

Lesson 1 Skills Practice**Solve Equations with Rational Coefficients**

Solve each equation. Check your work.

1. $\frac{1}{8}x = 5$ 40

2. $\frac{2}{9}w = 24$ 108

3. $\frac{3}{7}k = \frac{12}{35}$ $\frac{4}{5}$

4. $\frac{8}{9}p = \frac{12}{18}$ $\frac{3}{4}$

5. $0.3v = 1.35$ 4.5

6. $2.5c = 15.75$ 6.3

7. $-\frac{4}{11}y = -\frac{16}{33}$ $-\frac{4}{3}$ or $-1\frac{1}{3}$

8. $\frac{10}{13}n = -\frac{30}{39}$ -1

9. $-0.54 = 0.36m$ -1.5

10. $-2.3f = 9.2$ -4

11. $-8h = -0.36$ 0.045

12. $\frac{1}{8}n = -\frac{2}{7}$ $\frac{16}{7}$ or $2\frac{2}{7}$

13. $-\frac{16}{19}y = -\frac{20}{38}$ $\frac{5}{8}$

14. $\frac{12}{20}n = -\frac{36}{44}$ $-\frac{15}{11}$ or $-1\frac{4}{11}$

15. $-7.56 = 1.26m$ -6

16. $-64.5g = -25.8$ 0.4

17. $-3.2a = -55.68$ 17.4

18. $-\frac{15}{28}s = -\frac{9}{10}$ $\frac{42}{25}$ or $1\frac{17}{25}$

Lesson 2 Skills Practice

Solve Two-Step Equations

Solve each equation. Check your solution.

1. $3n + 4 = 7$ 1

2. $9 = 2s + 1$ 4

3. $4c - 6 = 2$ 2

4. $-4 = 2t - 2$ -1

5. $3f - 12 = -3$ 3

6. $8 = 4v + 12$ -1

7. $5d - 6 = 9$ 3

8. $2k + 12 = -4$ -8

9. $-5 = 3m - 14$ 3

10. $0 = 8z + 8$ -1

11. $9a - 2 = -2$ 0

12. $-8 + 4s = -16$ -2

13. $-1 = 4 - 5x$ 1

14. $5 = 9 - 2x$ 2

15. $-2x + 12 = 14$ -1

16. $1 - x = 8$ -7

17. $-2 = -x + 4$ 6

18. $11 = 2 - 3x$ -3

19. $12 - 3x = 6$ 2

20. $-6x + 5 = 17$ -2

21. $13 = 18 - 5x$ 1

22. $6x + 2 = 26$ 4

23. $-18 = 4y + 10$ -7

24. $-24 - a = -15$ -9

25. $5z - 17 = 13$ 6

26. $22 = 4 + 6e$ 3

27. $-15 = 2r + 1$ -8

28. $9k - 8 = 10$ 2

29. $-27 = -7 - 4c$ 5

30. $11 = 18 + 7f$ -1

Lesson 3 Skills Practice

Write Two-Step Equations

Translate each sentence into an equation.

- Four more than twice a number is 8.
Let n represent the number. $2n + 4 = 8$
- Three more than four times a number is 15.
Let n represent the number. $4n + 3 = 15$
- Five less than twice a number is 7.
Let n represent the number. $2n - 5 = 7$
- One less than four times a number is 11.
Let n represent the number. $4n - 1 = 11$
- Seven more than the quotient of a number and 2 is 10.
Let n represent the number. $\frac{n}{2} + 7 = 10$
- Six less than six times a number is 12.
Let n represent the number. $6n - 6 = 12$
- Five less than the quotient of a number and 3 is -7 .
Let n represent the number. $\frac{n}{3} - 5 = -7$
- Seven more than twice a number is 1.
Let n represent the number. $2n + 7 = 1$

Define a variable. Then write and solve an equation to find each number.

- The difference between 5 times a number and 3 is 12.
Let n represent the number. $5n - 3 = 12$; 3
- Nine more than three times a number is -6 .
Let n represent the number. $3n + 9 = -6$; -5
- Nine more than the quotient of a number and 4 is 12.
Let n represent the number. $\frac{n}{4} + 9 = 12$; 12
- Four less than the quotient of a number and 3 is -10 .
Let n represent the number. $\frac{n}{3} - 4 = -10$; -18
- Nine less than six times a number is -15 .
Let n represent the number. $6n - 9 = -15$; -1
- Three less than the quotient of a number and 6 is 1.
Let n represent the number. $\frac{n}{6} - 3 = 1$; 24
- Eight more than the quotient of a number and 5 is 3.
Let n represent the number. $\frac{n}{5} + 8 = 3$; -25
- The difference between twice a number and 11 is -23 .
Let n represent the number. $2n - 11 = -23$; -6

Lesson 4 Skills Practice

Solve Equations with Variables on Each Side

Solve each equation. Check your solution.

1. $3w + 6 = 4w$ **6**
2. $a + 18 = 7a$ **3**
3. $8c = 5c + 21$ **7**
4. $11d + 10 = 6d$ **-2**
5. $2e = 4e - 16$ **8**
6. $7v = 2v - 20$ **-4**
7. $4n - 6 = 10n$ **-1**
8. $2y + 27 = 5y$ **9**
9. $8h = 6h - 14$ **-7**
10. $18 - 2g = 4g$ **3**
11. $4x - 9 = 6x - 13$ **2**
12. $5c - 15 = 2c + 6$ **7**
13. $t + 10 = 7t - 14$ **4**
14. $8z + 6 = 7z + 4$ **-2**
15. $2e - 12 = 7e + 8$ **-4**
16. $9k + 6 = 8k + 13$ **7**
17. $2d + 10 = 6d - 10$ **5**
18. $-2a - 9 = 6a + 15$ **-3**
19. $8 - 3k = 3k + 2$ **1**
20. $7t - 4 = 10t + 14$ **-6**
21. $3c - 15 = 17 - c$ **8**
22. $14 + 3n = 5n - 6$ **10**
23. $3y + 5.2 = 2 - 5y$ **-0.4**
24. $10b - 2 = 7b - 7.4$ **-1.8**
25. $2m - 2 = 6m - 4$ **0.5**
26. $3g + 5 = 7g + 4$ **0.25**
27. $4s - 1 = 8 - 2s$ **1.5**
28. $9w + 3 = 4w - 9$ **-2.4**
29. $6z - 7 = 2z - 2$ **1.25**
30. $3 - a = 4a + 12$ **-1.8**

Lesson 5 Skills Practice

Solve Multi-Step Equations

Solve each equation. Check your solution.

1. $4(2 + 3c) = 56$ **4**

2. $63 = -3(1 - 2n)$ **11**

3. $-29 = 5(2a - 1) + 2a$ **-2**

4. $-g + 2(3 + g) = -4(g + 1)$ **-2**

5. $7p - (3p + 4) = -2(2p - 1) + 10$ **2**

6. $-3(t + 5) + (4t + 2) = 8$ **21**

7. $\frac{1}{2}(-4 + 6x) = \frac{1}{3}x + \frac{2}{3}(x + 9)$ **4**

8. $-8 - n = -3(2n - 4)$ **4**

9. $2\left(\frac{1}{2}q + 1\right) = -3(2q - 1) + 4(2q + 1)$ **-5**

10. $-4(2 - y) + 3y = 3(y - 4)$ **-1**

11. **HEALTH CLUB** Currently, 96 members participate in the morning workout, and this number has been increasing by 2 people per week. Currently, 80 members participate in the afternoon workout, and this number has been decreasing by 3 people per week. In how many weeks will the number of people working out in the morning be double the number of people working out in the afternoon? **8 wk**

12. **DISTANCE** Two cyclists leave town at the same time on the same road going in the same direction. Cyclist A is going 6 miles per hour faster than cyclist B. After 8 hours, cyclist A has traveled three times the distance as cyclist B. Use the equation $24x = 8(x + 6)$ to find how fast cyclist B is traveling. **3 mph**

$$1) \quad 12(x-6) + 20 = 4(3x-4)$$

$$12x - 72 + 20 = 12x - 16$$

$$\begin{array}{r} 12x - 52 = 12x - 16 \\ -12x \quad \quad -12x \end{array}$$

$$-52 = -16$$

FALSE

NO SOLUTION

$$2) \quad 3(3y+5) + 5 = 10(y+2) - y$$

$$9y + 15 + 5 = 10y + 20 - y$$

$$\begin{array}{r} 9y + 20 = 9y + 20 \\ -9y \quad \quad -9y \end{array}$$

$$20 = 20$$

TRUE

ALL REAL #S

$$3) \quad \frac{2}{6}x - 8\left(\frac{4}{6}x - 6\right) = \frac{4}{6}x - 12$$

$$\frac{2}{6}x - \frac{32}{6}x + 48 = \frac{4}{6}x - 12$$

$$\begin{array}{r} -\frac{30}{6}x + 48 = \frac{4}{6}x - 12 \\ +\frac{30}{6}x \quad \quad +\frac{30}{6}x \end{array}$$

$$\begin{array}{r} 48 = \frac{34}{6}x - 12 \\ +12 \quad \quad +12 \end{array}$$

$$\frac{6}{34} \cdot \frac{60}{1} = \left(\frac{34}{6}x\right) \cdot \frac{6}{34}$$

$$\frac{360}{34} = x$$

$$10 \frac{20}{34} = x$$

$$10 \frac{10}{17} = x$$