Name: _____

# Addition Properties

| Identity Property of Addition (Zero Property of addition) | Commutative Property of Addition | Associative Property of Addition |
|---|---|---|
| When you add zero to any number, the sum is that number. *example:* $29 + 0 = 29$ | You can add numbers in any order. *example:* $2 + 3 + 7 = 12$ $7 + 3 + 2 = 12$ $2 + 3 + 7 = 7 + 3 + 2$ | 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.**



~ P R E V I E W ~
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f = _____

property: _____

h = _____

property: _____

**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 = 

**8.**

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

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

q = _____

r = 

**9.**

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

s = _____

t = _____

u = _____

property: _____

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

v = _____

w = _____

x = _____

property: _____

# ANSWER KEY

## Addition Properties

| Identity Property of Addition (Zero Property of addition) | Commutative Property of Addition | Associative Property of Addition |
|---|---|---|
| When you add zero to any number, the sum is that number.<br><br>*example:* 29 + 0 = 29 | You can add numbers in any order.<br><br><br>*example:* 2 + 3 + 7 = 12<br>7 + 3 + 2 = 12<br><br>2 + 3 + 7 = 7 + 3 + 2 | You can group addends different ways, and the sum will not change. Addends are grouped with parenthesis. (You add the part in parenthesis first.)<br><br>*example:* (4 + 3) + 9 = 16<br>4 + (3 + 5) = 16<br><br>(4 + 3) + 9 = 4 + (3 + 9) |

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

**1.**

$$6 + 3 + 9 = a$$

$$3 + b + 6 = 18$$

**2.**

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

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

a = **18**

b = **9**

c = **25**

d = **10**

**3.**



e = **2**

f = **21**

property: **associative**

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 = **36**

j = **7**

property: **commutative**

**6.**

> (11 + 4) + (9 + 4) = k
>
> 11 + (m + 9) + m = 28

k = **28**

m = **4**

property: **associative**

**7.**

> 27 + n = 27

**8.**

> (q + q) + 2 = r

**also accept: commutative**

★ ★ ★ Challenge ★ ★ ★

**9.**

> (s + 3) + (s + 3) = u
>
> 8 + (t + 8) + t = u

s = **8**

t = **3**

u = **22**

property: **associative**

**10.**

> v + 3 + v + 3 + v + 3 = x
>
> w + 4 + w + 4 + w + 4 = x

v = **4**

w = **3**

x = **21**

property: **commutative**