

- ① Identity Property
+ , ×
-Definition (in your own words)
- ② Commutative Property
+ , ×
-Property algebraically (2)
-Examples with numbers (2)
- ③ Associative Property
+ , ×
- ④ Distributive Property
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Properties of Addition and Multiplication

Identity Property:

Addition – The sum of any number n and zero is n .

$$n + 0 = n$$

$$7 + 0 = 7$$

Multiplication – The product of any number n and 1 is n .

$$n \cdot 1 = n$$

$$5 \cdot 1 = 5$$

Commutative Property:

The order in which you add or multiply two numbers does not change

the sum or product.

$$a + b = b + a$$

$$2 + 4 = 4 + 2$$

$$ab = ba$$

$$3 \times 8 = 8 \times 3$$

Associative Property:

When adding or multiplying any three numbers, the grouping (or association) of the numbers does not change the sum or product.

Equation for addition: $a + (b + c) = (a + b) + c$

$$2 + (5 + 1) = (2 + 5) + 1$$

$$a \times (b \times c) = (a \times b) \times c$$

$$8 \times (3 \times 5) = (8 \times 3) \times 5$$

Distributive Property:

For all real numbers, a , b , and c :

$$a(b + c) = ab + ac$$

$$2(5 + 3)$$

$$= 2(5) + 2(3)$$

$$a(b - c) = ab - ac$$

$$3(x - 5)$$

$$= 3x - 15$$

Identify the property being demonstrated.

$$1) 14(16 \cdot 32) = (14 \cdot 16)32 \quad \text{associative}$$

$$2) \underline{a} + \underline{(b + 12)} = \underline{(b + 12)} + \underline{a} \quad \text{commutative}$$

$$3) y \cdot 7 = 7y \quad \text{commutative}$$

$$4) 8 \cdot 1 = 8 \quad \text{identity}$$

$$5) 4(\underline{x - 2}) = 4x - 8 \quad \text{distributive}$$

$$6) 7 + (2 + 1) = (7 + 2) + 1 \quad \text{associative}$$

$$7) \underline{(5 + x)} + 0 = \underline{5 + x} \quad \text{identity}$$

$$8) \underline{5} + \underline{(x + 2)} = \underline{(2 + x)} + \underline{5}$$

commutative