



**ESSENTIAL QUESTION**

How do you identify an integer and its opposite?

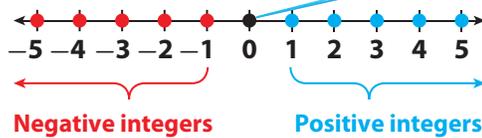
**EXPLORE ACTIVITY 1**



## Positive and Negative Numbers

**Positive numbers** are numbers greater than 0. Positive numbers can be written with or without a plus sign; for example, 3 is the same as +3. **Negative numbers** are numbers less than 0. Negative numbers must always be written with a negative sign.

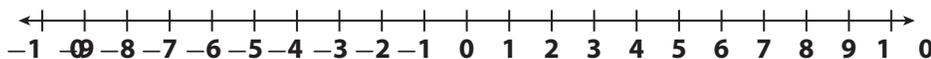
The number 0 is neither positive nor negative.



The elevation of a location describes its height above or below sea level, which has elevation 0. Elevations below sea level are represented by negative numbers, and elevations above sea level are represented by positive numbers.

- A** The table shows the elevations of several locations in a state park. Graph the locations on the number line according to their elevations.

Location	Little Butte A	Cradle Creek B	Dinosaur Valley C	Mesa Ridge D	Juniper Trail E
Elevation (ft)	5	-5	-9	8	-3



- B** What point on the number line represents sea level? \_\_\_\_\_
- C** Which location is closest to sea level? How do you know?  
\_\_\_\_\_
- D** Which two locations are the same distance from sea level? Are these locations above or below sea level?  
\_\_\_\_\_
- E** Which location has the least elevation? How do you know?  
\_\_\_\_\_



## EXPLORE ACTIVITY 1 (cont'd)

### Reflect

1. **Analyze Relationships** Morning Glory Stream is 7 feet below sea level. What number represents the elevation of Morning Glory Stream?

\_\_\_\_\_

2. **Multiple Representations** Explain how to graph the elevation of Morning Glory Stream on a number line.

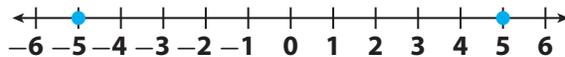
\_\_\_\_\_

## EXPLORE ACTIVITY 2



### Opposites

Two numbers are **opposites** if, on a number line, they are the same distance from 0 but on different sides of 0. For example, 5 and  $-5$  are opposites. 0 is its own opposite.



**Integers** are the set of all whole numbers and their opposites.

Remember, the set of whole numbers is 0, 1, 2, 3, 4, 5, 6, ...

**On graph paper, use a ruler or straightedge to draw a number line. Label the number line with each integer from  $-10$  to  $10$ . Fold your number line in half so that the crease goes through 0. Numbers that line up after folding the number line are opposites.**

- A Use your number line to find the opposites of 7,  $-6$ , 1, and 9. \_\_\_\_\_
- B How does your number line show that 0 is its own opposite?  
\_\_\_\_\_
- C What is the opposite of the opposite of 3? \_\_\_\_\_

### Reflect

3. **Justify Reasoning** Explain how your number line shows that 8 and  $-8$  are opposites.  
\_\_\_\_\_
4. **Multiple Representations** Explain how to use your number line to find the opposite of the opposite of  $-6$ .  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Integers and Opposites on a Number Line

Positive and negative numbers can be used to represent real-world quantities. For example, 3 can represent a temperature that is 3°F above 0. -3 can represent a temperature that is 3°F below 0. Both 3 and -3 are 3 units from 0.



## EXAMPLE 1



TEKS 6.2.B

Sandy kept track of the weekly low temperature in her town for several weeks. The table shows the low temperature in °F for each week.

Week	Week 1	Week 2	Week 3	Week 4
Temperature (°F)	-1	3	-4	2

- A** Graph the temperature from Week 3 and its opposite on a number line. What do the numbers represent?

**STEP 1** Graph the value from Week 3 on the number line.

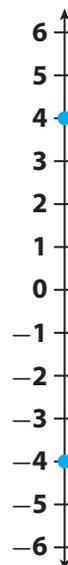
The value from Week 3 is -4.  
Graph a point 4 units below 0.

**STEP 2** Graph the opposite of -4.

Graph a point 4 units above 0.

The opposite of -4 is 4.

-4 represents a temperature that is 4°F below 0 and 4 represents a temperature that is 4°F above 0.



- B** The value for Week 5 is the opposite of the opposite of the value from Week 1. What was the low temperature in Week 5?

**STEP 1** Graph the value from Week 1 on the number line.

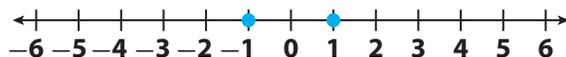
The value from Week 1 is -1.

**STEP 2** Graph the opposite of -1.

The opposite of -1 is 1.

**STEP 3** Graph the opposite of 1.

The opposite of 1 is -1.



The opposite of the opposite of -1 is -1.

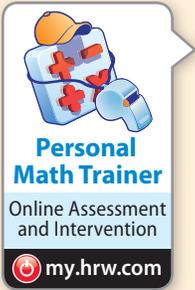
The low temperature in Week 5 was -1°F.

## Reflect

5. **Analyze Relationships** Explain how you can find the opposite of the opposite of any number without using a number line.

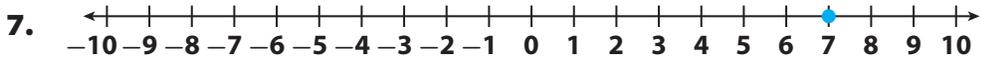
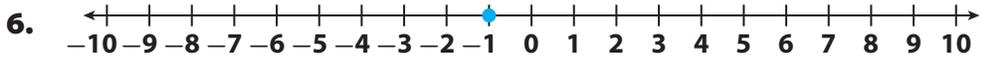
## My Notes

Use this space to take notes as you listen in class.



## YOUR TURN

Graph the opposite of the number shown on each number line.



Write the opposite of each number.

8. 10 \_\_\_\_\_      9. -5 \_\_\_\_\_      10. 0 \_\_\_\_\_

11. What is the opposite of the opposite of 6? \_\_\_\_\_

### Math Talk

Mathematical Processes

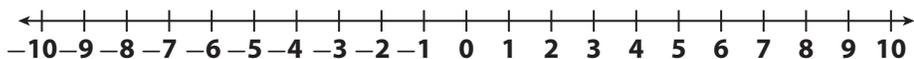
Explain how you could use a number line to find the opposite of 8.

## Guided Practice

1. Graph and label the following points on the number line.

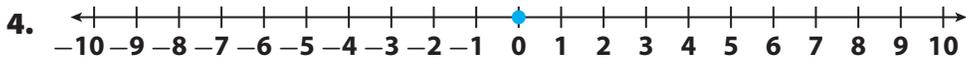
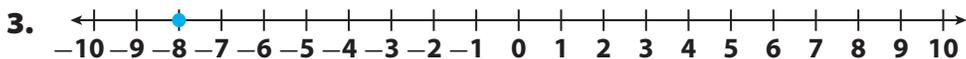
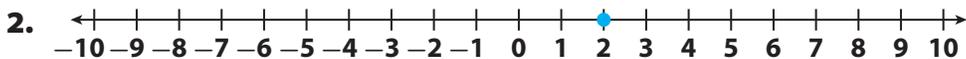
(Explore Activity 1)

- a. -2      b. 9      c. -8      d. -9      e. 5      f. 8



Graph the opposite of the number shown on each number line.

(Explore Activity 2 and Example 1)



Write the opposite of each number. (Explore Activity 2 and Example 1)

5. 4 \_\_\_\_\_      6. -11 \_\_\_\_\_      7. 3 \_\_\_\_\_

8. -3 \_\_\_\_\_      9. 0 \_\_\_\_\_      10. 22 \_\_\_\_\_



### ESSENTIAL QUESTION CHECK-IN

11. Given an integer, how do you find its opposite?

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# 1.1 Independent Practice

 **TEKS 6.2.B**



**Personal Math Trainer**  
Online Assessment and Intervention

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- 12. Chemistry** Atoms normally have an electric charge of 0. Certain conditions, such as static, can cause atoms to have a positive or a negative charge. Atoms with a positive or negative charge are called *ions*.

<b>Ion</b>	A	B	C	D	E
<b>Charge</b>	-3	+1	-2	+3	-1

- a.** Which ions have a negative charge?

\_\_\_\_\_

- b.** Which ions have charges that are opposites?

\_\_\_\_\_

- c.** Which ion's charge is not the opposite of another ion's charge?

\_\_\_\_\_

**Name the integer that meets the given description.**

- 13.** the opposite of  $-17$  \_\_\_\_\_      **14.** 4 units left of 0 \_\_\_\_\_
- 15.** the opposite of the opposite of 2 \_\_\_\_\_      **16.** 15 units right of 0 \_\_\_\_\_
- 17.** 12 units right of 0 \_\_\_\_\_      **18.** the opposite of  $-19$  \_\_\_\_\_

- 19. Analyze Relationships** Several wrestlers are trying to lose weight for a competition. Their change in weight since last week is shown in the chart.

<b>Wrestler</b>	Tino	Victor	Ramsey	Baxter	Luis
<b>Weight Change (in pounds)</b>	-2	6	2	5	-5

- a.** Did Victor lose or gain weight since last week? \_\_\_\_\_
- b.** Which wrestler's weight change is the opposite of Ramsey's? \_\_\_\_\_
- c.** Which wrestlers have lost weight since last week? \_\_\_\_\_
- d.** Frankie's weight change since last week was the opposite of Victor's.  
What was Frankie's weight change? \_\_\_\_\_
- e.** Frankie's goal last week was to gain weight. Did he meet his goal? Explain.  
\_\_\_\_\_

Find the distance between the given number and its opposite on a number line.

20. 6 \_\_\_\_\_

21.  $-2$  \_\_\_\_\_

22. 0 \_\_\_\_\_

23.  $-7$  \_\_\_\_\_

24. **What If?** Three contestants are competing on a trivia game show. The table shows their scores before the final question.

Contestant	Score Before Final Question
Timothy	$-25$
Shawna	18
Kaylynn	$-14$

- a. How many points must Shawna earn for her score to be the opposite of Timothy's score before the final question? \_\_\_\_\_
- b. Which person's score is closest to 0? \_\_\_\_\_
- c. Who do you think is winning the game before the final question? Explain.  
\_\_\_\_\_

**H.O.T.** FOCUS ON HIGHER ORDER THINKING

25. **Communicate Mathematical Ideas** Which number is farther from 0 on a number line:  $-9$  or  $6$ ? Explain your reasoning.

\_\_\_\_\_  
\_\_\_\_\_

26. **Analyze Relationships** A number is  $k$  units to the left of 0 on the number line. Describe the location of its opposite.

\_\_\_\_\_

27. **Critique Reasoning** Roberto says that the opposite of a certain integer is  $-5$ . Cindy concludes that the opposite of an integer is always negative. Explain Cindy's error.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

28. **Multiple Representations** Explain how to use a number line to find the opposites of the integers 3 units away from  $-7$ .

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Work Area

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