

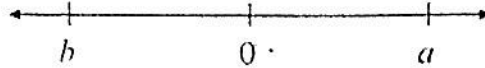
Name: _____

Date: 9-11-17

Aim: What do we know about integers?

DO NOW:

Assuming that a and b are the same distance from zero, what assumptions can you make about a and b ? List as many as you can.



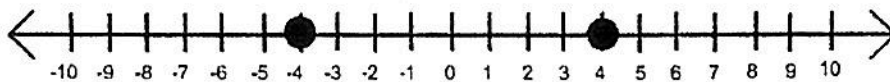
a is a positive number
 b is a negative number
 a and b are additive
Inverses
 $a+b=0$

a is a positive number

b is the same number but opposite of a

Ex a 3
 b -3

Which of these numbers is closer to zero?



The are
both the
same distance
from zero

Absolute Value: The distance between a number and zero

on a number line. $|x|$ = the distance between x and 0

The symbol $|x|$ is read as the ABSOLUTE VALUE of x

Evaluate each expression.

1.) $ -3 $ <div style="border: 1px solid black; padding: 5px; display: inline-block;">3</div>	2.) $ 8.2 $ <div style="border: 1px solid black; padding: 5px; display: inline-block;">8.2</div>	3.) $ -1/2 $ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$1/2$</div>	4.) $- 10 $ <div style="border: 1px solid black; padding: 5px; display: inline-block;">-10</div>	5.) $- -12 $ <div style="border: 1px solid black; padding: 5px; display: inline-block;">-12</div>
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Addition

SAME SIGNS SUM (& keep sign)

DIFFERENT SIGNS DIFFERENCE (& keep sign of integer with larger absolute value)

Find the sum

1) $3 + 2$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">5</div>	2) $-4 + 5$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">1</div>	3) $-6 + 2$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-4</div>	4) $-8 + (-6)$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-14</div>
5) $-1 + (-3)$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-4</div>	6) $-12 + 7$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-5</div>	7) $5 + (-6)$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-1</div>	8) $13 + (-12)$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">1</div>

State whether the following is **ALWAYS**, **SOMETIMES**, or **NEVER** true.

- 9) When adding two integers with the same sign, the sum will be positive. *SOMETIMES*
- 10) The sum of two integers with different signs is negative. *SOMETIMES*
- 11) The sum of two opposites is zero. *Always*
- 12) The sum of two negative integers is positive. *Never*
- 13) The sum of a positive and a negative integer is greater than the positive integer. *NEVER*

Subtraction is the same as adding the opposite (additive inverse)

Subtraction: Keep Change opposite (& follow rules for addition)

Find the difference

14) $-6 - 7$ $-6 + -7$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-13</div>	15) $7 - 15$ $7 + -15$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-8</div>	16) $-8 - (-3)$ $-8 + 3$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-5</div>
17) $10 - (-18)$ $10 + 18$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">28</div>	18) $51 - 82$ $51 + (-82)$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-31</div>	19) $-24 - (-11) - 30$ $-24 + 11$ $-13 - 30$ $-13 + -30$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">-43</div>

20) The variables a and b are integers. Tell whether the value of the expression $b - a$ is positive, negative or could be either if $b < a$.

$$b = -4$$

$$a = 2$$

$$b - a$$

$$-4 - 2$$

$$-4 - 2$$

$$\boxed{-6}$$

$$b = -3$$

$$a = -1$$

$$b - a$$

$$-3 - (-1)$$

$$-3 + 1$$

$$\boxed{-2}$$

Discussion Questions

Ex
-4
-(-4)

1) If a is a real number, then $-a$ is always a negative number.

False a could be a negative number therefore $-a$ would be a positive number

2) If a is a negative number, then $-a$ is always a positive number.

True

$$a = -5$$

$$-a = -(-5)$$

$$-(-a) = 5$$

3) The opposite of a number is always a different number.

True Ex $-(-5) = 5$ with the exception of zero

4) If x is a positive number, then x is greater than its opposite.

True because the opposite will be a negative

5) The opposite of the opposite of a number is that number itself.

True opposite of 5 is -5 opposite of -5 is 5

The **TAKEAWAY**

The two ways to remember the addition of integers are:

- Same Signs Sum
- Different Signs difference

When subtracting integers we must:

- Keep Change opposite