

When you are working with negative numbers, the properties of addition and multiplication still apply.

Complete the table below.

Commutative Property	$6 + -8 = \square$ $-8 + 6 = \square$ $6 + -8 = -8 + 6$ $a + b = b + a$	$4 \times -5 = \square$ $-5 \times 4 = \square$ $4 \times -5 = -5 \times 4$ $a \times b = b \times a$
Associative Property	$(-8 + 2) + 3 = \square$ $-8 + (2 + 3) = \square$ $(-8 + 2) + 3 = -8 + (2 + 3)$ $(a + b) + c = a + (b + c)$	$(6 \times -2) \times -3 = \square$ $6 \times (-2 \times -3) = \square$ $(6 \times -2) \times -3 = 6 \times (-2 \times -3)$ $(a \times b) \times c = a \times (b \times c)$
Distributive Property	$3(-4 + 2) = \square$ $(3 \times -4) + (3 \times 2) = \square$ $3(-4 + 2) = (3 \times -4) + (3 \times 2)$ $a(b + c) = (a \times b) + (a \times c)$	
Identity Property	$-15 + 0 = \square$ $0 + -15 = \square$ $a + 0 = a$	$-9 \times 1 = \square$ $1 \times -9 = \square$ $a \times 1 = a$

Another property also applies.

Opposites Property:  $10 + -10 = 0$

Name the property illustrated.

1.  $-9 \times 1 = -9$  \_\_\_\_\_

3.  $-42 + 0 = -42$  \_\_\_\_\_

5.  $-4 + -12 = -12 + -4$  \_\_\_\_\_

7.  $(3 + -20) + -2 = 3 + (-20 + -2)$  \_\_\_\_\_

2.  $-8 + 8 = 0$  \_\_\_\_\_

4.  $-20 \times 6 = 6 \times -20$  \_\_\_\_\_

6.  $3(-4 + -2) = (3 \times -4) + (3 \times -2)$  \_\_\_\_\_

8.  $(-10 \times 6) \times -5 = -10 \times (6 \times -5)$  \_\_\_\_\_

Solve the equation. Use the number properties.

9.  $6 + d = 0$   
 $d = \underline{\hspace{2cm}}$

10.  $-13 + c = -27 + -13$   
 $c = \underline{\hspace{2cm}}$

11.  $-7 \times a = 6 \times -7$   
 $a = \underline{\hspace{2cm}}$

12.  $15 \times a = 15$   
 $a = \underline{\hspace{2cm}}$

13.  $29 + b = 29$   
 $b = \underline{\hspace{2cm}}$

14.  $c(6 \times -5) = (-7 \times 6) \times c$   
 $c = \underline{\hspace{2cm}}$

15.  $(-9 + 4) + b = -9 + (4 + -2)$   
 $b = \underline{\hspace{2cm}}$

16.  $(a \times 5) + (a \times 6) = 9(5 + 6)$   
 $a = \underline{\hspace{2cm}}$