

*In exercises 1 - 25 odd, solve each formula for the specified variable. Describe the set of solutions using set notation. Do you recognize the formula? If so, what does it describe?*

1)  $d = rt$  for  $r$

3)  $I = Prt$  for  $P$

5)  $C = 2\pi r$  for  $r$

7)  $E = mc^2$  for  $m$

9)  $y = mx + b$  for  $m$

11)  $T = D + pm$  for  $D$

13)  $A = \frac{1}{2}bh$  for  $b$

15)  $M = \frac{n}{5}$  for  $n$

17)  $\frac{c}{2} + 80 = 2F$  for  $c$

19)  $A = \frac{1}{2}(a + b)$  for  $a$

21)  $S = P + Prt$  for  $t$

23)  $A = \frac{1}{2}h(a + b)$  for  $b$

25)  $Ax + By = C$  for  $x$

*In exercises 27 - 35 odd, express each percent as a decimal.*

27) 27%

29) 63.4%

31) 170%

33) 3%

35)  $\frac{1}{2}\%$

*In exercises 37 - 43 odd, express each decimal as a percent.*

37) 0.89

39) 0.002

41) 4.78

43) 100

*Translate the following sentences into an algebraic equation. Solve the equation and then state a conclusion based upon your results.*

45) What is 3% of 200?

47) What is 18% of 40?

49) 3 is 60% of what?

51) 24% of what number is 40.8?

53) 3 is what percent of 15?

55) What percent of 2.5 is 0.3?

57) If 5 is increased to 8, the increase is what percent of the original number?

59) If 4 is decreased to 1, the decrease is what percent of the original number?

*In exercises 61 - 67 odd, solve each equation for  $x$ . Describe the set of solutions in set notation.*

61)  $y = (a + b)x$

63)  $y = (a - b)x + 5$

65)  $y = cx + dx$

67)  $y = Ax - Bx - C$

69) The average, or mean,  $A$ , of three exam grades,  $x$ ,  $y$ , and  $z$ , is given by the formula

$$A = \frac{x+y+z}{3}$$

a. Solve the formula for  $z$ .

- b. Use the formula in part (a) to solve the following problem: On your first two exams, your grades are 86% and 88% so  $x = 86$  and  $y = 88$ . What must you get on the third exam to have an average of 90%?

71) If you are traveling in your car at an average rate of  $r$  miles per hour for  $t$  hours, then the distance,  $d$ , in miles, that you travel is described by the formula  $d = rt$ : distance equals rate times time.

- a. Solve the formula for  $t$ .

- b. Use the formula in part (a) to find the time that you travel if you cover a distance of 100 miles at an average rate of 40 miles per hour.

79) A charity has raised \$7500, with a goal of raising \$60,000. What percent of the goal has been raised?

81) A restaurant bill came to \$60. If 15% of this amount was left as a tip, how much was the tip?

83) Suppose that the local sales tax rate is 6% and you buy a car for \$16,800.

a. How much tax is due?

b. What is the car's total cost after tax?

89) Suppose that you put \$10,000 in a rather risky investment recommended by your financial advisor. During the first year, your investment decreases by 30% of its original value. During the second year, your investment increases by 40% of its first-year value. Your advisor tells you that there must have been a 10% overall increase of your original \$10,000 investment. Is your financial advisor using percentages properly? If not, what is the actual percent gain or loss on your original \$10,000 investment?