

Name _____

Date _____

Mr. Tallman

Math 7-8A

Do Now**Evaluate the following.**

| | | |
|---------------------|--|--|
| 1) $6 + 8 = 14$ | 2) $-512 + 512 = 0$ | 3) $37 + (-5) = 32$ |
| 4) $-43 + 20 = -20$ | 5) $-9 + 3 + (-12)$ \checkmark $-6 + (-12)$ -18 | 6) $6 + (-2) + -4 + 1 $ \checkmark \checkmark $4 + -3 $ $4 + 3$ 7 |

7) The New York Jets started out at the 30 yard line. Ryan Fitzpatrick throws a 15 yard pass, but on the next play, the Jets receive a false start and have to take a 5 yard penalty. What yard line are the Jets currently on? Write an expression to model this situation.

$$30 + 15 + (-5)$$

$$\checkmark$$

$$45 + (-5)$$

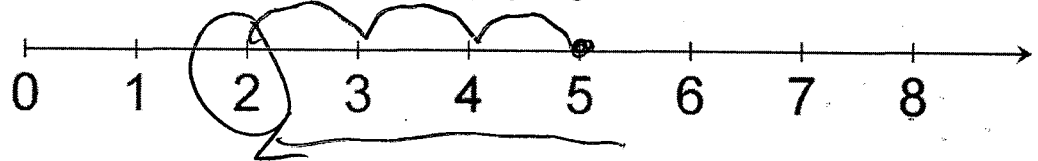
40 yard line

Lesson #4 - Subtracting Integers

Let's remember the addition rules for integers:

| Adding Integers: Same Sign | Adding Integers: Different Sign |
|------------------------------------|--|
| Add the #'s, Keep the Common Sign. | Subtract the #'s, Keep the Sign of the higher #. |

Let's discover the rule for subtracting integers:

Model the following problem on the number line below: $5 - 3$ Rewrite $5 - 3$ using an **addition expression**: $5 - 3 \rightarrow 5 + (-3)$ If you reverse the order of integers, $3 - 5$, will you get the same answer? Explain.

No. Subtraction is not commutative.

Rule for Subtracting Integers

Keep the first number, Change subtraction to addition,
Change the sign of the second #.

Example 1) Change each subtraction problem into an addition problem. Then evaluate each.

| | |
|-----------------------------------|-----------------------------------|
| A) $-7 - 2$ $-7 + (-2)$ (-9) | B) $-1 - (-3)$ $-1 + 3$ (2) |
| C) $3 - 5$ $3 + (-5)$ (-2) | D) $-8 - (-4)$ $-8 + 4$ (-4) |

Example 2) Evaluate each expression if $a = 9$, $b = -8$ and $c = -2$

| | |
|---|---|
| A) $14 - b$ $14 - (-8)$ $14 + 8$ (22) | B) $c - a$ $-2 - 9$ $-2 + (-9)$ (-11) |
|---|---|

Example 3) The temperature on Monday was -5°C . By Tuesday, the temperature rose to -2°C . Write an expression to show the **change** in temperature. Then state the change in temperature.

$$\text{Change} = \text{Final} - \text{Original}$$
$$-2 - (-5) = -2 + 5 = (3^{\circ})$$

Now You Try!

For questions 4-6, evaluate the expressions when $x = -5$ and $y = 7$

| | | |
|---|---|---|
| 4) $x - (-8)$ $-5 - (-8)$ $-5 + 8$ (3) | 5) $-3 - y$ $-3 - 7$ $-3 + (-7)$ (-10) | 6) $y - x - 3$ $7 - (-5) - 3$ $7 + 5 - 3$ $12 - 3$ (9) |
|---|---|---|



5) Complete the table below.

| x | y | $x - y$ | $x + y$ |
|-----|-----|-------------------------------|---------------------|
| -10 | 6 | $-10 - 6 = -10 + (-6) = -16$ | $-10 + 6 = -4$ |
| 15 | -11 | $15 - (-11) = 15 + 11 = 26$ | $15 + (-11) = 4$ |
| -25 | -19 | $-25 - (-19) = -25 + 19 = -6$ | $-25 + (-19) = -44$ |
| 27 | -35 | $27 - (-35) = 27 + 35 = 62$ | $27 + (-35) = -8$ |
| 0 | -7 | $0 - (-7) = 0 + 7 = 7$ | $0 + (-7) = -7$ |

6) The top of a sailboat mast is 22 feet above the water's surface. The bottom of the sailboat is 3 feet below the surface of the water. What is the **difference** in elevations?

$$22 - (-3)$$

$$22 + 3 = 25 \text{ feet}$$

7) The temperature at the start of a football game was $-1^\circ F$. At halftime, the temperature was $-9^\circ F$. What was the **change** in temperature?

$$-9 - (-1)$$

$$-9 + 1 = -8^\circ$$

8) A submarine is 450 feet below sea level. If it **descends** 300 feet, what is its new position?

$$-450 - 300$$

$$-450 + (-300)$$

$$-750 \text{ ft}$$

