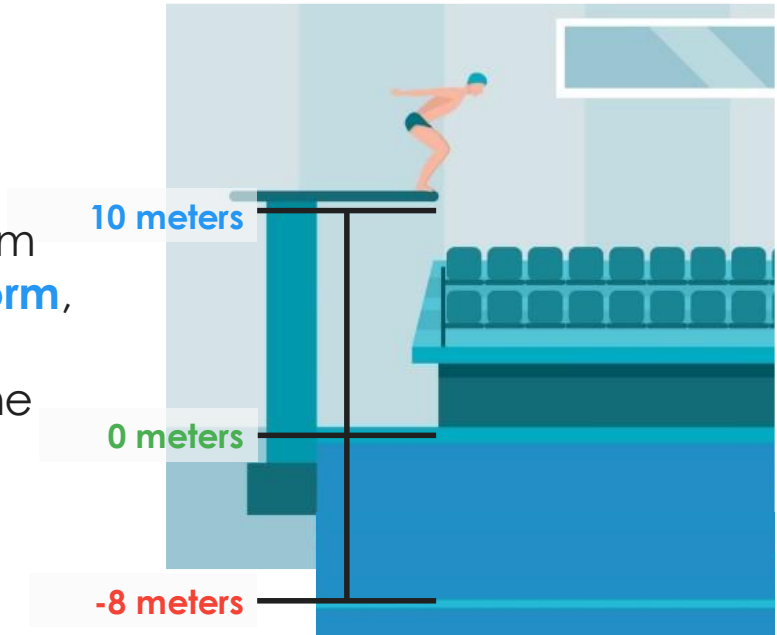


A **quantity** is a measured amount.

A **quantity** can be measured with either **positive** or **negative** numbers.

► **Positive** or **negative** numbers are determined by comparing them to **zero**.

Juan is practicing diving. He dives from the **10-meter platform**, and sinks to about **8 meters deep** in the pool.



CFU

Which can be represented using a **positive number**? Explain.

- A** Mt. George is 1200 feet (366 meters) above sea level.
- B** A large fish was seen about 10 feet (3 meters) below sea level.
- C** A boat floating on the sea.

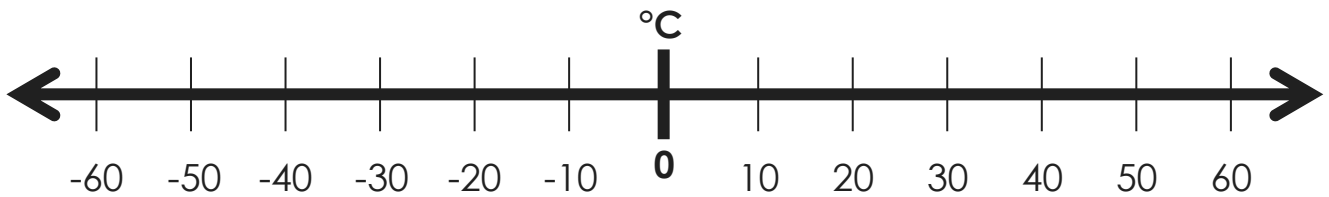
Which can be represented using a **negative number**? Explain.

- A** Mt. George is 1200 feet (366 meters) above sea level.
- B** A large fish was seen about 10 feet (3 meters) below sea level.
- C** A boat floating on the sea.

In your own words, what are positive and negative numbers?

- 1 Read the problem.
- 2 Identify the quantities. (underline)
- 3 Represent the quantities. (plot)
- 4 Interpret the quantities. (answer questions orally)

1. Last summer, the high temperature was 40 degrees Celsius.
Today, the low temperature is 10 degrees below zero.

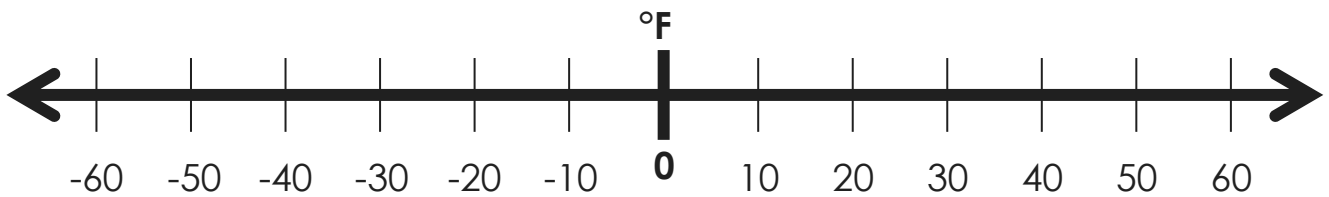


Zero represents _____ .

40 degrees Celsius is _____ because it's _____ 0.
positive/negative greater than/less than

-10 degrees is _____ because it's _____ 0.
positive/negative greater than/less than

2. Today's high temperature will be 35 degrees Fahrenheit.
At night, the temperature is expected to drop to 15 degrees below zero.



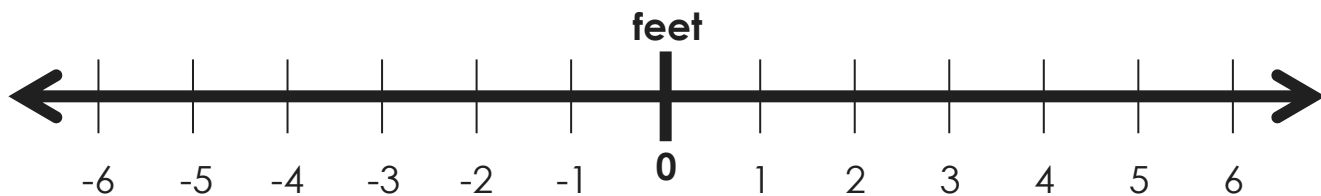
Zero represents _____ .

35 degrees Fahrenheit is _____ because it's _____ 0.
positive/negative greater than/less than

-15 degrees is _____ because it's _____ 0.
positive/negative greater than/less than

- 1 Read the problem.
- 2 Identify the quantities. (underline)
- 3 Represent the quantities. (plot)
- 4 Interpret the quantities. (answer questions orally)

3. New Orleans is 3 feet (1 meter) below sea level.
Miami is about 6 feet (2 meters) above sea level.

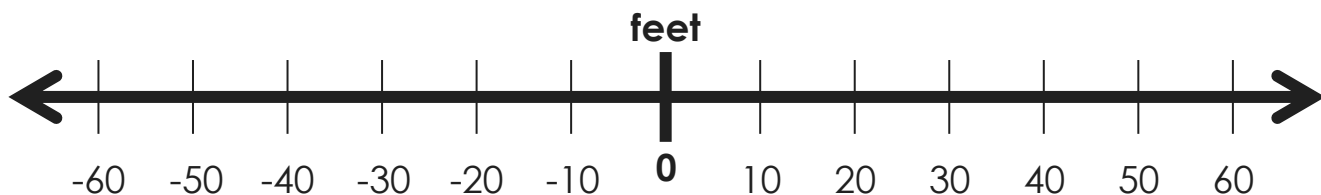


Zero represents _____ .

-3 feet is _____ because it's _____ 0 (sea level).
 positive/negative greater than/less than

6 feet is _____ because it's _____ 0 (sea level).
 positive/negative greater than/less than

4. New York is 33 feet (10 meters) above sea level.
Lake Frome in Australia is 20 feet (6 meters) below sea level.



Zero represents _____ .

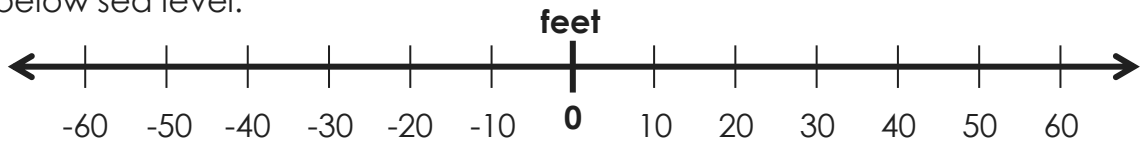
33 feet is _____ because it's _____ 0 (sea level).
 positive/negative greater than/less than

-20 feet is _____ because it's _____ 0 (sea level).
 positive/negative greater than/less than

Skill Closure

- 1 Read the problem.
- 2 Identify the quantities. (underline)
- 3 Represent the quantities. (plot)
- 4 Interpret the quantities. (write)

1. A seagull is flying at an elevation of 15 feet above the sea. A fish swims 25 feet below sea level.

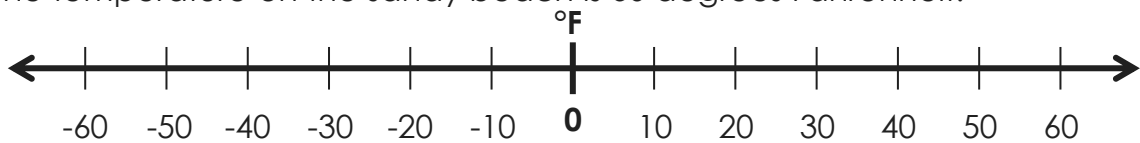


Zero represents _____ .

15 feet is _____ because it's _____ 0 (sea level).
positive/negative greater than/less than

-25 feet is _____ because it's _____ 0 (sea level).
positive/negative greater than/less than

2. The temperature on a snowy mountain is 30 degrees Fahrenheit below zero. The temperature on the sandy beach is 60 degrees Fahrenheit.



Zero represents _____ .

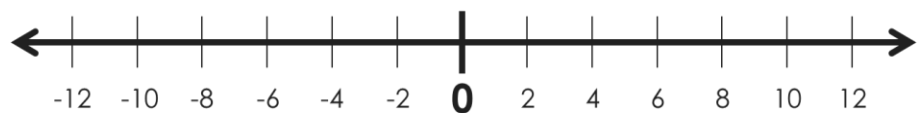
-30 degrees is _____ because it's _____ 0.
positive/negative greater than/less than

60 degrees is _____ because it's _____ 0.
positive/negative greater than/less than

Concept Closure

The school's swimming pool is 12 feet deep and the diving board was 3 feet above the water.

Alexis said these quantities could be represented with positive and negative numbers as 12 and -3. Do you agree? Explain.



Summary Closure

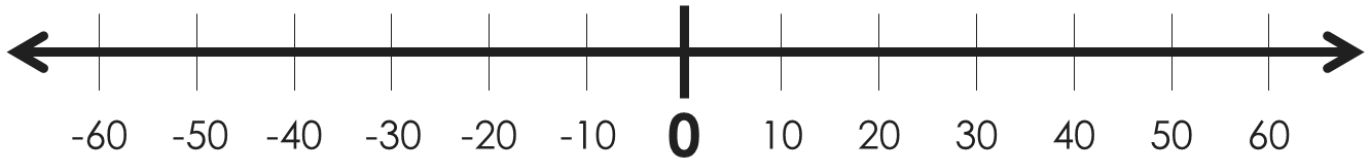
What did you learn today about representing quantities using positive and negative numbers?

Word Bank

- quantity
- measured
- negative
- positive
- numbers
- zero

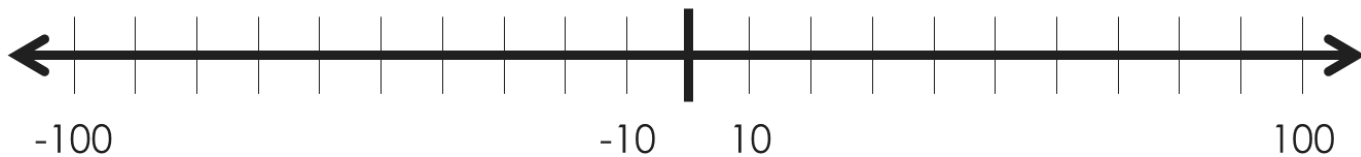
- 1 Read the problem.
- 2 Identify the quantities. (underline)
- 3 Represent the quantities. (plot)
- 4 Interpret the quantities. (answer questions orally)

1. The refrigerator keeps food at about 4 degrees Celsius.
The freezer keeps food about 18 degrees below zero Celsius.



- A. On the number line, does zero represent no food in the refrigerator or zero degrees?
- B. Which temperature is a negative number, the refrigerator's or the freezer's? Explain.
- C. Which temperature is a positive number, the refrigerator's or the freezer's? Explain.

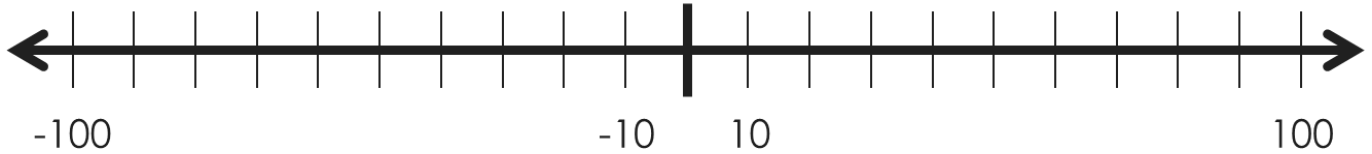
2. To make tea, boil water to 100 degrees Celsius. To make ice cubes for iced tea, freeze water to -10 degrees Celsius.



- A. Does zero represent the amount of water or water temperature?
- B. Which temperature is a positive number, boiling water or freezing water? Explain.
- C. Which temperature is a negative number, boiling water or freezing water? Explain.

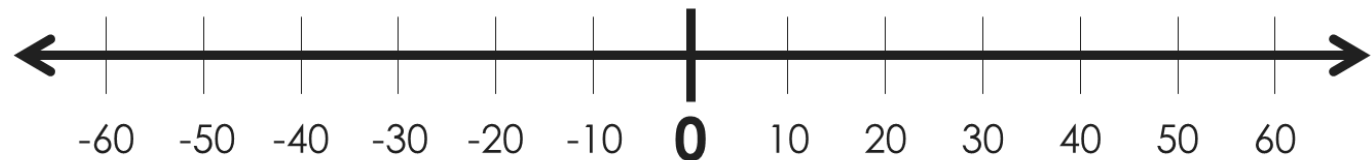
- 1 Read the problem.
- 2 Identify the quantities. (underline)
- 3 Represent the quantities. (plot)
- 4 Interpret the quantities. (answer questions orally)

3. In Field A, a grape farmer had a crop of 100 pounds more grapes than last year. Field B had a crop of 60 pounds less than last year.



- A. Does zero represent pounds or years?
- B. Which field's yield is a negative number, Field A or B? Explain.
- C. Which field's yield is a positive number, Field A or B? Explain.

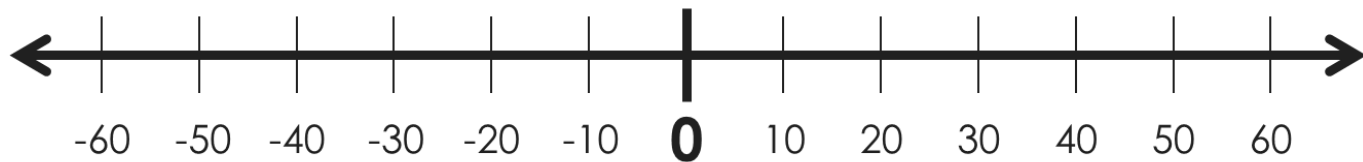
4. A 30-foot high oak tree was found to have 15-foot deep roots, giving it strength and stability.



- A. Does zero represent strength or ground level?
- B. Which is a negative number, the height of the oak tree or the depth of its roots? Explain.
- C. Which is a positive number, the height of the oak tree or the depth of its roots? Explain.

Listening

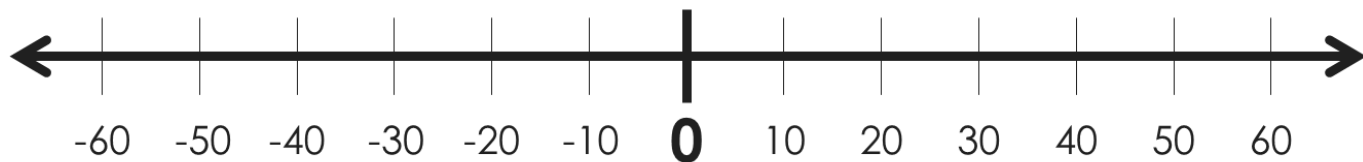
Listen carefully to the problem. Label the quantities and answer the questions.



Zero represents _____ .

-5 degrees is _____ because it's _____ 0.

55 degrees is _____ because it's _____ 0.



Zero represents _____ .

-10 feet is _____ because it's _____ 0 (sea level).

20 feet is _____ because it's _____ 0 (sea level).

Reading **Read the paragraph. Represent the quantities.**

Contestants on the reality show *Survivor* had to participate in many challenges. They had to climb 30-foot trees and dive into 50-foot deep lakes. They had to hike four miles one way and then hike four miles the opposite way. The temperature averaged 85 degrees above zero with 1 inch of rain per day. Each participant had to commit to staying on the show for the entire season if necessary, but if he or she got voted off, their time could be shortened by 7, 14, or 21 days. The winner will have \$1 million dollars put into their bank account but must spend \$5,000 to go to the interviews. The average viewership dropped by 9 million viewers after its second season.

Last week, I played a fantasy adventure video game. I climbed a tower that was 200 feet tall. Then, I jumped off the tower and dove into a lake that was 82 feet deep. Then, I travelled through icy caverns where the temperature went as low as 60 degrees below zero, but I brought a magical torch whose fire was as hot as 210 degrees above zero. At the beginning of the game, I had a debt of 50,000 gold coins, and I had to run away from ogres that were also loan collectors. At the end of the game, I defeated a rich dragon, and gained 450,000 gold coins. My playtime was below the average player's playtime by 17 hours.

Writing



Read the statements. Represent the quantities.

Statement	Represented as a Positive or Negative Number
1. The hot air balloon went 200 feet high.	
2. The scuba diver explored a 300-foot depth.	
3. The aluminum melted at 1,220 degrees (°F).	
4. George walked down three floors to reach the company basement.	
5. Construction of the tall building started with a 20-foot deep foundation.	
6. John deducts 50 points from his score by hitting a bullseye in a game of darts.	
7. The tea kettle whistled from boiling water at 102 degrees (°C).	
8. José buried his time capsule 13 meters below ground level.	
9. The coldest winter was recorded at 60 degrees below 0 (°F).	
10. Bob's golf score is two under par, or two fewer strokes than the score of a golf expert.	
11. Jane's rocket toy went up as high as 270 feet into the air.	
12. Arnold Transportation Services went bankrupt with a debt of \$50 million.	