

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

Date: \_\_\_\_\_ Score: \_\_\_\_\_

# Algebraic Proofs Worksheet

Complete each proof by naming the property that justifies each statement.

1) Prove if:  $2(x - 3) = 8$ , then  $x = 7$

Given:  $2(x - 3) = 8$

Prove:  $x = 7$

**Statements**

**Reasons**

a.  $2(x - 3) = 8$

Given

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

2) Prove if:  $4x - 6 = 2x + 4$ , then  $x = 5$

Given:  $4x - 6 = 2x + 4$

Prove:  $x = 5$

**Statements**

**Reasons**

a.  $4x - 6 = 2x + 4$

Given

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

3) Prove if:  $-3(x + 2) = 16 - x$ , then  $x = -11$

Given:  $-3(x + 2) = 16 - x$

Prove:  $x = -11$

**Statements**

**Reasons**

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

Given

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

4) Prove if:  $3x + 12 = 8x - 18$ , then  $x = 6$

Given:  $3x + 12 = 8x - 18$

Prove:  $x = 6$

**Statements**

**Reasons**

a.  $3x + 12 = 8x - 18$

Given

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

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# Algebraic Proofs Worksheet

## Answers

1) Prove if:  $2(x - 3) = 8$ , then  $x = 7$

Given:  $2(x - 3) = 8$

Prove:  $x = 7$

Statements

Reasons

a.  $2(x - 3) = 8$

Given

b.  $2x - 6 = 8$

Distributive Prop.

c.  $2x = 14$

Addition Prop.

d.  $x = 7$

Division Prop.

2) Prove if:  $4x - 6 = 2x + 4$ , then  $x = 5$

Given:  $4x - 6 = 2x + 4$

Prove:  $x = 5$

Statements

Reasons

a.  $4x - 6 = 2x + 4$

Given

b.  $2x - 6 = 4$

Subtraction Prop.

c.  $2x = 10$

Addition Prop.

d.  $x = 5$

Division Prop.

3) Prove if:  $-3(x + 2) = 16 - x$ , then  $x = -11$

Given:  $-3(x + 2) = 16 - x$

Prove:  $x = -11$

Statements

Reasons

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

Given

b.  $-3x - 6 = 16 - x$

Distributive Prop.

c.  $-2x - 6 = 16$

Addition Prop.

d.  $-2x = 22$

Addition Prop.

e.  $x = -11$

Division Prop.

4) Prove if:  $3x + 12 = 8x - 18$ , then  $x = 6$

Given:  $3x + 12 = 8x - 18$

Prove:  $x = 6$

Statements

Reasons

a.  $3x + 12 = 8x - 18$

Given

b.  $12 = 5x - 18$

Subtraction Prop.

c.  $30 = 5x$

Addition Prop.

d.  $6 = x$

Division Prop.

e.  $x = 6$

Symmetric Prop.