

Chapter 5 Summary

Section 5.1

- Writing mathematical quantities as ratios
- Using unit values to compare quantities
- Solving proportions
- Solving proportion applications

Section 5.2

- Converting percents to fractions or decimals
- Converting fractions or decimals to percents
- Writing mathematical ratios as percents

Section 5.3

- Using proportions to solve percent problems with unknown percentage
- Using proportions to solve percent problems with unknown base
- Using proportions to solve percent problems with unknown percent

Section 5.4

- Using the percent equation to solve percent problems with unknown percentage
- Using the percent equation to solve percent problems with unknown base
- Using the percent equation to solve percent problems with unknown percent

Section 5.5

- Solving percent application problems with unknown percentage
- Solving percent application problems with unknown base
- Solving percent application problems with unknown percent

Chapter 5 Review Exercises

Write the following mathematical quantities as a ratio, and simplify.

1. (driving) 532 miles traveled in 8 hours
2. (consumer) \$22.95 paid for 5 pounds of top sirloin steak
3. (construction) \$1,650 paid for 132 feet of fencing
4. (land value) \$179,200 paid for 5.6 acres of land

Compare the two given quantities using unit value comparisons.

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| 5. Apple Juice
8 rolls for \$2.88
15 rolls for \$5.40 | 6. Paper Towels
4 rolls for \$2.65
10 rolls for \$6.57 |
| 7. Speed of a Car
38 nautical miles in 3 hours
92 nautical miles in 8 hours | 8. Speed of a Boat
123 nautical miles in 15 hours
200 nautical miles in 25 hours |
| 9. Price of Land
\$28,000 for 0.56 acres
\$76,800 for 1.6 acres | 10. Gas Mileage
205 miles on 13.2 gallons of gas
267 miles on 17.8 gallons of gas |

Solve each proportion.

11. $\frac{x}{4} = \frac{13}{18}$

13. $-\frac{7}{15} = \frac{z}{10}$

15. $\frac{x-4}{4} = \frac{x+1}{3}$

12. $\frac{20}{-3} = \frac{-7}{y}$

14. $\frac{3}{a} = \frac{-9}{20}$

16. $\frac{2x-1}{3} = \frac{2x+3}{4}$

Solve the following proportion applications. Be sure to answer the question with the appropriate types of numbers (fraction, decimal, rounded).

17. The property tax rate in a certain state is \$1.15 for every \$120 in property value. If a home has a property value of \$75,000, how much will be the property tax?
18. A car drives 270 miles in 4.5 hours. At this speed, how far will the car travel in 6.2 hours?
19. Todd paid \$27,520 income tax for \$86,000 in income. At this rate, what would his tax be for \$65,000 in income?

42. An experimental blood pressure medication is tested on 1260 people, and 1197 show a decrease in blood pressure. What percent of the tested people showed decrease in blood pressure?

Solve the following percent problems using the proportion method.

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|---|-----------------------------------|
| 43. 62% of 240 is what number? | 44. 65% of 264 is what number? |
| 45. 45% of what number is 163.8? | 46. 38% of what number is 247? |
| 47. 112 is what percent of 160? | 48. 391 is what percent of 460? |
| 49. $12\frac{2}{3}\%$ of 1200 is what number? | 50. 37.5% of what number is 975? |
| 51. 140% of what number is 168? | 52. 612.5 is what percent of 350? |

Solve the following percent problems using the percent equation method.

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| 53. $15\frac{2}{3}\%$ of 1800 is what number? | 54. $6\frac{3}{4}\%$ of 540 is what number? |
| 55. 15% of what number is 39? | 56. 35% of what number is 140? |
| 57. 345 is what percent of 600? | 58. 150 is what percent of 400? |
| 59. $8\frac{1}{2}\%$ of what number is 42.5? | 60. $9\frac{3}{4}\%$ of what number is 54.6? |
| 61. 425% of 130 is what number? | 62. 225% of what number is 270? |

Solve the following application problems. Be sure to answer the question.

63. You earn 740 out of 800 possible points in your algebra class. What is your percent of points earned?
64. You earn 756 points in a course, which is 84% of the possible points in the course. What are the possible points in the course?
65. The sales tax rate in a certain state is 7.25%. If you buy a \$16,500 car, how much will the state sales tax be?
66. The sales tax rate in a certain state is 6.75%. If you pay \$850.50 sales tax on a new ski boat, what was the purchase price of the boat?
67. Kobe Bryant makes 42% of his three-point field goal attempts. If he makes 105 three-point field goals, how many attempts did he have?
68. Shaquille O'Neal makes 56% of his field goal attempts. If he makes 280 field goals, how many attempts did he have?
69. When applying for the loan on a house, you must pay $2\frac{1}{4}\%$ of the loan amount as loan fees. If the loan is for \$68,000, how much will you need to pay in loan fees?

70. A real estate broker earns a \$2580 commission on the sale of a \$86,000 home. What is the commission rate being used?
71. A sales representative earns a commission which is 2.25% of the sales in his district. If he earns \$351 commission during one week, how much were his sales that week?
72. A sales clerk receives a monthly salary of \$1,450 plus a commission of 3.5% of the monthly sales above \$9,500. If the clerk has sales of \$26,800, what is her monthly income?
73. A sales representative receives a monthly salary of \$1,625 plus a commission of 6.5% of the monthly sales above \$15,000. If the clerk has a monthly income of \$2,444, what are her sales that month?
74. Matt invests \$540 of his \$4500 monthly wage as a systems analyst in his company 401(k) program. What percent of his wage does he save?