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Adding Integers Guided Notes

Rules for Adding Integers

There are two rules that you must follow when adding integers.

You must look at the signs of each number that you are adding to determine which rule to use!

Rule 1:

If the signs are the same, add and keep the same sign.

$(+) + (+) = (+)$ **Add** the numbers.

The sum of two positive integers is always **positive.**

$(-) + (-) = (-)$ **Add** the numbers.

The sum of two negative integers is always **negative.**

Rule 2:

If the signs are different, subtract the numbers and use the sign of the larger number.

$(-) + (+) =$ **Subtract** the numbers and take **the sign of the bigger number.**

$(+) + (-) =$ **Subtract** the numbers and take **the sign of the bigger number.**

The sum of a positive integer and a negative integer is sometimes positive, sometimes negative, and sometimes zero.

The sum of a negative number and its opposite positive number of the same size equals zero.

Sample Problem 1: Find the sum of each expression below using the rules for adding integers.

a. $3 + 6 =$ $3 + 6 = 9$

b. $(-12) + (-34) =$ $(-12) + (-34) = (-46)$

c. $(-23) + (-34) =$ $(-23) + (-34) = (-57)$

d. $45 + 21 =$ $45 + 21 = 66$

Sample Problem 2: Find the sum of each expression below using the rules for adding integers.

a. $(-13) + 14 =$ $(-13) + 14 = 1$

b. $28 + (-11) =$ $28 + (-11) = 17$

c. $(-17) + 11 =$ $(-17) + 11 = -6$

d. $100 + (-100) =$ $100 + (-100) = 0$

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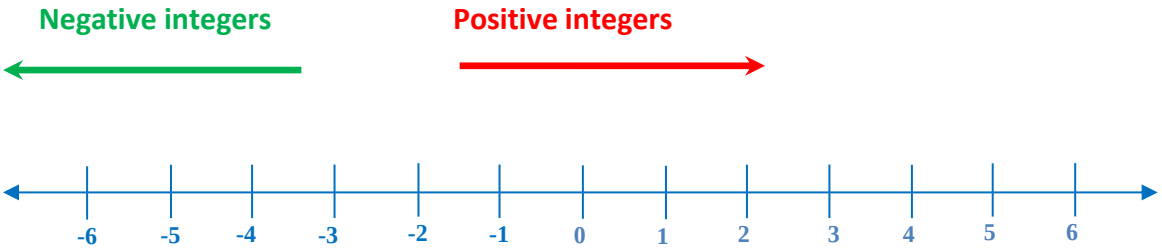
Using the Number Line to Add Integers

We can also use the number line and direction arrows to illustrate addition of integers.

Let a positive number be represented by a right-facing arrow and a negative number be represented by a left-facing.

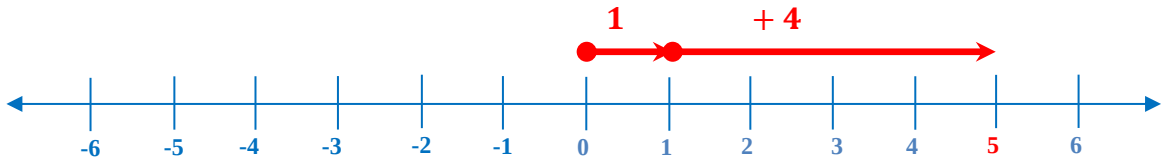
To add two integers, find the point on the number line corresponding to the first addend (integer).

The sum is the number directly below the tip of the arrow.



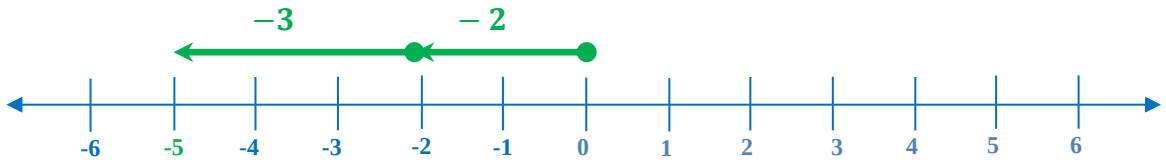
Sample Problem 3: **Show the addition on the number line. Then write the sum.**

a. $\mathbf{1 + 4 =}$



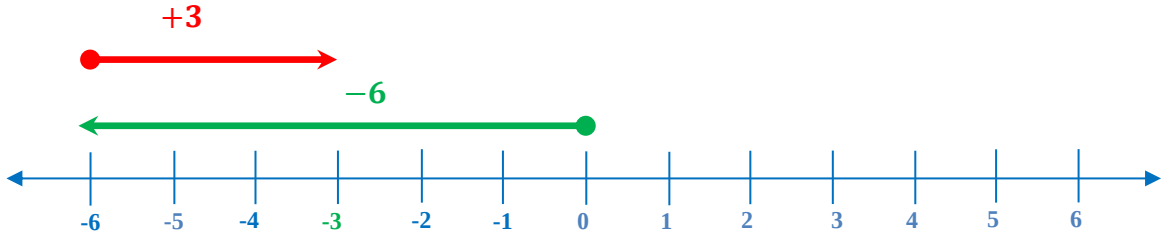
$\mathbf{1 + 4 = 5}$

b. $\mathbf{(-2) + (-3) =}$



$\mathbf{(-2) + (-3) = -5}$

c. $\mathbf{(-6) + 3 =}$



$\mathbf{(-6) + 3 = -3}$

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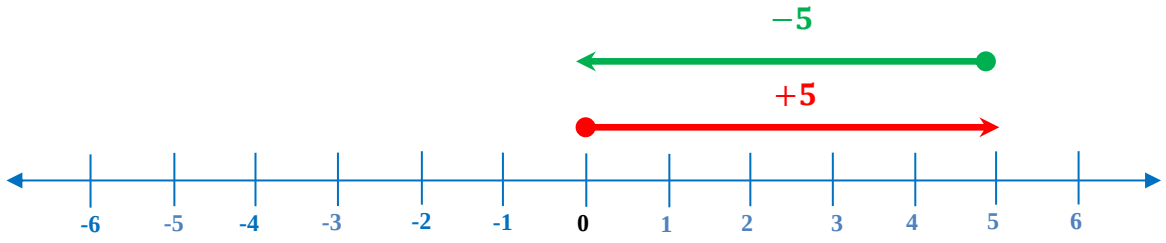
d. $5 + (-5) =$



$5 + (-5) = 0$

Sample Problem 4: Solve each expression below.

a. $(-123) + (-140) + 32 =$

$(-123) + (-140) + 32 =$
$= (-263) + 32 =$
$= -231$

b. $128 + 23 + (-34) =$

$128 + 23 + (-34) =$
$= 151 + (-34) =$
$= 117$

c. $(-70) + [-2 + 24]^2 =$

$(-70) + [-2 + 24]^2 =$
$= (-70) + [22]^2 =$
$= (-70) + 484 =$
$= 414$