

Chapter 3 Part 2 Extra Practice

Solve each proportion.

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

$$2. \frac{1}{t} = \frac{5}{3}$$

$$3. \frac{0.1}{2} = \frac{0.5}{x}$$

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

$$5. \frac{4}{6} = \frac{8}{x}$$

$$6. \frac{x}{21} = \frac{3}{63}$$

$$7. \frac{9}{y+1} = \frac{18}{54}$$

$$8. \frac{3}{d} = \frac{18}{3}$$

$$9. \frac{5}{8} = \frac{p}{24}$$

$$10. \frac{4}{b-2} = \frac{4}{12}$$

$$11. \frac{1.5}{x} = \frac{12}{x}$$

$$12. \frac{3+y}{4} = \frac{-y}{8}$$

$$13. \frac{a-8}{12} = \frac{15}{3}$$

$$14. \frac{12}{k} = \frac{24}{k}$$

$$15. \frac{2+w}{6} = \frac{12}{9}$$

Use a proportion to solve each problem.

16. MODELS To make a model of the Guadeloupe River bed, Hermie used 1 inch of clay for 5 miles of the river's actual length. His model river was 50 inches long. How long is the Guadeloupe River?

17. EDUCATION Josh finished 24 math problems in one hour. At that rate, how many hours will it take him to complete 72 problems?

34. PAINTING Ysidra paints a room that has 400 square feet of wall space in $2\frac{1}{2}$ hours. At this rate, how long will it take her to paint a room that has 720 square feet of wall space?

35. VACATION PLANS Walker is planning a summer vacation. He wants to visit Petrified National Forest and Meteor Crater, Arizona, the 50,000-year-old impact site of a large meteor. On a map with a scale where 2 inches equals 75 miles, the two areas are about $1\frac{1}{2}$ inches apart. What is the distance between Petrified National Forest and Meteor Crater?

State whether each percent of change is a percent of increase or a percent of decrease. Then find each percent of change. Round to the nearest whole percent.

1. original: 50
new: 80

2. original: 90
new: 100

3. original: 45
new: 20

4. original: 77.5
new: 62

5. original: 140
new: 150

6. original: 135
new: 90

7. original: 120
new: 180

8. original: 90
new: 270

9. original: 27.5
new: 25

Find the final price of each item. When a discount and a sales tax are listed, compute the discount price before computing the tax.

1. Compact disc: \$16
Discount: 15%

2. Two concert tickets: \$28
Student discount: 28%

3. Airline ticket: \$248.00
Superair discount: 33%

4. Shirt: \$24.00
Sales tax: 4%

5. CD player: \$142.00
Sales tax: 5.5%

6. Celebrity calendar: \$10.95
Sales tax: 7.5%

7. Class ring: \$89.00
Group discount: 17%
Sales tax: 5%

8. Software: \$44.00
Discount: 21%
Sales tax: 6%

9. Video recorder: \$110.95
Discount: 20%
Sales tax: 5%

10. **VIDEOS** The original selling price of a new sports video was \$65.00. Due to the demand the price was increased to \$87.75. What was the percent of increase over the original price?

11. **SCHOOL** A high school paper increased its sales by 75% when it ran an issue featuring a contest to win a class party. Before the contest issue, 10% of the school's 800 students bought the paper. How many students bought the contest issue?

12. **BASEBALL** Baseball tickets cost \$15 for general admission or \$20 for box seats. The sales tax on each ticket is 8%, and the municipal tax on each ticket is an additional 10% of the base price. What is the final cost of each type of ticket?

Solve each equation or formula for the variable specified.

7. $4(c + 3) = t$ for c

8. $2x + b = c$ for x

9. $x(1 + y) = z$ for x

10. $16z + 4x = y$ for x

11. $d = rt$ for r

12. $A = \frac{h(a + b)}{2}$ for h

13. $C = \frac{5}{9}(F - 32)$ for F

14. $P = 2\ell + 2w$ for w

15. $A = \ell w$ for ℓ

1. **GEOMETRY** The volume of a cylinder V is given by the formula $V = \pi r^2 h$, where r is the radius and h is the height.

a. Solve the formula for h .

b. Find the height of a cylinder with volume 2500π feet and radius 10 feet.

2. WATER PRESSURE The water pressure on a submerged object is given by $P = 64d$, where P is the pressure in pounds per square foot, and d is the depth of the object in feet.

- Solve the formula for d .
- Find the depth of a submerged object if the pressure is 672 pounds per square foot.

3. GRAPHS The equation of a line containing the points $(a, 0)$ and $(0, b)$ is given by the formula $\frac{x}{a} + \frac{y}{b} = 1$.

- Solve the equation for y .
- Suppose the line contains the points $(4, 0)$, and $(0, -2)$. If $x = 3$, find y .

4. GEOMETRY The surface area of a rectangular solid is given by the formula $S = 2lw + 2lh + 2wh$, where l = length, w = width, and h = height.

- Solve the formula for h .
- The surface area of a rectangular solid with length 6 centimeters and width 3 centimeters is 72 square centimeters. Find the height.

Write an equation and solve for the variable specified.

- Five more than a number g is six less than twice a number h . Solve for g .
- One fourth of a number q is three more than three times a number w . Solve for q .
- Eight less than a number s is three more than four times a number t . Solve for s .

1. SOLUTIONS How many grams of sugar must be added to 60 grams of a solution that is 32% sugar to obtain a solution that is 50% sugar?

2. NUTS The Quik Mart has two kinds of nuts. Pecans sell for \$1.55 per pound and walnuts sell for \$1.95 per pound. How many pounds of walnuts must be added to 15 pounds of pecans to make a mixture that sells for \$1.75 per pound?

3. INVESTMENTS Alice Gleason invested a portion of \$32,000 at 9% interest and the balance at 11% interest. How much did she invest at each rate if her total income from both investments was \$3,200.

4. MILK Whole milk is 4% butterfat. How much skim milk with 0% butterfat should be added to 32 ounces of whole milk to obtain a mixture that is 2.5% butterfat?

1. TRAVEL Mr. Anders and Ms. Rich each drove home from a business meeting. Mr. Anders traveled east at 100 kilometers per hour and Ms. Rich traveled west at 80 kilometers per hour. In how many hours were they 100 kilometers apart.

2. AIRPLANES An airplane flies 750 miles due west in $1\frac{1}{2}$ hours and 750 miles due south in 2 hours. What is the average speed of the airplane?

- 3. TRACK** Sprinter A runs 100 meters in 15 seconds, while sprinter B starts 1.5 seconds later and runs 100 meters in 14 seconds. If each of them runs at a constant rate, who is further in 10 seconds after the start of the race? Explain.
- 4. TRAINS** An express train travels 90 kilometers per hour from Smallville to Megatown. A local train takes 2.5 hours longer to travel the same distance at 50 kilometers per hour. How far apart are Smallville and Megatown?
- 5. CYCLING** Two cyclists begin traveling in the same direction on the same bike path. One travels at 15 miles per hour, and the other travels at 12 miles per hour. When will the cyclists be 10 miles apart?
- 6. TRAINS** Two trains leave Chicago, one traveling east at 30 miles per hour and one traveling west at 40 miles per hour. When will the trains be 210 miles apart?