

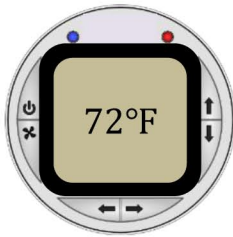
Name _____

Date _____

The Opposite of a Number

In a recent survey, a magazine reported that the preferred room temperature in the summer is 68°F . A wall thermostat, like the ones shown below, tells a room's temperature in degrees Fahrenheit.

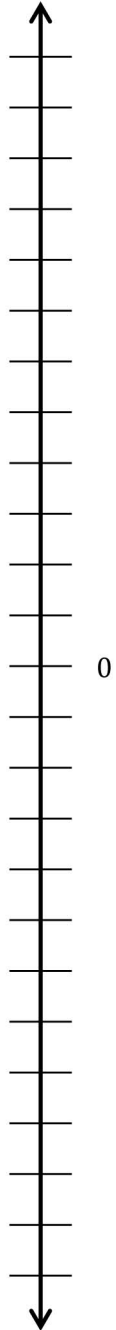
Sarah's Upstairs Bedroom



Downstairs Bedroom



- Which bedroom is warmer than the recommended room temperature?
- Which bedroom is cooler than the recommended room temperature?
- Sarah notices that her room's temperature is 4°F above the recommended temperature and the downstairs bedroom's temperature is 4°F below the recommended temperature. She graphs 72 and 64 on a vertical number line and determines they are opposites. Is Sarah correct? Explain.
- After determining the relationship between the temperatures, Sarah now decides to represent 72°F as 4 and 64°F as -4 and graphs them on a vertical number line. Graph 4 and -4 on the vertical number line on the right. Explain what zero represents in this situation.

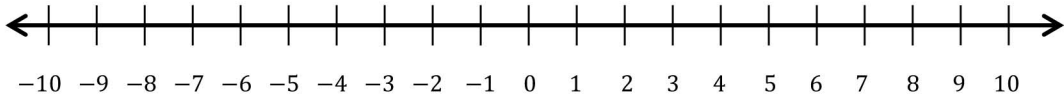


1. Find the opposite of each number and describe its location on the number line.

- a. -5
- b. 10
- c. -3
- d. 15

2. Write the opposite of each number and label the points on the number line.

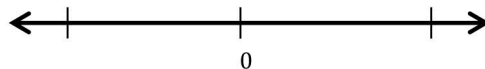
- a. Point A: The opposite of 9.
- b. Point B: The opposite of -4 .
- c. Point C: The opposite of -7 .
- d. Point D: The opposite of 0.
- e. Point E: The opposite of 2.



3. Study the first example. Write the integer that represents the opposite of each real-world situation. In words, write the meaning of the opposite.

- a. An atom's positive charge of 7
- b. A deposit of \$25
- c. 3,500 feet below sea level
- d. A rise of 45°C
- e. A loss of 13 pounds

4. On a number line, locate and label a credit of \$38 and a debit for the same amount from a bank account. What does zero represent in this situation?



5. On a number line, locate and label 40°C below zero and 40°C above zero. What does zero represent in this situation?



In a recent survey, a magazine reported that the preferred room temperature in the summer is 68°F . A wall thermostat, like the ones shown below, tells a room's temperature in degrees Fahrenheit.

Sarah's Upstairs Bedroom



Downstairs Bedroom



- a. Which bedroom is warmer than the recommended room temperature?

The upstairs bedroom is warmer than the recommended room temperature.

- b. Which bedroom is cooler than the recommended room temperature?

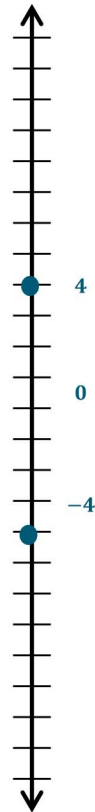
The downstairs bedroom is cooler than the recommended room temperature.

- c. Sarah notices that her room's temperature is 4°F above the recommended temperature and the downstairs bedroom's temperature is 4°F below the recommended temperature. She graphs 72 and 64 on a vertical number line and determines they are opposites. Is Sarah correct? Explain.

No, both temperatures are positive numbers and not the same distance from 0, so they cannot be opposites. Both numbers have to be the same distance from zero, but one has to be above zero and the other has to be below zero in order to be opposites.

- d. After determining the relationship between the temperatures, Sarah now decides to represent 72°F as 4 and 64°F as -4 and graphs them on a vertical number line. Graph 4 and -4 on the vertical number line on the right. Explain what zero represents in this situation.

Zero represents the recommended room temperature of 68°F . Zero could also represent not being above or below the recommended temperature.



1. Find the opposite of each number and describe its location on the number line.

- a. -5

The opposite of -5 is 5, which is 5 units to the right of (or above) 0.

- b. 10

The opposite of 10 is -10 , which is 10 units to the left of (or below) 0.

- c. -3

The opposite of -3 is 3, which is 3 units to the right of (or above) 0.

d. 15

The opposite of 15 is -15 , which is 15 units to the left of (or below) 0.

2. Write the opposite of each number and label the points on the number line.

a. Point A: The opposite of 9.

-9

b. Point B: The opposite of -4 .

4

c. Point C: The opposite of -7 .

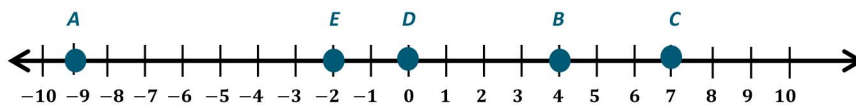
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d. Point D: The opposite of 0.

0

e. Point E: The opposite of 2.

-2



3. Study the first example. Write the integer that represents the opposite of each real-world situation. In words, write the meaning of the opposite.

a. An atom's positive charge of 7 -7 , an atom's negative charge of 7

b. A deposit of \$25 -25 , a withdrawal of \$25

c. 3,500 feet below sea level 3,500, 3,500 feet above sea level

d. A rise of 45°C -45 , a decrease of 45°C

e. A loss of 13 pounds 13, a gain of 13 pounds

4. On a number line, locate and label a credit of \$38 and a debit for the same amount from a bank account. What does zero represent in this situation?

Zero represents no change in the balance.



5. On a number line, locate and label 40°C below zero and 40°C above zero. What does zero represent in this situation?

Zero represents 0°C .

