

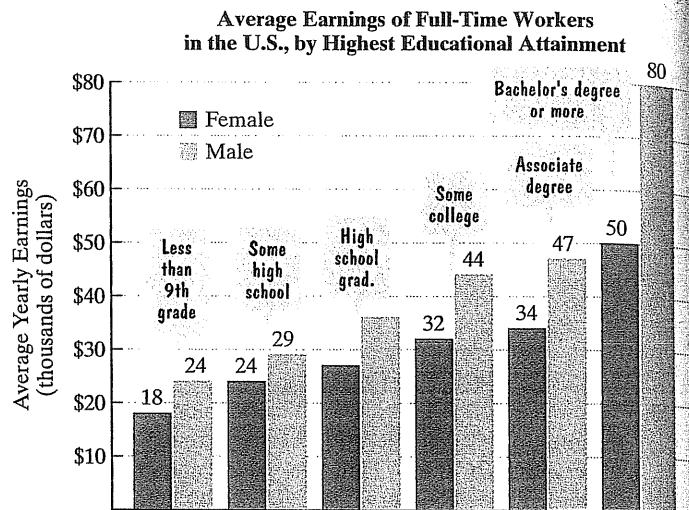
32. Video Store A charges \$9 to rent a video game for one week. Although only members can rent from the store, membership is free. Video Store B charges only \$4 to rent a video game for one week. Only members can rent from the store and membership is \$50 per year. After how many video-game rentals will the total amount spent at each store be the same? What will be the total amount spent at each store?
33. The bus fare in a city is \$1.25. People who use the bus have the option of purchasing a monthly coupon book for \$15.00. With the coupon book, the fare is reduced to \$0.75. Determine the number of times in a month the bus must be used so that the total monthly cost without the coupon book is the same as the total monthly cost with the coupon book.
34. A coupon book for a bridge costs \$30 per month. The toll for the bridge is normally \$5.00, but it is reduced to \$3.50 for people who have purchased the coupon book. Determine the number of times in a month the bridge must be crossed so that the total monthly cost without the coupon book is the same as the total monthly cost with the coupon book.
35. In 2005, there were 13,300 students at college A, with a projected enrollment increase of 1000 students per year. In the same year, there were 26,800 students at college B, with a projected enrollment decline of 500 students per year.
- According to these projections, when will the colleges have the same enrollment? What will be the enrollment in each college at that time?
 - Use the following table to numerically check your work in part (a). What equations were entered for Y_1 and Y_2 to obtain this table?

X	Y_1	Y_2
7	20300	23300
8	21300	22800
9	22300	22300
10	23300	21800
11	24300	21300
12	25300	20800
13	26300	20300

$X=7$

36. In 2000, the population of Greece was 10,600,000, with projections of a population decrease of 28,000 people per year. In the same year, the population of Belgium was 10,200,000, with projections of a population decrease of 12,000 people per year. (Source: United Nations) According to these projections, when will the two countries have the same population? What will be the population at that time?
37. After a 20% reduction, you purchase a television for \$336. What was the television's price before the reduction?
38. After a 30% reduction, you purchase a dictionary for \$30.80. What was the dictionary's price before the reduction?
39. Including 8% sales tax, an inn charges \$162 per night. Find the inn's nightly cost before the tax is added.
40. Including 5% sales tax, an inn charges \$252 per night. Find the inn's nightly cost before the tax is added.

The graph shows average yearly earnings in the United States by highest educational attainment. Use the relevant information shown in the graph to solve Exercises 41–42.



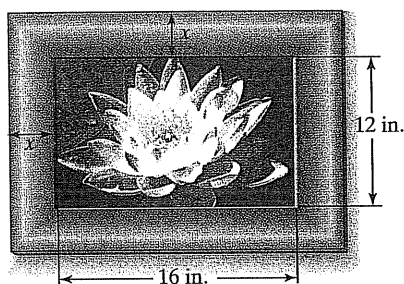
Source: U.S. Census Bureau

41. The annual salary for men with some college is an increase of 22% over the annual salary for men whose highest educational attainment is a high school degree. What is the annual salary, to the nearest thousand dollars, for men whose highest educational attainment is a high school degree?
42. The annual salary for women with an associate degree is an increase of 26% over the annual salary for women whose highest educational attainment is a high school degree. What is the annual salary, to the nearest thousand dollars, for women whose highest educational attainment is a high school degree?

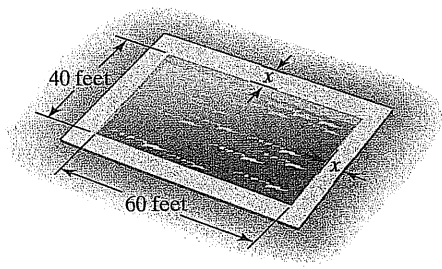
Exercises 43–44 involve markup, the amount added to the dealer's cost of an item to arrive at the selling price of that item.

43. The selling price of a refrigerator is \$584. If the markup is 25% of the dealer's cost, what is the dealer's cost of the refrigerator?
44. The selling price of a scientific calculator is \$15. If the markup is 25% of the dealer's cost, what is the dealer's cost of the calculator?
45. You invested \$7000 in two accounts paying 6% and 8% annual interest, respectively. If the total interest earned for the year was \$520, how much was invested at each rate?
46. You invested \$11,000 in stocks and bonds, paying 5% and 8% annual interest, respectively. If the total interest earned for the year was \$730, how much was invested in stocks and how much was invested in bonds?
47. Things did not go quite as planned. You invested \$8000, part of it in stock that paid 12% annual interest. However, the rest of the money suffered a 5% loss. If the total annual income from both investments was \$620, how much was invested at each rate?
48. Things did not go quite as planned. You invested \$12,000, part of it in stock that paid 14% annual interest. However, the rest of the money suffered a 6% loss. If the total annual income from both investments was \$680, how much was invested at each rate?

49. A rectangular soccer field is twice as long as it is wide. If the perimeter of the soccer field is 300 yards, what are its dimensions?
50. A rectangular swimming pool is three times as long as it is wide. If the perimeter of the pool is 320 feet, what are its dimensions?
51. The length of the rectangular tennis court at Wimbledon is 6 feet longer than twice the width. If the court's perimeter is 228 feet, what are the court's dimensions?
52. The length of a rectangular pool is 6 meters less than twice the width. If the pool's perimeter is 126 meters, what are its dimensions?
53. The rectangular painting in the figure shown measures 12 inches by 16 inches and contains a frame of uniform width around the four edges. The perimeter of the rectangle formed by the painting and its frame is 72 inches. Determine the width of the frame.



54. The rectangular swimming pool in the figure shown measures 40 feet by 60 feet and contains a path of uniform width around the four edges. The perimeter of the rectangle formed by the pool and the surrounding path is 248 feet. Determine the width of the path.



55. An automobile repair shop charged a customer \$448, listing \$63 for parts and the remainder for labor. If the cost of labor is \$35 per hour, how many hours of labor did it take to repair the car?
56. A repair bill on a sailboat came to \$1603, including \$532 for parts and the remainder for labor. If the cost of labor is \$63 per hour, how many hours of labor did it take to repair the sailboat?
57. An HMO pamphlet contains the following recommended weight for women: "Give yourself 100 pounds for the first 5 feet plus 5 pounds for every inch over 5 feet tall." Using this description, what height corresponds to a recommended weight of 135 pounds?
58. A job pays an annual salary of \$33,150, which includes a holiday bonus of \$750. If paychecks are issued twice a month, what is the gross amount for each paycheck?

59. Answer the question in the following *Peanuts* cartoon strip. (Note: You may not use the answer given in the cartoon!)



PEANUTS reprinted by permission of United Features Syndicate, Inc.

60. For a long-distance person-to-person telephone call, a telephone company charges \$0.43 for the first minute, \$0.32 for each additional minute, and a \$2.10 service charge. If the cost of a call is \$5.73, how long did the person talk?

In Exercises 61–80, solve each formula for the specified variable. Do you recognize the formula? If so, what does it describe?

- | | |
|---|---|
| 61. $A = lw$ for w | 62. $D = RT$ for R |
| 63. $A = \frac{1}{2}bh$ for b | 64. $V = \frac{1}{3}Bh$ for B |
| 65. $I = Prt$ for P | 66. $C = 2\pi r$ for r |
| 67. $E = mc^2$ for m | 68. $V = \pi r^2h$ for h |
| 69. $T = D + pm$ for p | 70. $P = C + MC$ for M |
| 71. $A = \frac{1}{2}h(a + b)$ for a | 72. $A = \frac{1}{2}h(a + b)$ for b |
| 73. $S = P + Prt$ for r | 74. $S = P + Prt$ for t |
| 75. $B = \frac{F}{S - V}$ for S | 76. $S = \frac{C}{1 - r}$ for r |
| 77. $IR + Ir = E$ for I | 78. $A = 2lw + 2lh + 2wh$ for h |
| 79. $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$ for f | 80. $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$ for R_1 |



Writing in Mathematics

81. In your own words, describe a step-by-step approach for solving algebraic word problems.
82. Write an original word problem that can be solved using a linear equation. Then solve the problem.
83. Explain what it means to solve a formula for a variable.
84. Did you have difficulties solving some of the problems that were assigned in this exercise set? Discuss what you did if this happened to you. Did your course of action enhance your ability to solve algebraic word problems?