

Name: \_\_\_\_\_

Unit 2: Logic & Proof



Date: \_\_\_\_\_ Per: \_\_\_\_\_

Homework 6: Algebraic Proofs (Day 1)

**\*\* This is a 2-page document! \*\***

**Directions:** Write the letter of the property of equality that justifies each statement.

- \_\_\_\_\_ 1. If  $a = 2b$ , then  $a - c = 2b - c$
- \_\_\_\_\_ 2.  $8x = 8x$
- \_\_\_\_\_ 3.  $3(p - 7) = 3p - 21$
- \_\_\_\_\_ 4. If  $-7k = -42$ , then  $k = 6$
- \_\_\_\_\_ 5. If  $m + n = 15$  and  $n = 2$ , then  $m + 2 = 15$
- \_\_\_\_\_ 6. If  $\frac{x}{4} = -5$ ,  $x = -20$
- \_\_\_\_\_ 7. If  $w^2 = 2x$  and  $2x = y$ , then  $w^2 = y$
- \_\_\_\_\_ 8. If  $c - 9 = -1$ , then  $c = 8$
- \_\_\_\_\_ 9. If  $n = -3$ , then  $-3 = n$

- A. Addition Property of Equality
- B. Subtraction Property of Equality
- C. Multiplication Property of Equality
- D. Division Property of Equality
- E. Distributive Property
- F. Substitution Property
- G. Reflexive Property
- H. Symmetric Property
- I. Transitive Property

**Directions:** Complete each proof using the properties of equality. Not all rows may be used.

10. **Given:**  $-8(x - 3) = -32$ ; **Prove:**  $x = 7$

| Statements | Reasons |
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11. **Given:**  $-16 = \frac{m}{5} - 18$ ; **Prove:**  $m = 10$

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12. Given:  $\frac{2y-1}{-3} = -5$ ; Prove:  $y = 8$

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13. Given:  $5n - 42 = 12n$ ; Prove:  $n = -6$

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14. Given:  $2x + 30 = -4(5x - 2)$ ; Prove:  $x = -1$

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15. Given:  $18x - 2(3x + 1) = 5x - 16$ ; Prove:  $x = -2$

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