Check Your Understanding

= Step-by-Step Solutions begin on page R20.

Example 1

1. **PETS** Out of a survey of 1000 households, 460 had at least one dog or cat as a pet. What is the ratio of pet owners to households?

2. **SPORTS** Thirty girls tried out for 15 spots on the basketball team. What is the ratio of open spots to the number of girls competing?

Example 2

3. The ratio of the measures of three sides of a triangle is 2:5:4, and its perimeter is 165 units. Find the measure of each side of the triangle.

4. The ratios of the measures of three angles of a triangle are 4:6:8. Find the measure of each angle of the triangle.

Example 3

Solve each proportion.

5. $\frac{2}{3} = \frac{x}{24}$

6. $\frac{x}{5} = \frac{28}{100}$

7. $\frac{2.2}{x} = \frac{26.4}{96}$

8. $\frac{x-3}{3} = \frac{5}{8}$

Example 4

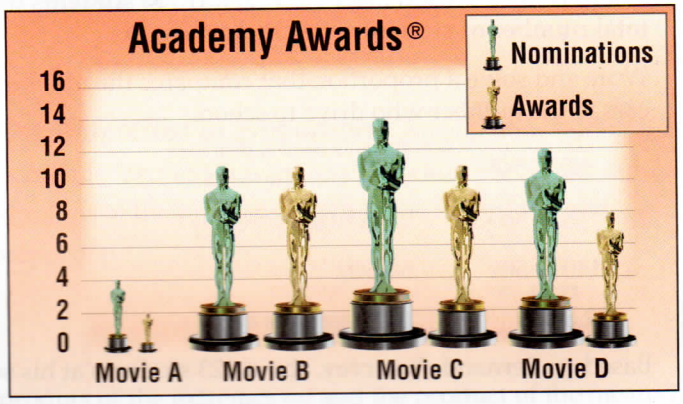
9. **BAKING** Ella is baking apple muffins for the Student Council bake sale. The recipe that she is using calls for 2 eggs per dozen muffins, and she needs to make 108 muffins. How many eggs will she need?

Practice and Problem Solving

Extra Practice begins on page

Example 1

MOVIES **For Exercises 10 and 11, refer to the graphic below.**



10. Of the films listed, which had the greatest ratio of Academy Awards to number of nominations?

11. Which film listed had the lowest ratio of awards to nominations?

Example 2

12. **GAMES** A video game store has 60 games to choose from, including 40 sports games. What is the ratio of sports games to video games?

13. The ratio of the measures of the three sides of a triangle is 9 : 7 : 5. Its perimeter is 191.1 inches. Find the measure of each side.

14. The ratio of the measures of the three sides of a triangle is 3:7:5, and its perimeter is 156.8 meters. Find the measure of each side.

15. The ratio of the measures of the three sides of a triangle is $\frac{1}{4}:\frac{1}{8}:\frac{1}{6}$. Its perimeter is 4.75 feet. Find the length of the longest side.

16. The ratio of the measures of the three sides of a triangle is $\frac{1}{4}:\frac{1}{3}:\frac{1}{6}$, and its perimeter is 31.5 centimeters. Find the length of the shortest side.

Find the measures of the angles of each triangle.

17. The ratio of the measures of the three angles is 3:6:1.

18. The ratio of the measures of the three angles is 7:5:8.

19. The ratio of the measures of the three angles is 10:8:6.

20. The ratio of the measures of the three angles is 5:4:7.

mple 3 **Solve each proportion.**

21. $\frac{5}{8} = \frac{y}{3}$ **22.** $\frac{w}{6.4} = \frac{1}{2}$ **23.** $\frac{4x}{24} = \frac{56}{112}$ **24.** $\frac{11}{20} = \frac{55}{20x}$

25. $\frac{2x+5}{10} = \frac{42}{20}$ **26.** $\frac{a+2}{a-2} = \frac{3}{2}$ **27.** $\frac{3x-1}{4} = \frac{2x+4}{5}$ **28.** $\frac{3x-6}{2} = \frac{4x-2}{4}$

mple 4 **29.** **NUTRITION** According to a recent study, 7 out of every 500 Americans aged 13 to 17 years are vegetarian. In a group of 350 13- to 17-year-olds, about how many would you expect to be vegetarian?

30. **CURRENCY** Your family is traveling to Mexico on vacation. You have saved $500 to use for spending money. If 269 Mexican pesos is equivalent to 25 United States dollars, how much money will you get when you exchange your $500 for pesos?

ALGEBRA **Solve each proportion. Round to the nearest tenth.**

31. $\frac{2x+3}{3} = \frac{6}{x-1}$ **32.** $\frac{x^2+4x+4}{40} = \frac{x+2}{10}$ **33.** $\frac{9x+6}{18} = \frac{20x+4}{3x}$

34. The perimeter of a rectangle is 98 feet. The ratio of its length to its width is 5:2. Find the area of the rectangle.

35. The perimeter of a rectangle is 220 inches. The ratio of its length to its width is 7:3. Find the area of the rectangle.

36. The ratio of the measures of the side lengths of a quadrilateral is 2:3:5:4. Its perimeter is 154 feet. Find the length of the shortest side.

37. The ratio of the measures of the angles of a quadrilateral is 2:4:6:3. Find the measures of the angles of the quadrilateral.

38. **SUMMER JOBS** In June of 2000, 60.2% of American teens 16 to 19 years old had summer jobs. By June of 2006, 51.6% of teens in that age group were a part of the summer work force.

a. Has the number of 16- to 19-year-olds with summer jobs increased or decreased since 2000? Explain your reasoning.

b. In June 2006, how many 16- to 19-year-olds would you expect to have jobs out of 700 in that age group? Explain your reasoning.

39. **GOLDEN RECTANGLES** In a golden rectangle, the ratio of the length to the width is about 1.618. This is known as the *golden ratio*.

a. A rectangle has dimensions of 19.42 feet and 12.01 feet. Determine if the rectangle is a golden rectangle. Then find the length of the diagonal.

b. Recall from page 457 that a standard television screen has an aspect ratio of 4:3, while a high definition television screen has an aspect ratio of 16:9. Is either type of screen a golden rectangle? Explain.

40. **SCHOOL ACTIVITIES** A survey of club involvement showed that, of the 36 students surveyed, the ratio of French Club members to Spanish Club members to Drama Club members was 2:3:7. How many of those surveyed participate in Spanish Club? Assume that each student is active in only one club.