

1. Name the property that has been used in each example.

(a) $(6 + 3) + 5 \cdot 4 = (3 + 6) + 5 \cdot 4$

(b) $(6 + 3) + 5 \cdot 4 = 6 + (3 + 5 \cdot 4)$

(c) $(6 + 3) + 5 \cdot 4 = (6 + 3) + 4 \cdot 5$

(d) $(6 + 3) \cdot 1 + 5 = (6 + 3) + 5$

(e) $0 \cdot (6 + 3) + 5 = 0 \cdot 6 + 0 \cdot 3 + 5$

(f) $6(3 + 5) = 6(3 + 5 + 0)$

(g) $6(3 \cdot 5) + 0 = (6 \cdot 3) \cdot 5 + 0$

(h) $6(3 + 5) = 6(3 + 5) \cdot 1$

(i) $6 \cdot 3 + (5 + 0) = 6 \cdot 3 + (5 + 0 \cdot 6)$

2. Complete the number sentence $5(4 + 3) + (2 + 1) + 0 = \underline{\quad(?)\quad}$ to demonstrate the property:

(a) Commutative Property of Multiplication

(b) Associative Property of Addition

(c) Identity Property of Addition

(d) Commutative Property of Addition

(e) Identity Property of Multiplication

(f) Distributive Property of Multiplication over Addition

(g) Zero Property of Multiplication

3. Identify each number sentence as true or false.

(a) $6 + 4 \cdot 5 = (6 + 4) \cdot 5$

(b) $8 + 6 \div 2 + 1 = 8 + 6 \div (2 + 1)$

(c) $24 \div 3 + 5 \cdot 2 = (24 \div 3) + (5 \cdot 2)$

(d) $20 + 5(3 + 2) = 20 + 5 \cdot 3 + 2$

(e) $2 \cdot 3^2 = 6^2$

(f) $12 \div 3 + (7 + 5) = (12 \div 3 + 7) + 5$

4. Place parentheses, if needed, to make each statement true.

(a) $4 + 3 \cdot 2 + 1 = 15$

(b) $4 + 3 \cdot 2 + 1 = 11$

(c) $6 + 3 + 9 \div 3 = 6$

(d) $6 + 3 + 9 \div 3 = 10$

(e) $3 \times 6 - 2 \div 1 = 12$

(f) $3 \times 6 - 2 \div 1 = 16$

(g) $7 + 3 \cdot 2^2 - 3 = 40$

(h) $7 + 3 \cdot 2^2 - 3 = 37$

(i) $7 + 3 \cdot 2^2 - 3 = 10$

1. (a) Commutative property of addition
(b) Associative property of addition
(c) Commutative property of multiplication
(d) Identity property of multiplication
(e) Distributive property of multiplication over addition
(f) Identity property of addition
(g) Associative property of multiplication
(h) Identity property of multiplication
(i) Zero property of multiplication
2. (a) $(4 + 3) \cdot 5 + (2 + 1) + 0$
(b) $(5(4 + 3) + 2) + 1 + 0$ or $5(4 + 3) + 2 + (1 + 0)$
(c) $5(4 + 3) + (2 + 1)$ or $0 + 5(4 + 3) + (2 + 1) + 0$ or $5(4 + 3) + 0 + (2 + 1) + 0$
or $5(4 + 3) + (2 + 1 + 0) + 0$
(d) $5(3 + 4) + (2 + 1) + 0$ or $5(4 + 3) + (1 + 2) + 0$ or $(2 + 1) + 5(4 + 3) + 0$ or
 $0 + 5(4 + 3) + (2 + 1)$
(e) $1 \cdot 5(4 + 3) + (2 + 1) + 0$ or $5(4 + 3) \cdot 1 + (2 + 1) + 0$ or $5(4 + 3) + 1 \cdot (2 + 1) + 0$
or $5(4 + 3) + (2 + 1) \cdot 1 + 0$
(f) $5 \cdot 4 + 5 \cdot 3 + (2 + 1) + 0$
(g) $5(4 + 3) + (2 + 1) + 0 \cdot 7$
3. (a) False: $26 \neq 50$
(b) False: $12 \neq 10$
(c) True: $18 = 18$
(d) False: $45 \neq 37$
(e) False: $18 \neq 36$
(f) True: $16 = 16$
4. (a) $(4 + 3) \cdot 2 + 1 = 15$
(b) $4 + 3 \cdot 2 + 1 = 11$
(c) $(6 + 3 + 9) \div 3 = 6$
(d) $6 + (3 + 9) \div 3 = 10$
(e) $3 \times (6 - 2) \div 1 = 12$
(f) $3 \times 6 - 2 \div 1 = 16$
(g) $7 + (3 \cdot 2)^2 - 3 = 40$
(h) $(7 + 3) \cdot 2^2 - 3 = 37$
(i) $7 + 3 \cdot (2^2 - 3) = 10$