

Multiplication, Division, Addition, and Subtraction of Integers

$$\sqrt[b]{x^a} = x^{\frac{a}{b}}$$

Operation multiplication and division are easier to understand compared to adding and subtracting integers.

Multiplication of Integers

Example: $(-5) \times (-5) = 25$, $3 \times 3 = 9$

As shown in the example above, when you multiply two numbers with the same sign, whether both are positive or both negative, the result is positive.

For example, $(-9) \times 5 = -45$. However, when you multiply numbers with opposite signs, the result is negative.

Division of Integers (works the same way as multiplication)

Example:

$$5 \div 5 = 1,$$

 $(+) \div (+) = +$

$$-10 \div 2 = -5,$$

 $(-) \div (+) = -$

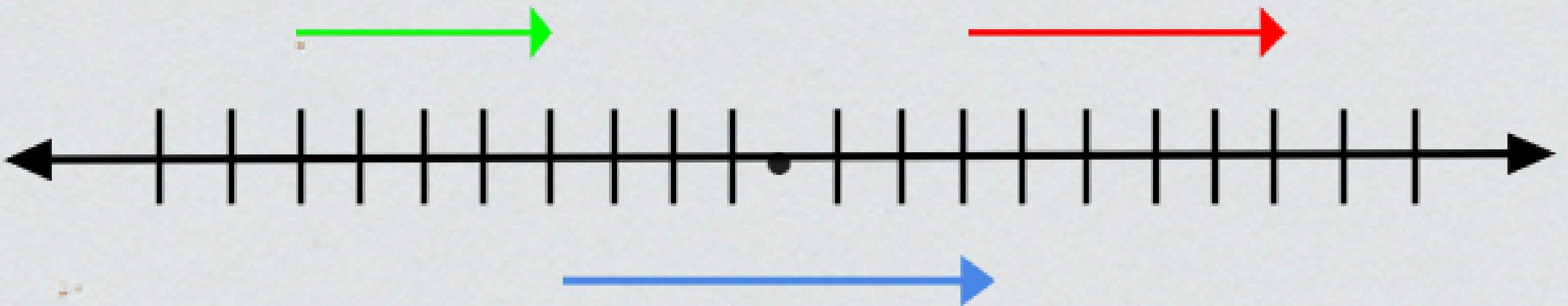
$$-9 \div -3 = 3$$

 $(-) \div (-) = +$

On the other hand, adding and subtracting integers can be more challenging than multiplication and division. Many students find it confusing to understand the correct order and rules for adding and subtracting integers.

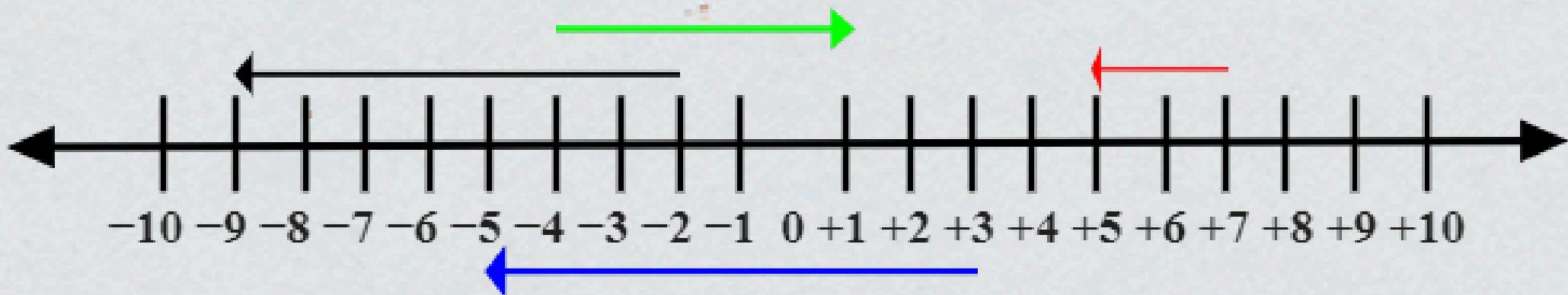
Addition of Integers (using number line)

OPPOSITES



1. $3 + 5 = 8$, the arrow starts with a positive 3 since the operation is addition; the direction of the arrow is counting 5 units to the right.
2. $-5 + 8 = 3$, The arrow starts with 5 counting 8 units to the right.
3. $-7 + 3 = -4$, the arrow starts with -7, counting 3 units to the right.

Subtraction of Integers (using number line)



1. $7 - 2 = 5$, the arrow starts with a positive 7 since the operation is subtraction; the direction of the arrow is counting 2 units to the left.

2. $3 - 8 = -5$, the arrow starts with positive 3 counting 8 units to the left

3. $-2 - 7 = -9$, the arrow starts with negative 2, counting 7 units to the left.

4. $-4 - (-5)$,
simplify

therefore,
 $-4 + 5 = 1$.

since the signs are both negative; as we mentioned earlier, negative multiplied by negative, the product is positive;