

2.5A Algebraic Proofs

Name: _____

Date: _____ Bell: _____

Directions: Name the property of equality that justifies each statement.

- _____ 1. If $a = 2b$, then $a - c = 2b - c$
- _____ 2. $x = x$
- _____ 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
$-8(x - 3) = -32$	
$-8x + 24 = -32$	
$-8x = -56$	
$x = 7$	

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

Statements	Reasons
$-16 = \frac{m}{5} - 18$	
$2 = \frac{m}{5}$	
$10 = m$	
$m = 10$	

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

Statements	Reasons
$\frac{2y-1}{-3} = -5$	
	Multiplication Property
	Division Property

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

Statements	Reasons
$2x + 30 = -4(5x - 2)$	
	Distributive Property
$30 = -22x + 8$	
	Subtraction Property
$-1 = x$	

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

Statements	Reasons