

CHAPTER

Equations and Inequalities

Lesson 8.1 Solving Algebraic Equations

Solve each equation using the substitution method.

1. $x + 8 = 14$

$x = \underline{\hspace{2cm}}$

2. $y + 6 = 20$

$y = \underline{\hspace{2cm}}$

3. $p - 9 = 7$

$p = \underline{\hspace{2cm}}$

4. $k - 15 = 20$

$k = \underline{\hspace{2cm}}$

5. $6w = 72$

$w = \underline{\hspace{2cm}}$

6. $15q = 60$

$q = \underline{\hspace{2cm}}$

7. $\frac{1}{8}e = 7$

$e = \underline{\hspace{2cm}}$

8. $\frac{1}{10}g = 12$

$g = \underline{\hspace{2cm}}$

Solve each equation using the concept of balancing.

9. $a + 14 = 20$

$a = \underline{\hspace{2cm}}$

10. $b + 18 = 34$

$b = \underline{\hspace{2cm}}$

11. $18 = s - 12$

$s = \underline{\hspace{2cm}}$

12. $h - 15 = 9$

$h = \underline{\hspace{2cm}}$

13. $7k = 84$

$k = \underline{\hspace{2cm}}$

14. $\frac{m}{6} = 16$

$m = \underline{\hspace{2cm}}$

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Solve each equation using the concept of balancing. Write all fractional answers in its simplest form.

15. $x + \frac{1}{6} = \frac{5}{6}$

$x =$ _____

16. $y - \frac{2}{5} = \frac{3}{5}$

$y =$ _____

17. $8k = \frac{4}{9}$

$k =$ _____

18. $10g = \frac{4}{6}$

$g =$ _____

19. $\frac{3}{5}p = \frac{3}{10}$

$p =$ _____

20. $\frac{2}{3}w = \frac{5}{6}$

$w =$ _____

21. $x + 1.8 = 3.4$

$x =$ _____

22. $p + 6.3 = 9.1$

$p =$ _____

23. $y - 3.5 = 2.9$

$y =$ _____

24. $k - 8.5 = 2.7$

$k =$ _____

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25. $3x + 2.5 = 6.1$

26. $4y - 6.2 = 13$

$x =$ _____

$y =$ _____

27. $3.2k = 40$

28. $2.4p = 36$

$k =$ _____

$p =$ _____

29. $w + \frac{2}{3} = 2\frac{5}{6}$

30. $d - \frac{2}{5} = 1\frac{3}{10}$

$w =$ _____

$d =$ _____

31. $\frac{3y}{4} = 15$

32. $\frac{3}{7}k = 6$

$y =$ _____

$k =$ _____

Solve.

33. Find three whole numbers, such that when inserted into the equation below, the value of $x = 6$.

$$ax + b = c$$

Answers

Chapter 8

Lesson 8.1

- If $x = 4$, $4 + 8 = 12$.
If $x = 6$, $6 + 8 = 14$.
So, $x = 6$.
- If $y = 10$, $10 + 6 = 16$.
If $y = 14$, $14 + 6 = 20$.
So, $y = 14$.
- If $p = 14$, $14 - 9 = 5$.
If $p = 16$, $16 - 9 = 7$.
So, $p = 16$.
- If $k = 30$, $30 - 15 = 15$.
If $k = 35$, $35 - 15 = 20$.
So, $k = 35$.
- If $w = 12$, $6 \cdot 12 = 72$.
So, $w = 12$.
- If $q = 4$, $15 \cdot 4 = 60$.
So, $q = 4$.
- If $e = 56$, $\frac{1}{8} \cdot 56 = 7$.
So, $e = 56$.
- If $g = 120$, $\frac{1}{10} \cdot 120 = 12$.
So, $g = 120$.
- $a + 14 - 14 = 20 - 14$
 $a = 6$
- $b + 18 - 18 = 34 - 18$
 $b = 16$
- $18 + 12 = s - 12 + 12$
 $s = 30$
- $h - 15 + 15 = 9 + 15$
 $h = 24$
- $7k \div 7 = 84 \div 7$
 $k = 12$
- $\frac{m}{6} \cdot 6 = 16 \cdot 6$
 $m = 96$
- $x + \frac{1}{6} - \frac{1}{6} = \frac{5}{6} - \frac{1}{6}$
 $x = \frac{4}{6} = \frac{2}{3}$
- $y - \frac{2}{5} + \frac{2}{5} = \frac{3}{5} + \frac{2}{5}$
 $y = \frac{5}{5} = 1$
- $8k \div 8 = \frac{4}{9} \div 8$
 $k = \frac{1}{18}$
- $10g \div 10 = \frac{4}{5} \div 10$
 $g = \frac{1}{25}$
- $\frac{3}{5} \cdot \frac{5}{3}p = \frac{1}{10} \cdot \frac{5}{3}$
 $p = \frac{1}{2}$
- $\frac{3}{2} \cdot \frac{2}{3}w = \frac{5}{6} \cdot \frac{3}{2}$
 $w = 1\frac{1}{4}$
- $x + 1.8 - 1.8 = 3.4 - 1.8$
 $x = 1.6$
- $p + 6.3 - 6.3 = 9.1 - 6.3$
 $p = 2.8$
- $y - 3.5 + 3.5 = 2.9 + 3.5$
 $y = 6.4$
- $k - 8.5 + 8.5 = 2.7 + 8.5$
 $k = 11.2$
- $3x + 2.5 - 2.5 = 6.1 - 2.5$
 $3x = 3.6$
 $3x \div 3 = 3.6 \div 3$
 $x = 1.2$
- $4y - 6.2 + 6.2 = 13 + 6.2$
 $4y = 19.2$
 $4y \div 4 = 19.2 \div 4$
 $y = 4.8$
- $k = 40 \div 3.2$
 $k = 12.5$
- $p = 36 \div 2.4$
 $p = 15$
- $w + \frac{2}{3} - \frac{2}{3} = 2\frac{5}{6} - \frac{2}{3}$
 $w = 2\frac{1}{6}$
- $d - \frac{2}{5} + \frac{2}{5} = 1\frac{3}{10} + \frac{2}{5}$
 $d = 1\frac{7}{10}$
- $\frac{3y}{4} \cdot 4 = 15 \cdot 4$
 $3y = 60$
 $y = 20$
- $\frac{7}{3} \cdot \frac{3}{7}k = \frac{7}{3} \cdot 6$
 $k = 14$
- One possible solution:
If $a = 3$, $b = 2$, $c = 20$, then the equation is
 $3x + 2 = 20$
 $3x + 2 - 2 = 20 - 2$
 $3x = 18$
 $x = 6$

Lesson 8.2

- a) $w = 4z$
b) Independent variable: z ;
dependent variable: w
- a) $d = 2g - 1.5$
b) Independent variable: g ;
dependent variable: d