

Reasoning and Writing Geometric Proofs

Mathematical Proof

Algebraic Proof**Example 1**

Multi-Step Solve each equation. Write a justification for each step.

1. $y + 1 = 5$

2. $t - 3.2 = -8.3$

3. $2p - 30 = -4p + 6$

4. $\frac{x + 3}{-2} = 8$

5. $\frac{1}{2}n = \frac{3}{4}$

6. $0 = 2(r - 3) + 4$

Example 2

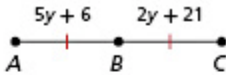
7. **Nutrition** Amy's favorite breakfast cereal has 102 Calories per serving. The equation $C = 9f + 90$ relates the grams of fat f in one serving to the Calories C in one serving. How many grams of fat are in one serving of the cereal? Solve the equation for f and justify each step.

8. **Movie Rentals** The equation $C = \$5.75 + \$0.89m$ relates the number of movie rentals m to the monthly cost C of a movie club membership. How many movies did Elias rent this month if his membership cost \$11.98? Solve the equation for m and justify each step.

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 Mathematical Proof
 Algebraic Proof

Example 3

Write a justification for each step.

9. 

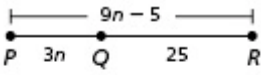
$$AB = BC$$

$$5y + 6 = 2y + 21$$

$$3y + 6 = 21$$

$$3y = 15$$

$$y = 5$$

10. 

$$PQ + QR = PR$$

$$3n + 25 = 9n - 5$$

$$25 = 6n - 5$$

$$30 = 6n$$

$$5 = n$$

Example 4

Identify the property that justifies each statement.

11. $\overline{AB} \cong \overline{AB}$

12. $m\angle 1 = m\angle 2$, and $m\angle 2 = m\angle 4$. So $m\angle 1 = m\angle 4$.

13. $x = y$, so $y = x$.

14. $\overline{ST} \cong \overline{YZ}$, and $\overline{YZ} \cong \overline{PR}$. So $\overline{ST} \cong \overline{PR}$.