

# Integer Rules

Integers are the set of whole numbers along with their opposites. Integers = { ... -3, -2, -1, 0, 1, 2, 3 ... }

The absolute value of a number and the absolute value of its opposite are the same.  $|6| = |-6| = 6$

## Addition:

**Same signs:** Add the absolute values of the numbers. The sum has the same sign as the given numbers.

$$\oplus + \oplus = \oplus \quad \text{Example: } 6 + 7 = 13$$

$$\ominus + \ominus = \ominus \quad \text{Example: } -6 + -7 = -13$$

**Different signs:** Find the difference of the absolute values of the numbers and take the sign of the larger number (i.e., the one larger in absolute value).

$$\oplus + \ominus = \quad \text{Example: } 5 + -2 = 3 \quad \text{Example: } 2 + -8 = -6$$

$$\ominus + \oplus = \quad \text{Example: } -4 + 9 = 5 \quad \text{Example: } -7 + 5 = -2$$

## Subtraction:

Change the subtraction sign to an addition sign, and then change the sign of the second number to the opposite sign.

$$\oplus - \oplus = \oplus + \ominus \quad \text{Example: } 3 - 2 = 3 + -2 = 1$$

$$\ominus - \oplus = \ominus + \ominus \quad \text{Example: } -9 - 11 = -9 + -11 = -20$$

$$\oplus - \ominus = \oplus + \oplus \quad \text{Example: } 4 - -5 = 4 + +5 = 4 + 5 = 9$$

$$\ominus - \ominus = \ominus + \oplus \quad \text{Example: } -6 - -10 = -6 + +10 = -6 + 10 = 4$$

## Multiplication:

The product of two numbers having the same sign is positive.

$$\oplus \cdot \oplus = \oplus \quad \text{Example: } 2(2) = 4 \quad \ominus \cdot \ominus = \oplus \quad \text{Example: } -3(-4) = 12$$

The product of two numbers having different signs is negative.

$$\oplus \cdot \ominus = \ominus \quad \text{Example: } 3(-6) = -18 \quad \ominus \cdot \oplus = \ominus \quad \text{Example: } -1(7) = -7$$

## Division:

The quotient of two numbers having the same sign is positive.

$$\frac{\oplus}{\oplus} = \oplus \quad \text{Example: } 6/3 = 2 \quad \frac{\ominus}{\ominus} = \oplus \quad \text{Example: } -24/-12 = 2$$

The quotient of two numbers having different signs is negative.

$$\frac{\oplus}{\ominus} = \ominus \quad \text{Example: } 14/-7 = -2 \quad \frac{\ominus}{\oplus} = \ominus \quad \text{Example: } -8/4 = -2$$