

UNIT 1: SIMPLIFY EXPRESSIONS

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Objectives: I can find opposites and absolute values of integers and add integers.

Adding Integers

(Absolute Value and Opposites of Integers)

absolute value

The distance of a number from zero, the positive value of a number.

Two parallel lines around a number or expression mean "the absolute value."

For example: $|-4| = 4$ $|8| = 8$ $|0| = 0$
 ↑ how far from zero? ↑ how far from zero? ↑ how far from zero?

*** Distance is ALWAYS positive!**

opposites

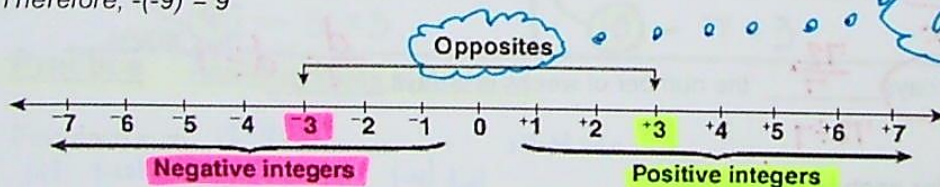
Two numbers that lie the same distance from 0 on the number line but in opposite directions.

For example: The opposite of 2 is -2 The opposite of -5 is 5.

A negative sign in front of a number or variable means "the opposite of."

Therefore, $-(-9) = 9$

Every whole number has an opposite — except Zero



Write an integer for each situation.

1. Lose \$7 -7

2. 1,300 ft below sea level -1300

3. 8°C below zero -8

4. 3 yards gained $+3$

5. 5 floors down -5

6. Deposit of \$150 $+150$

7. Profit of \$40 $+40$

8. Borrowed \$6 -6

Compare. Use $>$, $<$ or $=$ to complete each statement.

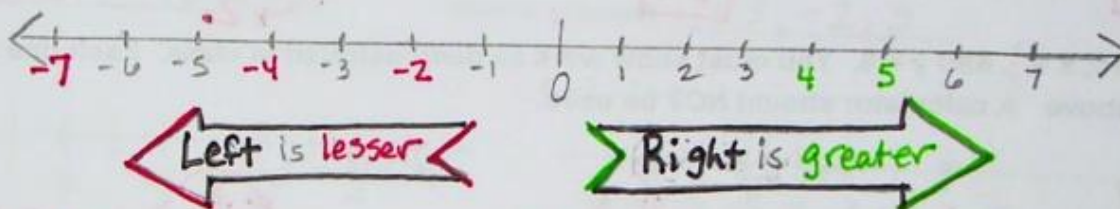
(Use the number line below!)

left right
1. $-4 < -2$

left right
2. $|-4| < |-5|$

left right
3. $-7 < |4|$
evaluate first!

Notes about adding integers...



• The further left, the lesser the value.

• The further right, the greater the value.

* **Negatives** are always **less** than zero and positive numbers

* **Positives** are always **greater** than zero and negative numbers

* **Be careful!** when comparing **two negatives**! The further a negative number is from zero — the **LESS** value it has!

More notes...

Adding Integers

⊙ If the signs are the **SAME**, keep the sign & **ADD**

Ex: $2 + 3 = \boxed{5}$ (both positive) | $-3 + (-4) = \boxed{-7}$ (both negative)

⊙ If the signs are **DIFFERENT**, **SUBTRACT** and give the answer the sign of the number with the greatest "ABSOLUTE value"...

Ex: $-8 + 5 = \boxed{-3}$ | $10 + (-7) = \boxed{3}$

$\begin{matrix} | -8 | & | 5 | \\ | -8 | & | 5 | \\ \hline 8 & - 5 = 3 \end{matrix}$

 $\begin{matrix} | 10 | & | -7 | \\ | 10 | & | -7 | \\ \hline 10 & - 7 = 3 \end{matrix}$

Practice Applying Rules of Addition

Find each sum. $12 - 9 = 3$

1. $9 + (-12) = \underline{-3}$

2. $-4 + 10 = \underline{6}$

3. $-1 + (-8) = \underline{-9}$

* Problems 7 & 8

Group negatives together & group positives together **FIRST!**
Then add.

4. $-6 + (-11) = \underline{-17}$

5. $-5 + 15 = \underline{10}$

6. $2 + (-14) = \underline{-12}$

* 7. $1 + (-3) + 2 + (-10) = \underline{-10}$

$3 + (-13)$ greater abs. value!
 $(1+2) + [(-3)+(-10)]$

* 8. $-12 + (-6) + 15 + (-2) + 5 = \underline{0}$

$-20 + 20$
 $[(-12)+(-6)+(-2)] + (15+5)$

HOMEWORK