

Name: _____ Hour: _____

6.1 B Algebraic Proofs

Solve each equation. Write a reason for every step.

1. $4x = 12x + 32$

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2. $28 + 12x = 8x - 4$

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3. $60x + 153 = 9x + 51$

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4. $-4x + 10 = -5x + 18$

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5. $-3(x + 2) = 16 - x$

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6. $-x - 2(9 - 8x) = 12$

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7. $6(x - 6) = x(16 - 7)$

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8. $\frac{1}{4}x + 10 = 2$

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9. $2(4-x)+1=16-3x$

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10. $\frac{1}{3}x+4=6x+12$

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11. **Given:** $8x - 5 = 2x + 1$

Prove: $x = 1$

Proof:

Statements	Reasons
a. $8x - 5 = 2x + 1$	a. _____
b. $8x - 5 - 2x = 2x + 1 - 2x$	b. _____
c. _____	c. Substitution Property
d. _____	d. Addition Property
e. $6x = 6$	e. _____
f. $\frac{6x}{6} = \frac{6}{6}$	f. _____
g. _____	g. _____

12.

Given: $\frac{4x + 6}{2} = 9$

Prove: $x = 3$

Proof:

Statements	Reasons
a. $\frac{4x + 6}{2} = 9$	a. _____
b. $-\left(\frac{4x + 6}{2}\right) = 2(9)$	b. Mult. Prop.
c. $4x + 6 = 18$	c. _____
d. $4x + 6 - 6 = 18 - 6$	d. _____
e. $4x =$ _____	e. Substitution
f. $\frac{4x}{4} =$ _____	f. Div. Prop.
g. _____	g. Substitution

13.

Given: $4x + 8 = x + 2$

Prove: $x = -2$

Proof:

Statements	Reasons
a. $4x + 8 = x + 2$	a. _____
b. $4x + 8 - x =$ $x + 2 - x$	b. _____
c. $3x + 8 = 2$	c. Substitution
d. _____	d. Subtr. Prop.
e. _____	e. Substitution
f. $\frac{3x}{3} = \frac{-6}{3}$	f. _____
g. _____	g. Substitution