

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.

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

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

$$i = \underline{\hspace{2cm}}$$

$$j = \underline{\hspace{2cm}}$$

property: _____

6.

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

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

$$k = \underline{\hspace{2cm}}$$

$$m = \underline{\hspace{2cm}}$$

property: _____

7.

$$27 + n = 27$$

$$n + 27 = p$$

$$n = \underline{\hspace{2cm}}$$

$$p = \underline{\hspace{2cm}}$$

property: _____

8.

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

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

$$q = \underline{\hspace{2cm}}$$

$$r = \underline{\hspace{2cm}}$$

property: _____

★ ★ ★ Challenge ★ ★ ★

9.

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

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

$$s = \underline{\hspace{2cm}}$$

$$t = \underline{\hspace{2cm}}$$

$$u = \underline{\hspace{2cm}}$$

property: _____

10.

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

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

$$v = \underline{\hspace{2cm}}$$

$$w = \underline{\hspace{2cm}}$$

$$x = \underline{\hspace{2cm}}$$

property: _____

ANSWER KEY

Addition Properties

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

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

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

1.

$$6 + 3 + 9 = a$$

$$3 + b + 6 = 18$$

$a =$ **18**

$b =$ **9**

property: **commutative**

2.

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

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

$c =$ **25**

$d =$ **10**

property: **associative**

3.

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

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

$e =$ **2**

$f =$ **21**

property: **associative**

4.

$$102 + g = 102$$

$$h + 0 = 102$$

$g =$ **0**

$h =$ **102**

property: **identity (or zero property)**

ANSWER KEY

5.

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

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

$$i = \underline{36}$$

$$j = \underline{7}$$

property: commutative

6.

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

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

$$k = \underline{28}$$

$$m = \underline{4}$$

property: associative

7.

$$27 + n = 27$$

$$n + 27 = p$$

$$n = \underline{0}$$

$$p = \underline{27}$$

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

8.

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

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

$$q = \underline{7}$$

$$r = \underline{16}$$

property: associative

★ ★ ★ Challenge ★ ★ ★

9.

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

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

$$s = \underline{8}$$

$$t = \underline{3}$$

$$u = \underline{22}$$

property: associative

10.

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

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

$$v = \underline{4}$$

$$w = \underline{3}$$

$$x = \underline{21}$$

property: commutative