

3-3 Solving Equations by Multiplying or Dividing

(Pages 129–133)

Some equations can be solved by multiplying or dividing each side of an equation by the same number.

Division Property of Equality	If you divide each side of an equation by the same nonzero number, the two sides remain equal. For any numbers a , b , and c , where $c \neq 0$ if $a = b$, then $\frac{a}{c} = \frac{b}{c}$.
Multiplication Property of Equality	If you multiply each side of an equation by the same number, the two sides remain equal. For any numbers a , b , and c , if $a = b$, then $a \cdot c = b \cdot c$.

EXAMPLES

A Solve $-6m = 72$.

$$-6m = 72$$

$$\frac{-6m}{-6} = \frac{72}{-6} \quad \text{Divide each side by } -6.$$

$$m = 12 \quad \text{Check your solution by replacing } m \text{ with } -12.$$

B Solve $\frac{n}{3} = 21$.

$$\frac{n}{3} = 21$$

$$\frac{n}{3} \cdot 3 = 21 \cdot 3 \quad \text{Multiply each side by } 3.$$

$$n = 63 \quad \text{Check your solution by replacing } n \text{ with } 63.$$

Try These Together

Solve each equation and check your solution.

1. $36 = 6x$

2. $7b = -49$

3. $\frac{a}{-4} = 6$

PRACTICE

Solve each equation and check your solution.

4. $8c = 72$

5. $-2z = 18$

6. $-42 = 6d$

7. $\frac{m}{12} = 4$

8. $-3h = -36$

9. $\frac{n}{11} = 11$

10. $\frac{s}{-4} = 30$

11. $-524 = -4t$

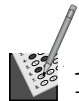
12. $\frac{k}{6} = 9$

13. $\frac{y}{-18} = -6$

14. $\frac{-x}{-4} = -14$

15. $\frac{x}{7} = -20$

16. Geometry An equilateral triangle has three sides of equal lengths. If the perimeter of an equilateral triangle is 72 centimeters, how long is each side?



17. Standardized Test Practice Enrique has 9 bills in his wallet totaling \$45.00. What types of bills does he have?

A ones

B fives

C tens

D twenties

Answers: 1. 6 2. -7 3. -24 4. 9 5. -9 6. -7 7. 48 8. 12 9. 121 10. -120 11. 131 12. 54 13. 108 14. 126 15. -140 16. 24 cm 17. B
