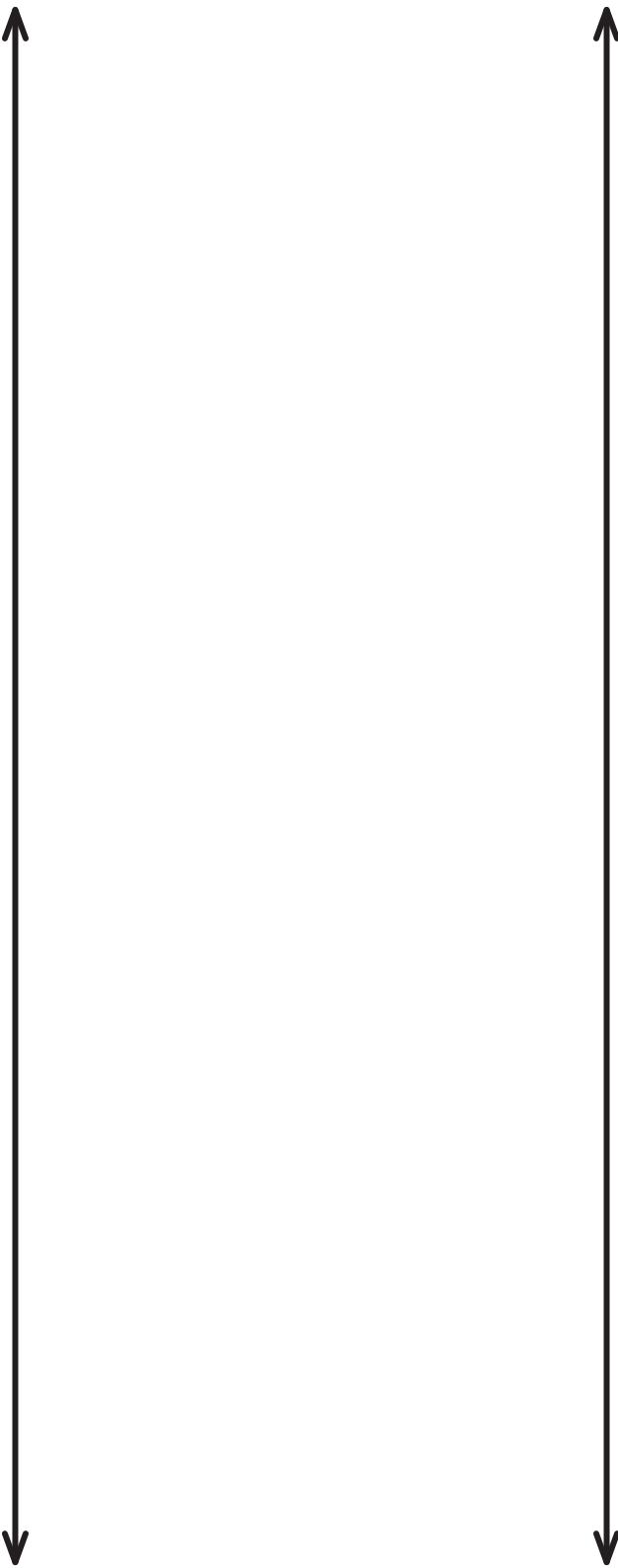
Vertical Open Number Lines



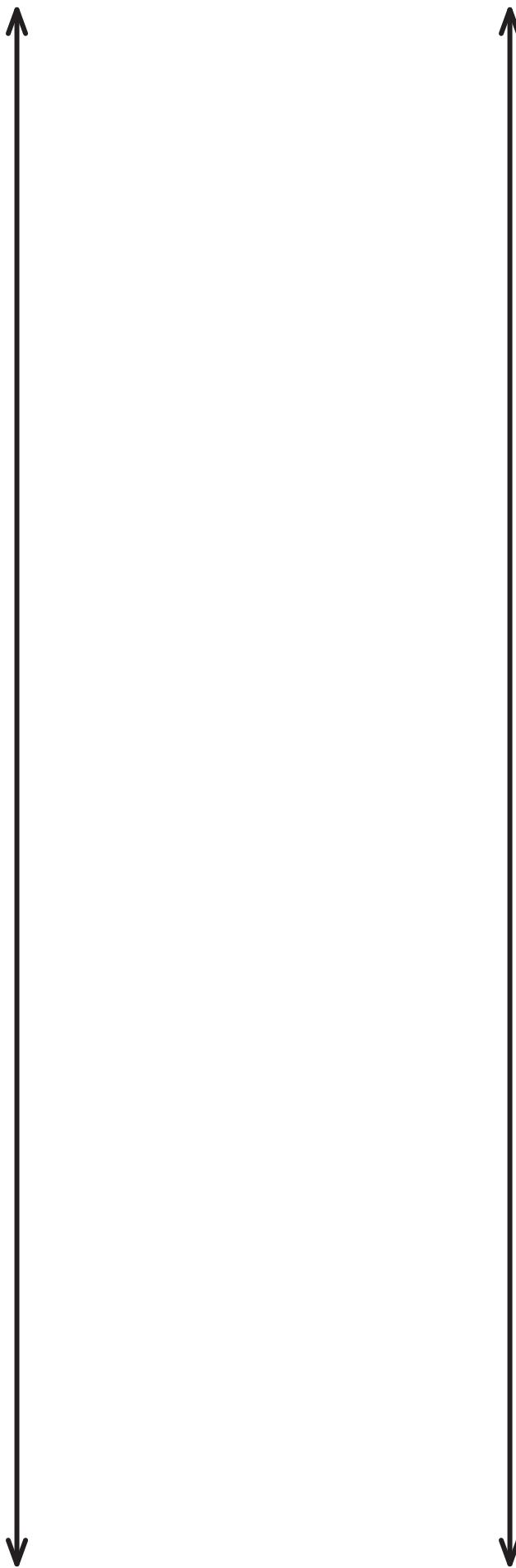
Vertical Open Number Lines



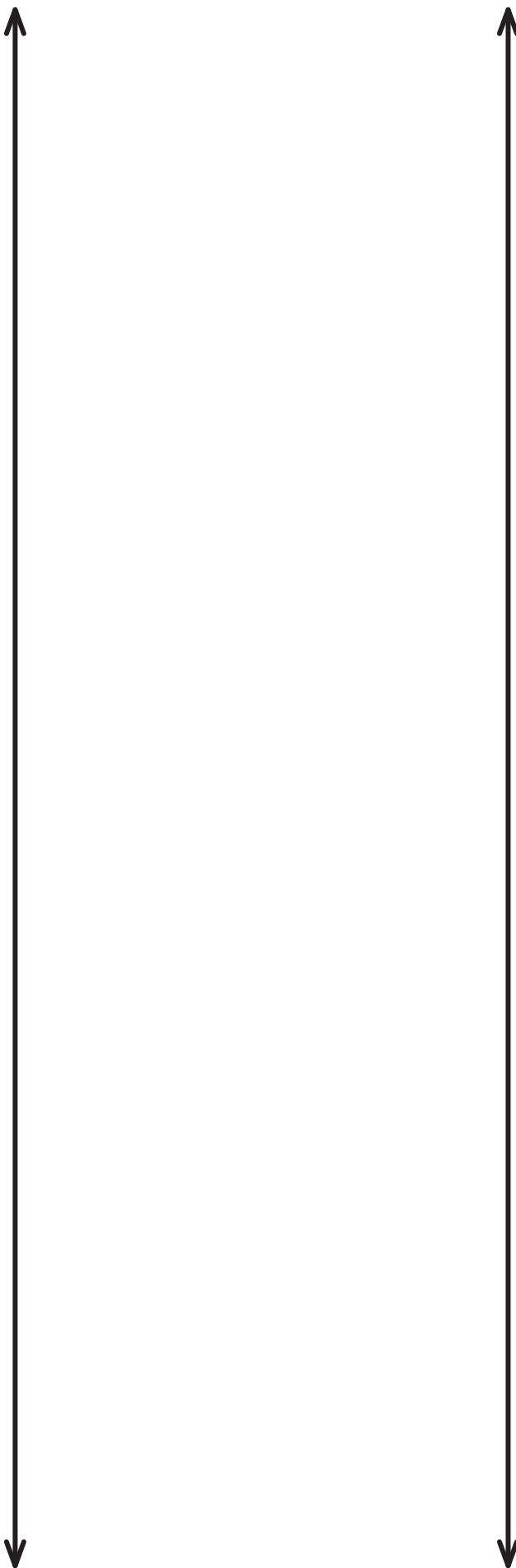
Vertical Open Number Lines



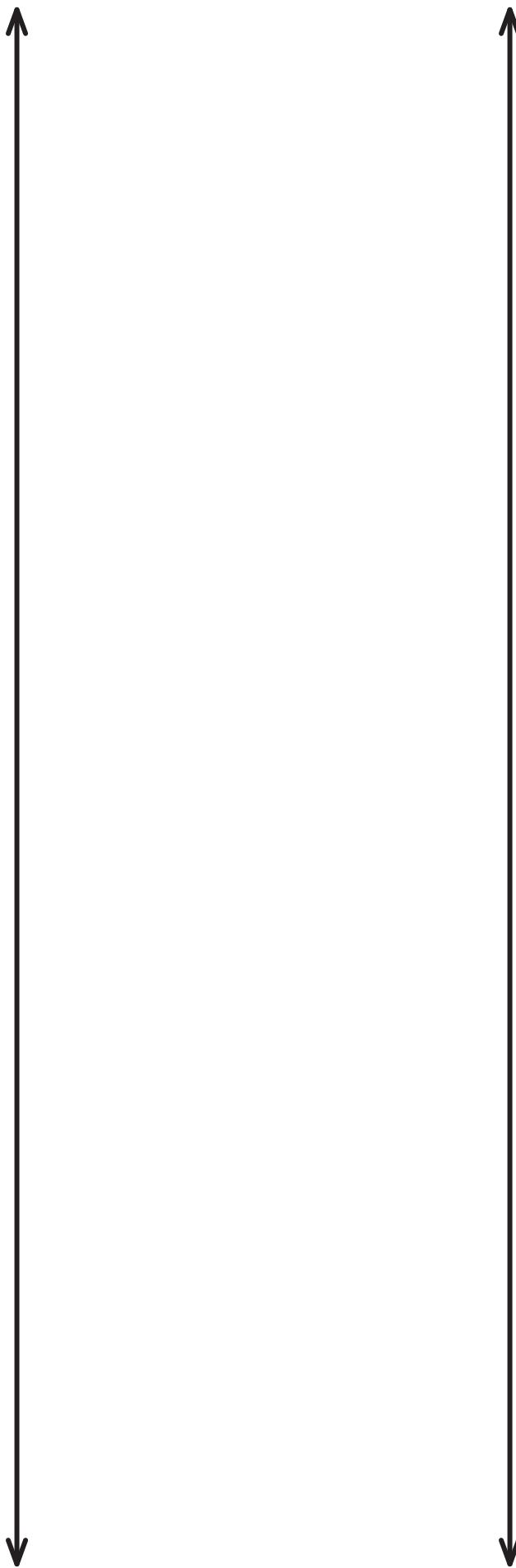
Open Number Lines



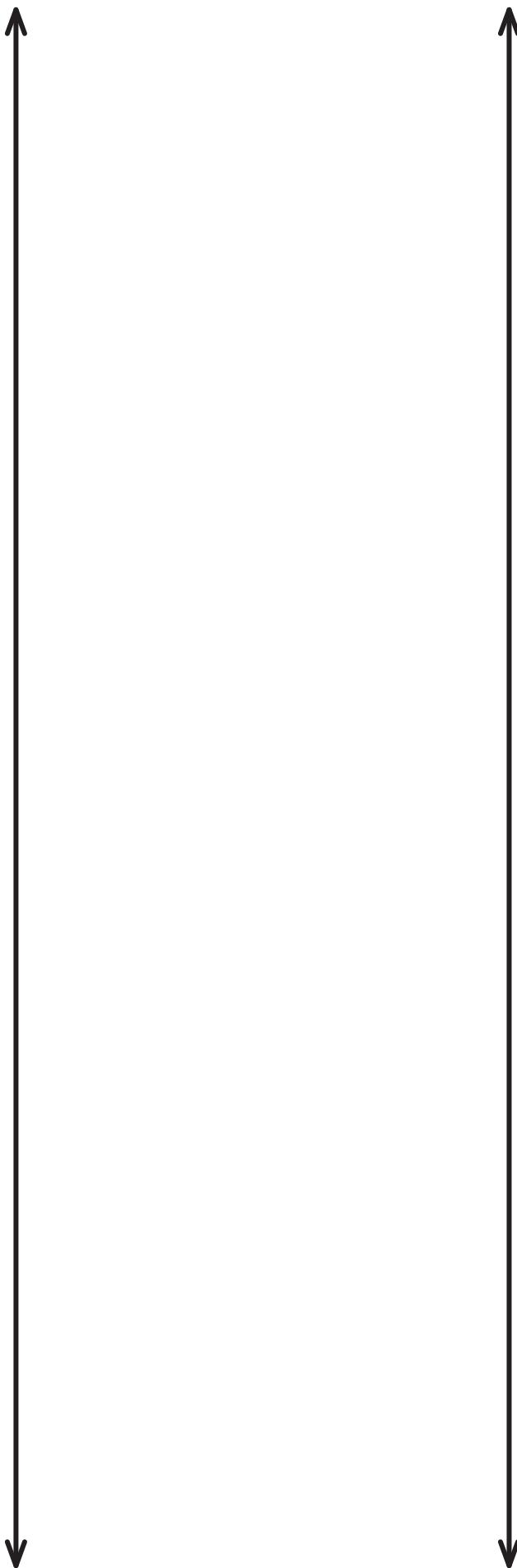
Open Number Lines



Open Number Lines



Open Number Lines







Integer Cards



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

Earn Cards

Earn \$8
mowing the lawn

Earn \$30
raking leaves

Earn \$25
babysitting

Earn \$25
selling clothes

Earn \$15
tutoring

Earn \$12
delivering flowers

Earn \$10
doing chores

Earn \$5
for returning a lost wallet

Spend Cards

Spend \$6
at the store

Spend \$20
at the store

Spend \$5
at the arcade

Spend \$9
for an app

Spend \$18
for lunch

Spend \$11
for breakfast

Spend \$13
on a movie

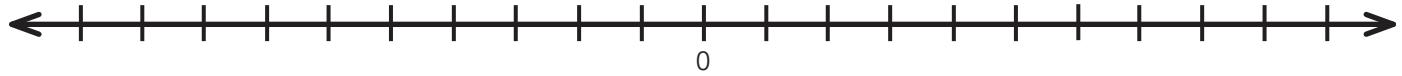
Spend \$22
for dinner

Assessment

Unit 1 Assessment

1. Use the number line to find the sum.

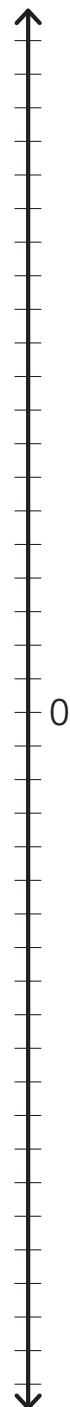
$$-8 + 3 = \underline{\hspace{2cm}}$$



2. Keke throws a diving ring into the pool from 3 feet above the surface of the water. From where she throws it, the ring falls 11 feet to land at the bottom of the pool. Write an addition equation to model the problem, and then use the number line to solve.

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

What integer represents where the ring landed, relative to the surface of the pool?



3. Joelle is playing a game. In her first turn, she loses 5 points. In her second turn, she earns 7 points. What is the sum of Joelle's points? Use integer addition rules to find the sum and write an equation. Then explain how you used the rules to find the sum.

4. Find the sum using integer addition rules. Then explain how you found it.

$$-10 + (-26) = \underline{\hspace{2cm}}$$

5. Last week, the water level in Omar's swimming pool was 4 inches below the top edge of the pool. This week, the water level went down another 5 inches. How far below the top edge of the pool is the water level now? Write a subtraction equation, and then use the keep-change-change rule to solve.

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

- 6.** Use integer subtraction rules to solve. Then explain how you used the rules to find the difference.

$$-15 - (-9) = \underline{\hspace{2cm}}$$

- 7.** Use absolute value to find the distance between 16 and -9 . Show your work.

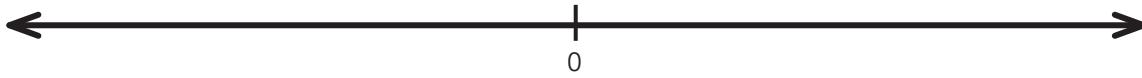
The distance between 16 and -9 is $\underline{\hspace{2cm}}$.

- 8.** Breonna is 18 feet to the left of the lemonade stand. Ariel is 20 feet to the right of the lemonade stand. How far apart are the two friends? Write an equation using absolute value to solve.

The friends are $\underline{\hspace{2cm}}$ feet apart.

- 9.** Use a number line to model the problem. Then write an addition or subtraction equation and solve.

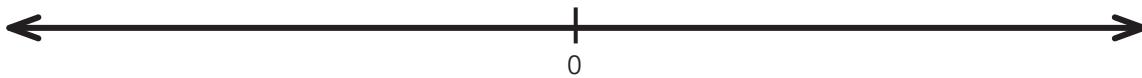
Mei has a coupon that will save her \$12 on a new rug if she orders online. For her online order, there is a shipping fee of \$7. After shipping, how much will Mei's coupon save her?



Equation: _____ Mei's coupon will save her \$ _____.

- 10.** Use a number line to model the problem. Then write an addition or subtraction equation and solve.

A diving bird catches a fish 2 meters below the water. Then it flies up to a branch that is 20 meters above the water. How far does the bird travel vertically to reach the branch?



Equation: _____ The bird travels _____ meters.



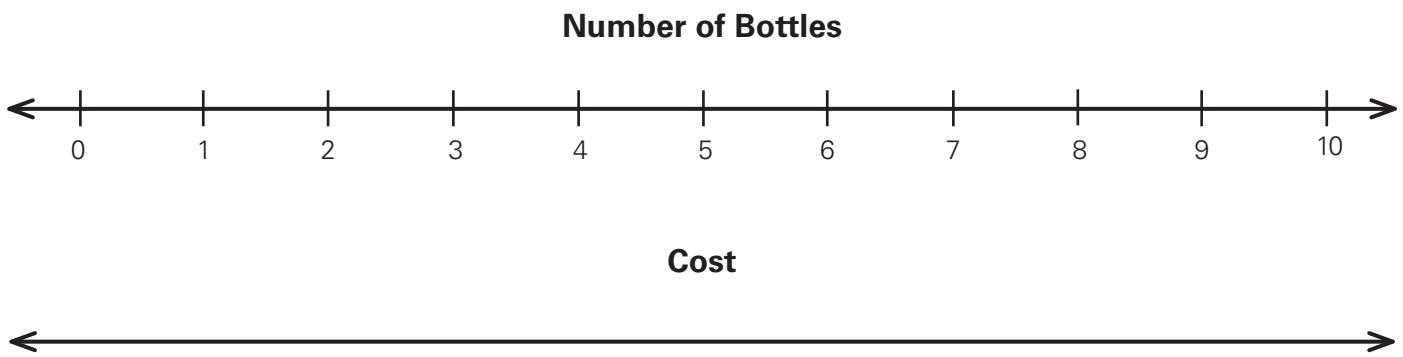
Unit 1 Cumulative Review

- Divide using the standard algorithm.

$$6 \overline{)479.34}$$

- Thea is buying bottles of apple juice. The table shows the costs for different numbers of bottles. Complete the table. Use the double number line to show your work.

Number of Bottles	Cost
1	
2	\$8
5	
	\$36



- 3.** Keir buys a bag of gumballs. The label says there are more than 35 gumballs in the bag. Circle each possible number of gumballs that could be in Keir's bag. Then write an inequality that describes the quantity of gumballs in a bag.

35

28

42

36

147

33

- 4.** Group like terms to write an equivalent expression.

$$3x + 6 + 1 + 2x = \underline{\hspace{2cm}}$$

- 5.** The opposite of -12 is .

- 6.** Sixth graders make up 16% of the basketball team. There are 25 students on the basketball team. How many sixth graders are on the basketball team?

There are sixth graders on the basketball team.

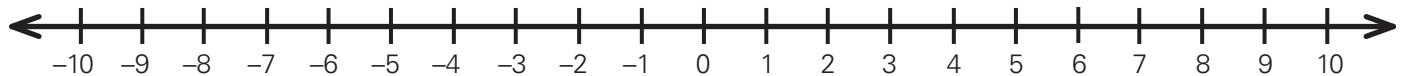
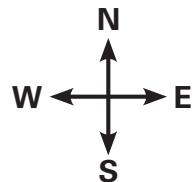
- 7.** Monique buys 5 books. Each book costs b dollars. She spends a total of \$32.50 on the books. How much does Monique spend on each book? Write an equation using the variable b to represent the situation. Then solve for the variable.

Equation: _____

Monique spends _____ on each book.

- 8.** Lin walks from his house 6 blocks east to mail a letter at the post office. Then, Lin walks 9 blocks west to the mall. How far is the mall from Lin's house? Write an equation and solve.

Equation: _____



The mall is _____ of Lin's house.

- 9.** Divide. Show your work.

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

- 10.** Nina has a dog walking business. The table shows how much Nina makes based on the number of dogs she walks each day. How much does Nina earn for each dog she walks?

Number of Dogs Walked (x)	Dollars Earned (y)
3	\$15
6	\$30
9	\$45

Nina earns \$_____ for each dog she walks.

What equation models the amount Nina earns for any number of dogs?

$$y = \underline{\hspace{2cm}}$$

- 11.** Kamal and Diego both rode their bikes at the park on Monday. Kamal rides his bike at the park every 3 days. Diego rides his bike at the park every 4 days. How many days will it be before Kamal and Diego are riding their bikes at the park together again? Show your work.

It will be _____ days until Kamal and Diego ride their bikes at the park together again.

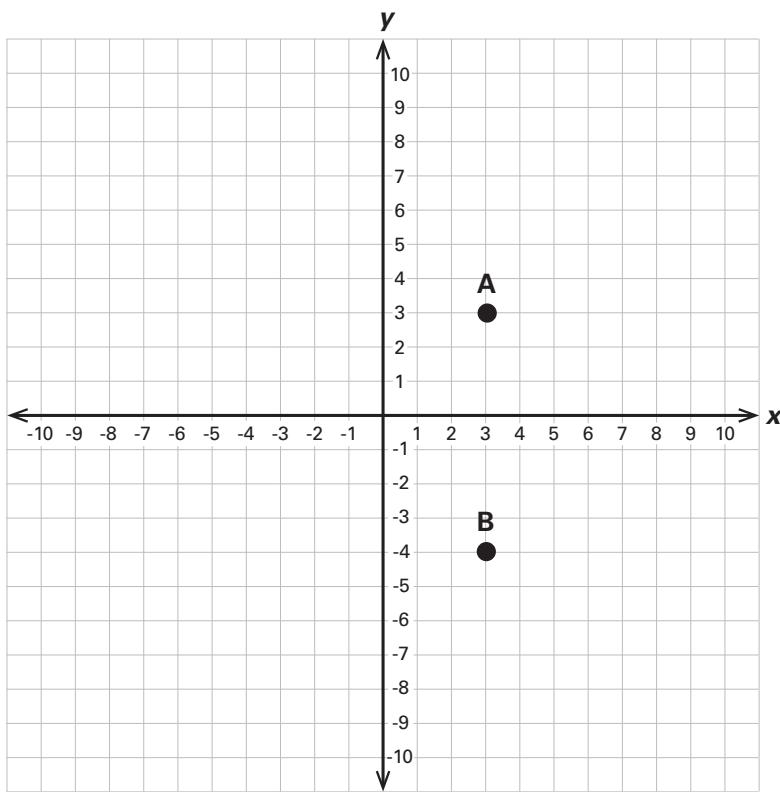
- 12.** Mr. Sanderson can drive his car 240 miles in 4 hours. How many miles can Mr. Sanderson drive in 7 hours?

Mr. Sanderson can drive _____ miles in 7 hours.

- 13.** Write the expression in standard form.

$$6^3 = \underline{\hspace{2cm}}$$

14. What is the distance between Point A and Point B?



The distance between Point A and Point B is _____ units.

15. Angelo went hiking last weekend. From the trailhead he hiked down 75 feet to a waterfall. Then, he hiked down another 28 feet to explore a cave. How far down did Angelo hike? Write an equation and solve.

Angelo hiked _____ feet down.

