

Solving Multiplication and Division Equations

(Pages 160–164)

You can solve a multiplication or division equation by using the Multiplication and Division Properties of Equality.

Multiplication Property of Equality	For any numbers a , b , and c , if $a = b$, then $ac = bc$.
Division Property of Equality	For any numbers a , b , and c , with $c \neq 0$, if $a = b$, then $\frac{a}{c} = \frac{b}{c}$.

EXAMPLES

A Solve $\frac{5}{2}x = \frac{7}{4}$.

$$\frac{5}{2}x = \frac{7}{4} \quad \text{Multiply each side by } \frac{2}{5}, \text{ the reciprocal of the number that is multiplied by } x.$$

$$\left(\frac{2}{5}\right)\left(\frac{5}{2}\right)x = \left(\frac{2}{5}\right)\left(\frac{7}{4}\right) \text{ so } x = \frac{14}{20} \text{ or } \frac{7}{10}$$

B Solve $7y = -63$.

$$7y = -63$$

$$\frac{7y}{7} = \frac{-63}{7} \quad \text{Divide each side by } 7.$$

$$y = -9$$

Try These Together

1. Solve $-5a = 55$.

HINT: Divide each side by -5 or multiply by $\frac{1}{-5}$.

2. Solve $\frac{x}{-5} = 4$.

HINT: Multiply each side by -5 .

PRACTICE

Solve each equation. Check your solution.

3. $6y = 54$

4. $-7d = -84$

5. $-22b = 66$

6. $2.4f = 12$

7. $3.6g = 18$

8. $\frac{1}{6}k = 8$

9. $-\frac{4}{5}m = 2$

10. $\frac{n}{8} = -4$

11. $\frac{p}{-6} = \frac{7}{12}$

12. $-\frac{7}{3}q = 21$

13. $5x = \frac{10}{13}$

14. $\frac{-r}{8} = -18$

15. If $6a = 36$, then $3a = \underline{\quad?}$.

16. If $2d = 7$, then $10d = \underline{\quad?}$.

Write an equation and solve.

17. Two-thirds of a number y is 14. What is the number?

18. Negative fourteen times a number x is 84. What is the number?



19. Standardized Test Practice There are nine boys in a class. If the boys make up three-eighths of the entire class, how many students are in the class?

A 72

B 24

C 20

D 10

Answers: 1. -11 2. -20 3. 9 4. 12 5. -3 6. 5 7. 5 8. 48 9. $-\frac{2}{5}$ or $-\frac{2}{5}$ 10. -32 11. $-\frac{2}{7}$ or $-\frac{2}{7}$ 12. -9 13. $\frac{13}{2}$ 14. 144 15. 18 16. 35 17. 21 18. -6 19. B