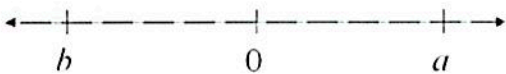


Pre-Algebra

Essential Questions: How do we determine the absolute value of a number? How do we add and subtract integers?

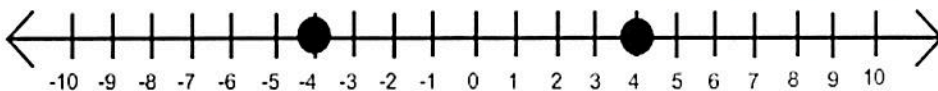
Do Now:

- a) 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. \hookrightarrow



- same absolute value
- a and b are opposites
- a is positive
- b is negative
- $a + b = 0$

- b) Which of these numbers is closer to zero? They are the same distance from 0.



Absolute Value $||$ \leftarrow same as parentheses

The absolute value of a number is its distance from zero on a number line. *always positive

Evaluate each expression.

1) $|3|$
3

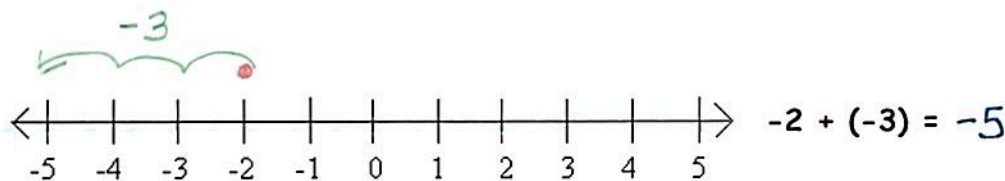
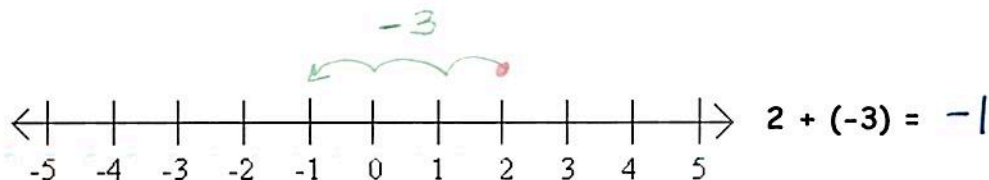
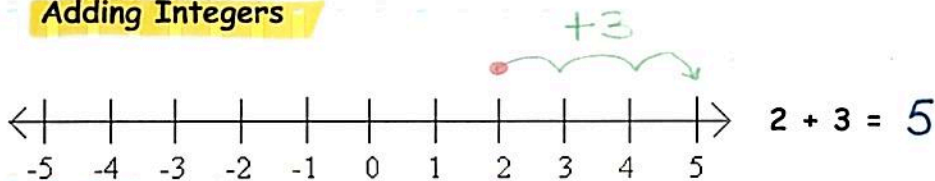
2) $|-5|$
5

3) $|0|$
0

4) $-|10|$
 $-(10)$
-10

5) $-|-12|$
 $-(12)$
-12

Adding Integers



SAME SIGNS: Sum and keep the sign of the numbers.

DIFFERENT SIGNS: Take the difference and keep the sign of the number with the larger absolute value.

Same signs SUM +

Different signs DIFFERENCE -

Find the sum.

1) $9 + 12$

21

2) $-4 + 5$

1

3) $-6 + 11$

5

4) $-8 + (-6)$

-14

5) $-12 + 12$

0

opposites

6) $-9 + (-2)$

-11

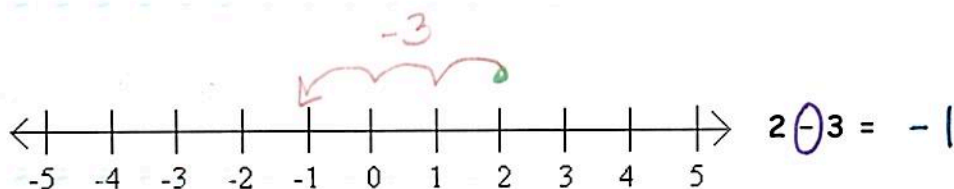
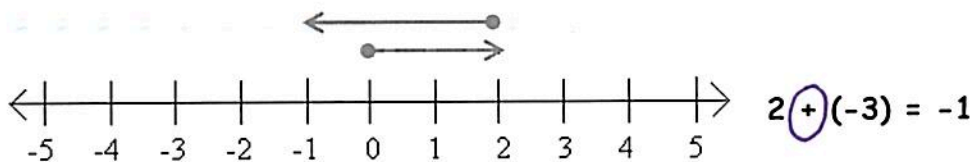
7) $-13 + 15$

2

8) $-25 + (-30)$

-55

Subtracting Integers



Subtraction is the same as adding the **OPPOSITE**.

<u>Keep</u>	<u>Change</u>	<u>Opposite</u>
	- → +	

Find the difference.

9) $-6 - 7$

$-6 + (-7)$

-13

10) $7 - 15$

$7 + (-15)$

-8

11) $-12 - 12$

$-12 + (-12)$

-24

12) $10 - (-18)$

$10 + 18$

28

13) $-8 - (-3)$

$-8 + 3$

-5

14) $-24 - 30$

$-24 + (-30)$

-54

15) $1 - 14$

$1 + (-14)$

-13

16) $-9 - (-13)$

$-9 + 13$

4

- 17) Which expression(s) below can go in the blank to make the statement true?
Circle all that apply.

$$5 - (-7) + \underline{\hspace{2cm}} = 0$$

$$5 + (-7) = -2$$

$$-2 + \underline{2} = 0$$

(A) $1 - (-1)$
 $1 + 1$
 2

B. $9 + (-11)$
 -2

C. $2 - (-4)$
 $2 + (-4)$
 -2

(D) $4 + (-2)$
 2

E. $-1 - (-1)$
 $-1 + (-1)$
 -2

(F) $-9 + 11$
 2

The **TAKEAWAY**

We can subtract integers by following the rules of addition. However, we must remember to keep, change, opposite.
 In other words, when subtracting integers, always add the opposite.

Turn and Talk 

The variables a and b represent two different integers and $b < a$. Tell whether the value of the expression is positive, negative or could be both. Justify your response.

Expression: $b - a$

$b < a$

Always negative.

$a = 2$ $0 - (2)$
 $b = 0$ $0 + (-2) = -2$

$a = 0$ $-2 - (0)$
 $b = -2$ $-2 + 0 = -2$

$a = 5$ $1 - 5$
 $b = 1$ $1 + (-5) = -4$

$a = -1$ $-2 - (1)$
 $b = -2$ $-2 + (-1) = -3$