

Guided Practice



1. What is the opposite of 0? (Example 1)

0



2. What is the opposite of the opposite of 6? (Example 2)

6

Evaluate each expression. (Examples 3–5)


3. $|-5| = 5$

4. $|20| - |-3| = 17$

5. $|-16| + |-12| = 28$

6. A game show contestant lost 15 points. He answered another question incorrectly and lost another 15 points. How many total points has he lost? (Example 6)

30 points

7.  **Building on the Essential Question** How can absolute value help you to understand the size of a quantity? Give an example. **Sample answer: Absolute value describes the distance of an integer from zero. If an account balance is -30 dollars, the absolute value 30 describes the size of the debt.**

Rate Yourself!

How well do you understand opposites and absolute value? Circle the image that applies.



Clear



Somewhat Clear



Not So Clear

For more help, go online to access a Personal Tutor.



Independent Practice

Go online for Step-by-Step Solutions



Find the opposite of each integer. (Example 1)

1. 6 -6

2. -3 3

3. 0 0



Find the opposite of the opposite of each integer. (Example 2)

4. 12 12

5. -9 -9

6. -17 -17

Evaluate each expression. (Examples 3-5)

7. $|-14| =$ 14

8. $|31| - |-1| =$ 30

9. $|-15| + |-6| =$ 21

10. Jayson spent \$18 on a shirt. Then he spent \$24 on a pair of pants. What is the total amount he spent? (Example 6) \$42

11. Lilly saw a jelly fish at 6 feet below sea level. She saw a bright blue fish at 10 feet below sea level. What is the distance between the blue fish and the jelly fish? (Example 6) 4 feet

12. **STEM** The table shows the melting points of various elements. Is the absolute value of the melting point of neon greater than or less than the absolute value of the melting point of hydrogen? less than

Element	Melting Point ($^{\circ}\text{C}$)
Hydrogen	-259
Neon	-248
Oxygen	-218

13. **STEM** The surface of Jupiter is made of colorful clouds created by various chemicals in the atmosphere. The temperature at the top of the clouds is -230°F . The temperature below the clouds is 70°F . Which temperature has the lower absolute value? 70°F

CCSS Reason Abstractly Evaluate each expression.

14. $-|3| =$ -3

15. $|5 + 9| =$ 14

16. $|17 - 8| =$ 9

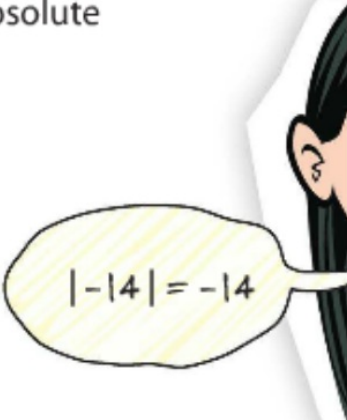


H.O.T. Problems Higher Order Thinking

17. **CCSS Find the Error** Mei is evaluating an expression using absolute value. Find her mistake and correct it.

Absolute value cannot be a negative number.

So, the absolute value of -14 is 14 , not -14 .



$|-14| = -14$

18. **CCSS Which One Doesn't Belong?** Identify the phrase that *cannot* be described by the same absolute value as the other three. Explain your reasoning.

a loss of
8 pounds

8 miles above
sea level

giving
away \$8

18° below
normal

18° below normal; the others have an absolute value of 8.

- CCSS Persevere with Problems** Determine whether each statement is *always*, *sometimes*, or *never* true. Explain.

19. The absolute value of a positive integer is a negative integer.

Never; distance cannot be negative.


always, sometimes, or never true. Explain.


19. The absolute value of a positive integer is a negative integer.

Never; distance cannot be negative.


20. If a and b are integers and $a > b$, then $|a| > |b|$.

Sometimes; if a is 4 and b is -6 , then $|4| < |-6|$.

21.  **Reason Abstractly** Explain why the absolute value of a number is never negative. **Absolute value is distance and distance cannot be negative.**

22.  **Reason Abstractly** Explain why an account balance less than -40 dollars represents a debt greater than 40 dollars.

Sample answer: Absolute value can be used to represent the amount of debt, but the value of the number is based on its position on the number line. So, an account balance less than -40 dollars, such as -50 dollars, has a greater absolute value, but a smaller value.

23.  **Reason Inductively** Is $-n$ always, sometimes, or never a positive number? Explain your reasoning. **sometimes; Sample answer: If n is positive, then $-n$ is negative. If n is negative, then $-n$ is positive.**