

Practice 5-7 Solving Equations by Adding or Subtracting Fractions

Solve each equation.

- | | |
|--|--|
| 1. $m - (-\frac{7}{10}) = -1\frac{1}{5}$ _____ | 2. $k - \frac{3}{4} = \frac{2}{5}$ _____ |
| 3. $x - \frac{5}{6} = \frac{1}{10}$ _____ | 4. $t - (-3\frac{1}{6}) = 7\frac{2}{3}$ _____ |
| 5. $x + \frac{5}{8} = \frac{7}{8}$ _____ | 6. $k + \frac{4}{5} = 1\frac{3}{5}$ _____ |
| 7. $4 = \frac{4}{9} + y$ _____ | 8. $h + (-\frac{5}{8}) = -\frac{5}{12}$ _____ |
| 9. $n + \frac{2}{3} = \frac{1}{9}$ _____ | 10. $e - \frac{11}{16} = -\frac{7}{8}$ _____ |
| 11. $w - 14\frac{1}{12} = -2\frac{3}{4}$ _____ | 12. $v + (-4\frac{5}{6}) = 2\frac{1}{3}$ _____ |
| 13. $a - 9\frac{1}{6} = -3\frac{19}{24}$ _____ | 14. $f + -3\frac{11}{12} = 18$ _____ |
| 15. $z + (-3\frac{2}{5}) = -4\frac{1}{10}$ _____ | 16. $x - \frac{7}{15} = \frac{7}{60}$ _____ |
| 17. $h - (-6\frac{1}{2}) = 14\frac{1}{4}$ _____ | 18. $p - 5\frac{3}{8} = -\frac{11}{24}$ _____ |

Solve each equation using mental math.

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|---|--|
| 19. $x + \frac{3}{7} = \frac{5}{7}$ _____ | 20. $k - \frac{8}{9} = -\frac{1}{9}$ _____ |
| 21. $a + \frac{1}{9} = \frac{3}{9}$ _____ | 22. $g - \frac{4}{5} = -\frac{2}{5}$ _____ |

Write an equation to solve each problem.

23. Pete's papaya tree grew $3\frac{7}{12}$ ft during the year. If its height at the end of the year was $21\frac{1}{6}$ ft, what was its height at the beginning of the year?
- _____
24. Lee is $1\frac{3}{4}$ ft taller than Jay. If Lee is $6\frac{1}{4}$ ft tall, how tall is Jay?
- _____

Practice 5-8 Solving Equations by Multiplying Fractions

Solve each equation.

1. $\frac{3}{4}x = \frac{9}{16}$ _____

2. $-\frac{1}{3}p = \frac{1}{4}$ _____

3. $\frac{-3}{8}k = \frac{1}{2}$ _____

4. $\frac{1}{8}h = \frac{1}{10}$ _____

5. $2\frac{2}{3}e = \frac{1}{18}$ _____

6. $-1\frac{2}{7}m = 6$ _____

7. $-\frac{1}{4}p = \frac{1}{18}$ _____

8. $\frac{11}{-12}w = -1$ _____

9. $-3\frac{4}{7}x = 0$ _____

10. $\frac{2}{3}m = 2\frac{2}{9}$ _____

11. $5c = \frac{2}{3}$ _____

12. $-8k = \frac{4}{3}$ _____

13. $\frac{4}{7}y = 4$ _____

14. $2\frac{1}{4}f = \frac{6}{5}$ _____

15. $\frac{10}{11}n = \frac{2}{11}$ _____

16. $\frac{7}{8}c = \frac{7}{6}$ _____

Solve each equation using mental math.

17. $7d = 42$ _____

18. $\frac{1}{4}y = 5$ _____

19. $-3h = \frac{3}{8}$ _____

20. $\frac{1}{5}k = -\frac{1}{3}$ _____

Write an equation to solve each problem.

21. It takes Nancy $1\frac{2}{3}$ min to read 1 page in her social studies book. It took her $22\frac{1}{2}$ min to complete her reading assignment. How long was the assignment? Let m represent the number of pages she read.
- _____

22. It takes Gary three hours to drive to Boston. If the trip is 156 miles, what is Gary's average number of miles per hour? Let x represent the miles per hour.
- _____

Practice 5-9 Powers of Products and Quotients

Simplify each expression.

1. $(\frac{5}{6})^2$ _____

2. $(-\frac{4}{9})^2$ _____

3. $(\frac{x^2}{5})^3$ _____

4. $(2x)^3$ _____

5. $(-3y^2)^2$ _____

6. $(5ab^2)^3$ _____

7. $(12mn)^2$ _____

8. $(-10xy^3)^3$ _____

9. $(9qrs^4)^3$ _____

10. $(\frac{2x}{9y})^2$ _____

11. $-(a^2b^2)^3$ _____

12. $(2a^3b^2)^4$ _____

13. $(\frac{2x}{y})^2$ _____

14. $(-\frac{3x}{8y})^2$ _____

15. $(\frac{3y^2}{x})^3$ _____

16. $(\frac{2x^2y}{xy^3})^5$ _____

Evaluate for $a = 2$, $b = -1$, and $c = \frac{1}{3}$.

17. $(a^2)^3$ _____

18. $2b^3$ _____

19. $(-9c^2)^3$ _____

20. $(a^2b)^2$ _____

21. $(ac)^2$ _____

22. $(b^3)^7$ _____

Complete each equation.

23. $(3b \text{ ---})^2 = 9b^{10}$

24. $(m^2n \text{ ---}) = m^8n^4$

25. $(xy \text{ ---})^2 = x^2y^6$

26. $(\frac{3s^2t}{r} \text{ ---}) = \frac{9s^4t^2}{r^2}$

27. Write an expression for the area of a square with a side of length $4a^2$.
Simplify your expression.

28. Write an expression for the volume of a cube with a side of length $3z^5$.
Simplify your expression.

Practice 6-2 Proportions

Write a proportion for each phrase. Then solve. When necessary, round to the nearest hundredth.

1. 420 ft² painted in 36 min; f ft² painted in 30 min

2. 75 points scored in 6 games; p points scored in 4 games

3. 6 apples for \$1.00; 15 apples for d dollars

Tell whether each pair of ratios forms a proportion.

4. $\frac{3}{4}$ and $\frac{9}{12}$ _____

5. $\frac{25}{40}$ and $\frac{5}{8}$ _____

6. $\frac{8}{12}$ and $\frac{14}{21}$ _____

7. $\frac{13}{15}$ and $\frac{4}{5}$ _____

8. $\frac{4}{5}$ and $\frac{5}{6}$ _____

9. $\frac{49}{21}$ and $\frac{28}{12}$ _____

Solve each proportion. Where necessary, round to the nearest tenth.

10. $\frac{3}{5} = \frac{15}{x}$ _____

11. $\frac{15}{30} = \frac{n}{34}$ _____

12. $\frac{h}{36} = \frac{21}{27}$ _____

13. $\frac{11}{6} = \frac{f}{60}$ _____

14. $\frac{26}{15} = \frac{130}{m}$ _____

15. $\frac{36}{j} = \frac{7}{20}$ _____

16. $\frac{r}{23} = \frac{17}{34}$ _____

17. $\frac{77}{93} = \frac{x}{24}$ _____

18. At Discount Copy, 12 copies cost \$0.66. Melissa needs 56 copies. How much should they cost?

19. You estimate that you can do 12 math problems in 45 min. How long should it take you to do 20 math problems?

Practice 6-6 Proportions and Percents

Write a proportion. Then solve. Where necessary, round to the nearest tenth or tenth of a percent.

- $62\frac{1}{2}\%$ of t is 35. What is t ? _____
- 38% of n is 33.44. What is n ? _____
- 120% of y is 42. What is y ? _____
- 300% of m is 600. What is m ? _____
- 1.5% of h is 12. What is h ? _____
- What percent of 40 is 12? _____
- What percent of 48 is 18? _____
- What percent is 54 of 60? _____
- What percent is 39 of 50? _____
- Find 80% of 25. _____
- Find 150% of 74. _____
- Find 44% of 375. _____
- Find 65% of 180. _____
- The Eagles won 70% of the 40 games that they played. How many games did they win?

- Thirty-five of 40 students surveyed said that they favored recycling. What percent of those surveyed favored recycling?

- Candidate Carson received 2,310 votes, 55% of the total. How many total votes were cast?

Practice 7-1 Solving Two-step Equations

Solve each equation.

- | | |
|----------------------------------|---------------------------------|
| 1. $4x - 17 = 31$ _____ | 2. $15 = 2m + 3$ _____ |
| 3. $\frac{k}{3} + 3 = 8$ _____ | 4. $7 = 3 + \frac{h}{6}$ _____ |
| 5. $9n + 18 = 81$ _____ | 6. $5 = \frac{y}{3} - 9$ _____ |
| 7. $14 = 5k - 31$ _____ | 8. $\frac{l}{9} - 7 = -5$ _____ |
| 9. $\frac{v}{8} - 9 = -13$ _____ | 10. $25 - 13f = -14$ _____ |

Solve each equation using mental math.

- | | |
|----------------------------------|---------------------------------|
| 11. $3p + 5 = 14$ _____ | 12. $\frac{k}{2} - 5 = 1$ _____ |
| 13. $\frac{m}{7} - 3 = 0$ _____ | 14. $10v - 6 = 24$ _____ |
| 15. $8 + \frac{x}{2} = -7$ _____ | 16. $7 = 6r - 17$ _____ |

Choose the correct equation. Solve.

17. Tehira has read 110 pages of a 290-page book. She reads 20 pages each day. How many days will it take to finish?
- A. $20 + 110p = 290$ B. $20p + 290 = 110$
 C. $110 + 20p = 290$ D. $290 = 110 - 20p$

Write an equation to describe the situation. Solve.

18. A waitress earned \$73 for 6 hours of work. The total included \$46 in tips. What was her hourly wage?
- _____
- _____
19. You used $6\frac{3}{4}$ c of sugar while baking muffins and nutbread for a class party. You used a total of $1\frac{1}{2}$ c of sugar for the muffins. Your nutbread recipe calls for $1\frac{3}{4}$ c of sugar per loaf. How many loaves of nutbread did you make?
- _____
- _____

Practice 7-2 Solving Multi-step Equations

Solve and check each equation.

1. $\frac{p}{3} - 7 = -2$

2. $2(n - 7) + 3 = 9$

3. $0 = 5(k + 9)$

4. $4h + 7h - 16 = 6$

5. $3(2n - 7) = 9$

6. $-27 = 8x - 5x$

7. $4p + 5 - 7p = -1$

8. $7 - y + 5y = 9$

9. $8e + 3(5 - e) = 10$

10. $-37 = 3x + 11 - 7x$

11. $9 - 3(n - 5) = 30$

12. $\frac{1}{6}(y + 42) - 15 = -3$

Write and solve an equation for each situation.

13. Find three consecutive integers whose sum is 51.
-
- _____
-
- _____

14. Find three consecutive integers whose sum is
- -15
- .
-
- _____
-
- _____

15. Find four consecutive integers whose sum is 30.
-
- _____
-
- _____

16. Jack's overtime wage is \$3 per hour more than his regular hourly wage. He worked for 5 hours at his regular wage and 4 hours at the overtime wage. He earned \$66. Find his regular wage.
-
- _____

Practice 7-3 Multi-step Equations with Fractions and Decimals

Solve and check each equation.

1. $0.7n - 1.5 + 7.3n = 14.5$

2. $18p - 45 = 0$

3. $16.3k + 19.2 + 7.5k = -64.1$

4. $h + 3h + 4h = 100$

5. $40 - 5n = -2$

6. $14 = \frac{2}{3}(9y - 15)$

7. $\frac{2}{3}y - 6 = 2$

8. $1.2m + 7.5m + 2.1 = 63$

9. $\frac{7}{8}h - \frac{5}{8} = 2$

10. $93.96 = 4.7p + 8.7p - 2.6p$

11. $9w - 16.3 = 5.3$

12. $88.1 - 2.3f = 72.46$

13. $-15.3 = -7.5k + 55.2$

14. $26e + 891 = -71$

15. $2.3(x + 1.4) = -9.66$

16. $(x - 17.7) + 19.6 = 27.8$

Write an equation to describe each situation. Solve.

17. Jolene bought three blouses at one price and 2 blouses priced \$3 below the others. The total cost was \$91.50. Find the prices of the blouses.

18. A car rented for \$29 per day plus \$.08 per mile. Julia paid \$46.12 for a one-day rental. How far did she drive?

By what number would you multiply each equation to clear denominators or decimals? Do not solve.

19. $\frac{1}{3}z + \frac{1}{6} = 5\frac{1}{6}$

20. $3.7 + 2.75k = 27.35$

Practice 7-4 Write an Equation

Write an equation. Then solve.

1. Bill purchased 4 pens for \$3.32, including \$.16 sales tax. Find the cost of 1 pen.

2. Arnold had \$1.70 in dimes and quarters. He had 3 more dimes than quarters. How many of each coin did he have?

3. A baby weighed 3.2 kg at birth. She gained 0.17 kg per week. How old was she when she weighed 5.75 kg?

4. In the parking lot at a truck stop there were 6 more cars than 18-wheel trucks. There were 134 wheels in the parking lot. How many cars and trucks were there?

5. The product of 6 and 3 more than k is 48.

6. A bottle and a cap together cost \$1.10. The bottle costs \$1 more than the cap. How much does each cost?

7. The perimeter of a rectangular garden is 40 ft. The width is 2 ft more than one half the length. Find the length and width.

Practice 7-5 Solving Equations with Variables on Both Sides

Solve each equation.

1. $3k + 16 = 5k$

2. $5e = 3e + 36$

3. $n + 4n - 22 = 7n$

4. $2(x - 7) = 3x$

5. $8h - 10h = 3h + 25$

6. $7n + 6n - 5 = 4n + 4$

7. $11(p - 3) = 5(p + 3)$

8. $9(m + 2) = -6(m + 7)$

9. $y + 2(y - 5) = 2y + 2$

10. $-9x + 7 = 3x + 19$

11. $k + 9 = 6(k - 11)$

12. $-6(4 - t) = 12t$

13. $2(x + 7) = 5(x - 7)$

14. $5m + 9 = 3(m - 5) + 7$

15. $5x + 7 = 6x$

16. $k + 12 = 3k$

17. $8m = 5m + 12$

18. $3p - 9 = 4p$

Write an equation for each situation. Solve.

19. The difference when 7 less than a number is subtracted from twice the number is 12. What is the number?

20. Four less than three times a number is three more than two times the number. What is the number?

