

Homework: Identity, Inverse, and Equality Properties

Give an example of the property named. **Answers may vary**

1. additive identity:

$$4 + 0 = 4$$

2. substitution property:

$$4(3 + 2) = 4(5)$$

3. symmetric property:

$$\text{If } 2x = 6, \text{ then } 6 = 2x$$

4. multiplicative identity property:

$$1a = a$$

5. reflexive property:

$$4x = 4x$$

6. transitive property:

$$\text{If } 3 + 5 = 8 \text{ and } 8 = 6 + 2, \text{ then } 3 + 5 = 6 + 2$$

7. multiplicative property of zero:

$$5 \cdot 0 = 0$$

8. additive inverse property:

$$5 + (-5) = 0$$

9. multiplicative inverse property:

$$\frac{3}{2} \cdot \frac{2}{3} = 1$$

10. zero product property:

$$\text{If } (x+2)(x-4) = 0, \text{ then } (x+2) = 0 \text{ and/or } (x-4) = 0$$

Name the property illustrated by each statement.

1. $5 \cdot 1 = 5$

Mult. identity

2. If $a + b = 9$, then $9 = a + b$

Symmetric

3. $(3 + 5) + 4 = 8 + 4$

Substitution

4. $6 \cdot 0 = 0$

Mult. prop. of zero

5. $a + 0 = a$

Additive identity

6. $2 \cdot \frac{1}{2} = 1$

Mult. inverse

7. $5x = 5x$

Reflexive

8. If $xy = 0$, then $x = 0$ and/or $y = 0$

Zero product property

9. $7 + (-7) = 0$

Additive inverse

11. $5(2 + 4) = 5(6)$

Substitution

12. $2x + 7 = 2x + 7$

Reflexive

13. $abc = 1abc$

Mult. identity

14. If $8 = x$, then $x = 8$

Symmetric

15. $9 + 0 = 9$

Additive identity

16. $\frac{3}{4} \cdot 0 = 0$

Mult. prop. of zero

17. If $10 = 6 + 4$ and $6 + 4 = 12 - 2$, then $10 = 12 - 2$

Transitive

Evaluate the expression and name the property used for each step.

18. $9(8 + 2) - 45 \cdot 2$

$9(10) - 45 \cdot 2$ Substitution

$90 - 90$ Substitution

0 Additive Inverse

19. $12 + 3(4^2 - 16)$

$12 + 3(16 - 16)$ Substitution

$12 + 3(0)$ Additive Inverse

$12 + 0$ Mult. Prop. of zero

12 Additive identity