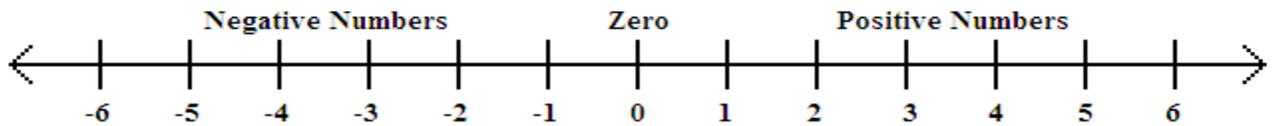


Negative Numbers

Negative numbers are numbers less than 0.



In Algebra, sometimes the same symbol has different meanings. We have seen the symbol “–” used in three different ways.

	Meaning	Example	We read...
Between two numbers	Subtraction	$9 - 4$	9 minus 4
In front of a number	Negative	-6	Negative 6
In front of a variable or a parenthesis	Opposite	$-x$ $-(-3)$	The opposite of x The opposite of negative 3

Objective 1: Adding integers

1. For positive numbers: Add as usual. The answer is positive.
For example, $2 + 3 = 5$
2. For negative numbers: Add absolute values and make the answer negative.
For example, $-2 + (-3) = -5$
3. When one number is zero, the sum is the other number.
For example, $4 + 0 = 4$
4. For a positive number and a negative number: Subtract the smaller absolute value from the greater absolute value. Then:
 - a) If the positive number has the greater absolute value, the answer is positive.
 - b) If the negative number has the greater absolute value, the answer is negative.
 - c) If the numbers have the same absolute value, the answer is 0.

Example: Add.

a) $-4 + (-7)$

Solution: Since both numbers are negative, we add their absolute values,

$$4 + 7 = 11,$$

and keep the negative sign so the answer is -11 .

Answer: -11

b) $4 + (-7)$

Solution: Since one number is positive and the other is negative, we subtract the smaller absolute value from the greater absolute value,

$$7 - 4 = 3.$$

The negative number has the greater absolute value so the answer is -3 .

Answer: -3

c) $-24 + 24$

Solution:

$$24 - 24 = 0$$

Answer: 0

Objective 2: Subtracting integers

Opposite – The opposite, or additive inverse, of a number a is written $-a$.

The Opposite of an Opposite – For any real number a ,

$$-(-a) = a.$$

For any real numbers a and b

$$a - b = a + (-b)$$

- KFC Method
 - K – Keep the first number the same
 - F – Flip the sign
 - C – Change the sign of the second number

Examples: Subtract.

a) $4 - 13$

Solution:

$$4 - 13$$

$$= 4 + (-13) \text{ KFC}$$

$$= -9 \quad \text{Apply the rule for adding integers}$$

Answer: -9

b) $0 - (-7)$

Solution:

$$0 - (-7)$$

$$= 0 + (7) \quad \text{KFC}$$

$$= 7 \quad \text{Apply the rule for adding integers}$$

Answer: 7

c) $-8 - (-3)$

Solution:

$$-8 - (-3)$$

$$= -8 + 3 \quad \text{KFC}$$

$$= -5 \quad \text{Apply the rule for adding integers}$$

Answer: -5

Objective 3: Multiplying/Dividing integers

To multiply or divide two nonzero numbers:

1. Using the absolute values, multiply or divide, as indicated.
2. If the signs are the same, the answer is positive.
3. If the signs are different, the answer is negative.

Examples: *Multiply/Divide.*

a) $-3 \cdot 7$

Solution:

$$3 \cdot 7 = 21$$

Since the signs are different, the answer is negative.

Answer: -21

b) $-3 \cdot (-6)$.

Solution:

$$3 \cdot 6 = 18$$

Since the signs are the same, the answer is positive.

Answer: 18

c) $-24 \div 3$

Solution:

$$24 \div 3 = 8$$

Since the signs are different, the answer is negative.

Answer: -8