

Name: _____

Addition Properties

Identity Property of Addition (Zero Property of addition)

When you add zero to any number, the sum is that number.

example: $29 + 0 = 29$

Commutative Property of Addition

You can add numbers in any order.

example: $2 + 3 + 7 = 12$
 $7 + 3 + 2 = 12$

$$2 + 3 + 7 = 7 + 3 + 2$$

Associative Property of Addition

You can group addends different ways, and the sum will not change. Addends are grouped with parenthesis. (You add the part in parenthesis first.)

example: $(4 + 3) + 9 = 16$
 $4 + (3 + 9) = 16$

$$(4 + 3) + 9 = 4 + (3 + 9)$$

Find the value of the variables. Also, tell which property is used.

1.

$$6 + 3 + 9 = a$$

$$3 + b + 6 = 18$$

a = _____

b = _____

property: _____

2.

$$10 + (10 + 5) = c$$

$$(10 + d) + 5 = 25$$

c = _____

d = _____

property: _____

3.

$$(12 + e) + 7 = 21$$

$$12 + (2 + 7) = f$$

e = _____

f = _____

property: _____

4.

$$102 + g = 102$$

$$h + 0 = 102$$

g = _____

h = _____

property: _____

Name: _____

5.

$$7 + 9 + 7 + 3 + 8 + 2 = i$$

$$2 + 3 + j + 9 + 7 + 8 = i$$

$i =$ _____

$j =$ _____

property: _____

6.

$$(11 + 4) + (9 + 4) = k$$

$$11 + (m + 9) + m = 28$$

$k =$ _____

$m =$ _____

property: _____

7.

$$27 + n = 27$$

$$n + 27 = p$$

$n =$ _____

$p =$ _____

property: _____

8.

$$(q + q) + 2 = r$$

$$7 + (7 + 2) = r$$

$q =$ _____

$r =$ _____

property: _____

★ ★ ★ Challenge ★ ★ ★

9.

$$(s + 3) + (s + 3) = u$$

$$8 + (t + 8) + t = u$$

$s =$ _____

$t =$ _____

$u =$ _____

property: _____

10.

$$v + 3 + v + 3 + v + 3 = x$$

$$w + 4 + w + 4 + w + 4 = x$$

$v =$ _____

$w =$ _____

$x =$ _____

property: _____

ANSWER KEY

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example: $(4 + 3) + 9 = 16$
 $4 + (3 + 5) = 16$

$$(4 + 3) + 9 = 4 + (3 + 9)$$

Find the value of the variables. Also, tell which property is used.

1.

$$6 + 3 + 9 = a$$

$$3 + b + 6 = 18$$

$a = \underline{18}$

$b = \underline{9}$

property: commutative

2.

$$10 + (10 + 5) = c$$

$$(10 + d) + 5 = 25$$

$c = \underline{25}$

$d = \underline{10}$

property: associative

3.

$$(12 + e) + 7 = 21$$

$$12 + (2 + 7) = f$$

$e = \underline{2}$

$f = \underline{21}$

property: associative

4.

$$102 + g = 102$$

$$h + 0 = 102$$

$g = \underline{0}$

$h = \underline{102}$

property: identity (or zero property)

ANSWER KEY

5.

$$\begin{aligned}7 + 9 + 7 + 3 + 8 + 2 &= i \\ 2 + 3 + j + 9 + 7 + 8 &= i\end{aligned}$$

$i = \underline{36}$

$j = \underline{7}$

property: commutative

6.

$$\begin{aligned}(11 + 4) + (9 + 4) &= k \\ 11 + (m + 9) + m &= 28\end{aligned}$$

$k = \underline{28}$

$m = \underline{4}$

property: associative

7.

$$\begin{aligned}27 + n &= 27 \\ n + 27 &= p\end{aligned}$$

$n = \underline{0}$

$p = \underline{27}$

property: identity (or zero property)
also accept: commutative

8.

$$\begin{aligned}(q + q) + 2 &= r \\ 7 + (7 + 2) &= r\end{aligned}$$

$q = \underline{7}$

$r = \underline{16}$

property: associative

★ ★ ★ Challenge ★ ★ ★

9.

$$\begin{aligned}(s + 3) + (s + 3) &= u \\ 8 + (t + 8) + t &= u\end{aligned}$$

$s = \underline{8}$

$t = \underline{3}$

$u = \underline{22}$

property: associative

10.

$$\begin{aligned}v + 3 + v + 3 + v + 3 &= x \\ w + 4 + w + 4 + w + 4 &= x\end{aligned}$$

$v = \underline{4}$

$w = \underline{3}$

$x = \underline{21}$

property: commutative