

1. Discuss each of the following situations with your group and write about what it means for a number to be positive, negative and zero.

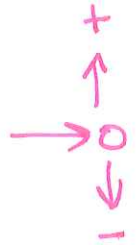
a. Temperature

Positive: warmer

Negative: colder

Zero: freezing in celcius

0°C freezing



b. Checking account balance

Positive: have money

Negative: owe money (negative balance)

Zero: even (\$0)

c. Elevation

Positive: above sea level (up hill)

Negative: below sea level down hill

Zero: at sea level, on the beach

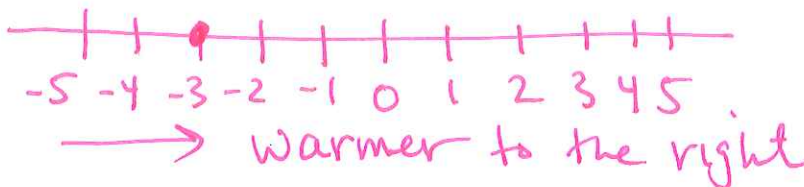
d. Profit for a business

Positive: making money - profitable - in the black

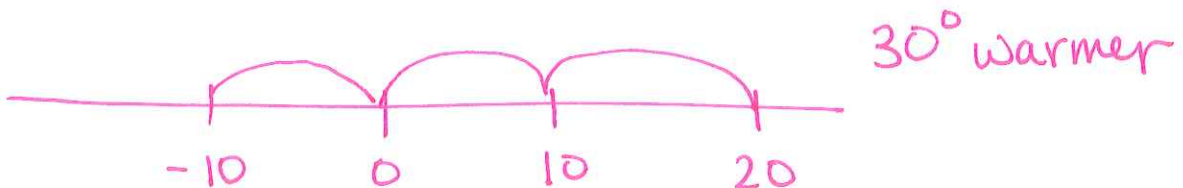
Negative: loss, owe money, in debt

Zero: broke even

2. Which is warmer:  $-3^{\circ}F$  or  $-5^{\circ}F$ ? Draw a number line to find or confirm your answer.



3. How much warmer is  $20^{\circ}F$  than  $-10^{\circ}F$ ? Draw a number line to find or confirm your answer.



4. Write the opposite of each integer described using words and symbols.

a. We were 1000 feet above sea level.

1000 feet below sea level, -1000 ft

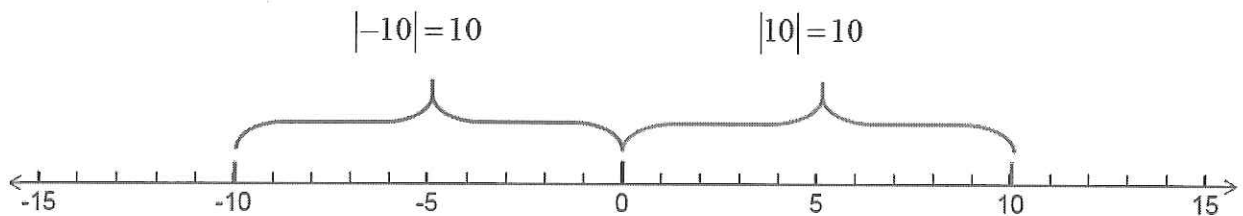
b. The All-Star Brewing Company had a profit of \$23,500 in 2015.

They had a loss of \$23,500. <sup>negative</sup> debt, deficit  
-\$23,500.

c. The temperature in degrees Celsius was 12 below zero.

12° above zero, +12°C, 12°C

As you noticed in problem 4, the opposite of a negative number is positive and the opposite of a positive number is negative. The **absolute value** of a number is the distance from zero to the number on a number line. In the example shown below, -10 and 10 both have an absolute value of 10 because they are both ten units away from zero. The absolute value, written with the number between two vertical bars, represents the value of the number without the sign.



5. Simplify the following expressions.

a.  $|-3|$

$= 3$

b.  $|3|$

$= 3$

c.  $-|-3|$

$= -3$

d.  $-|3|$

$= -3$

e.  $-(-2)$

$= 2$

f.  $|3+5|$

$= |8|$   
 $= 8$

g.  $-|9-2|$

$= -|7|$   
 $= -7$

h.  $|-18|$

$= 18$

i.  $-(4)$

$= -4$

j.  $-|6|$

$= -6$

k.  $-|-25|$

$= -25$

l.  $-(-11)$

$= 11$

6. Arrange the following numbers in order from least to greatest: 11, -7, 0, 5, -3, -13, 2

-13, -7, -3, 0, 2, 5, 11