

Concept 4: Applications Involving Principal and Interest

37. Tony has a total of \$12,500 in two accounts. One account pays 2% simple interest per year and the other pays 5% simple interest. If he earned \$370 in interest in the first year, how much did he invest in each account? (See Example 5.)
38. Lillian had \$15,000 invested in two accounts, one paying 9% simple interest and one paying 10% simple interest. How much was invested in each account if the interest after 1 yr is \$1432?
39. Jason borrowed \$18,000 in two loans. One loan charged 11% simple interest and the other charged 6% simple interest. After 1 yr, Jason paid a total of \$1380. Find the amount borrowed in each loan.
40. Amanda borrowed \$6000 from two sources: her parents and a credit union. Her parents charged 3% simple interest and the credit union charged 8% simple interest. If after 1 yr, Amanda paid \$255 in interest, how much did she borrow from her parents, and how much did she borrow from the credit union?
41. Donna invested money in two accounts: one paying 4% simple interest and the other paying 3% simple interest. She invested \$4000 more in the 4% account than in the 3% account. If she received \$720 in interest at the end of 1 yr how much did she invest in each account?
42. Mr. Hall had some money in his bank earning 4.5% simple interest. He had \$5000 more deposited in a credit union earning 6% simple interest. If his total interest for 1 yr was \$1140, how much did he deposit in each account?
43. Ms. Riley deposited some money in an account paying 5% simple interest and twice that amount in an account paying 6% simple interest. If the total interest from the two accounts is \$765 for 1 yr, how much was deposited into each account?
44. Sienna put some money in a certificate of deposit earning 4.2% simple interest. She deposited twice that amount in a money market account paying 4% simple interest. After 1 yr her total interest was \$488. How much did Sienna deposit in her money market account?

Concept 5: Applications Involving Mixtures

45. Ahmed mixes two plant fertilizers. How much fertilizer with 15% nitrogen should be mixed with 2 oz of fertilizer with 10% nitrogen to produce a fertilizer that is 14% nitrogen? (See Example 6.)
46. How much 8% saline solution should Kent mix with 80 cc (cubic centimeters) of an 18% saline solution to produce a 12% saline solution?
47. Jacque has 3 L of a 50% antifreeze mixture. How much 75% mixture should be added to get a mixture that is 60% antifreeze?
48. One fruit punch has 40% fruit juice and another is 70% fruit juice. How much of the 40% punch should be mixed with 10 gal of the 70% punch to create a fruit punch that is 45% fruit juice?
49. How many liters of an 18% alcohol solution must be added to a 10% alcohol solution to get 20 L of a 15% alcohol solution?
50. How many milliliters of a 2.5% bleach solution must be mixed with a 10% bleach solution to produce 600 mL of a 5% bleach solution?
51. Ronald has a 12% solution of the fertilizer Super Grow. How much pure Super Grow should he add to the mixture to get 32 oz of a 17.5% concentration?
52. How many ounces of water must be added to 20 oz of an 8% salt solution to make a 2% salt solution?
53. Two different teas are mixed to make a blend that will be sold at a fair. Black tea sells for \$2.20 per pound and green tea sells for \$3.00 per pound. How much of each should be used to obtain 4 lb of a blend selling for \$2.50?
54. A nut mixture consists of almonds and cashews. Almonds are \$4.98 per pound, and cashews are \$6.98 per pound. How many pounds of each type of nut should be mixed to produce 16 lb selling for \$5.73 per pound?



Section 1.3

Practice Exercises

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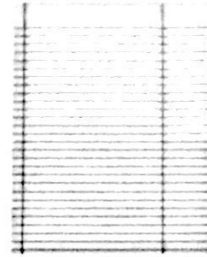
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Study Skills Exercise

1. In your next math class, take notes by drawing a vertical line about three-fourths of the way across the paper, as shown. On the left side, write down what your instructor puts on the board or overhead. On the right side, make your own comments about important words, procedures, or questions that you have.



Review Exercises

For Exercises 2–6, solve the equations.

$$2. 7 + 5x - (2x - 6) = 6(x + 1) + 21$$

$$3. \frac{3}{5}y - 3 + 2y = 5$$

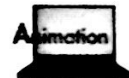
$$4. 3[z - (2 - 3z) - 4] = z - 7$$

$$5. 2a - 4 + 8a = 7a - 8 + 3a$$

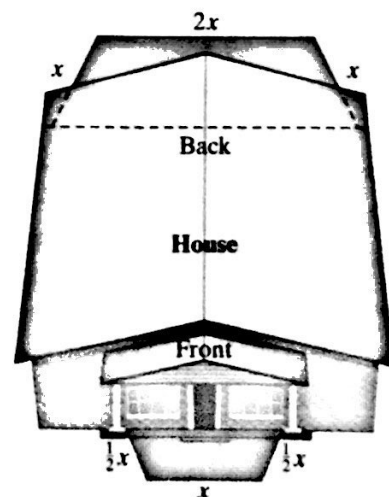
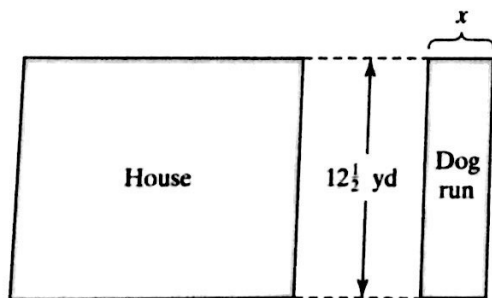
$$6. 3(t + 6) + t + 2 = 5(t + 4) - t$$

Concept 1: Applications Involving Geometry

For Exercises 7–18, use the geometry formulas listed in the inside back cover of the text.



7. A volleyball court is twice as long as it is wide. If the perimeter is 177 ft, find the dimensions of the court. (See Example 1.)
8. The length of a rectangular picture frame is 4 in. less than twice the width. The perimeter is 112 in. Find the length and the width.
9. The lengths of the sides of a triangle are given by three consecutive even integers. The perimeter is 24 m. What is the length of each side?
10. A triangular garden has sides that can be represented by three consecutive integers. If the perimeter of the garden is 15 ft, what are the lengths of the sides?
11. Raoul would like to build a rectangular dog run in the rear of his backyard, away from the house. The width of the yard is $12\frac{1}{2}$ yd, and Raoul wants an area of 100 yd^2 for his dog.
 - a. Find the dimensions of the dog run.
 - b. How much fencing would Raoul need to enclose the dog run?
12. Joanne wants to plant a flower garden in her backyard in the shape of a trapezoid, adjacent to her house (see the figure). She also wants a front yard garden in the same shape, but with sides one-half as long. What should the dimensions be for each garden if Joanne has only a total of 60 ft of fencing?



In statistics, the z-score formula $z = \frac{x - \mu}{\sigma}$ is used in studying probability. Use this formula for Exercises 61–62.

61. a. Solve $z = \frac{x - \mu}{\sigma}$ for x .

b. Find x when $z = 2.5$, $\mu = 100$, and $\sigma = 12$.

62. a. Solve $z = \frac{x - \mu}{\sigma}$ for σ .

b. Find σ when $x = 150$, $z = 2.5$, and $\mu = 110$.

63. Which expressions are equivalent to $\frac{-5}{x - 3}$?

a. $-\frac{5}{x - 3}$ b. $\frac{5}{3 - x}$ c. $\frac{5}{-x + 3}$

64. Which expressions are equivalent to $\frac{z - 1}{-2}$?

a. $\frac{1 - z}{2}$ b. $-\frac{z - 1}{2}$ c. $\frac{-z + 1}{2}$

65. Which expressions are equivalent to $\frac{-x - 7}{y}$?

a. $-\frac{x + 7}{y}$ b. $\frac{x + 7}{-y}$ c. $\frac{-x - 7}{-y}$

66. Which expressions are equivalent to $\frac{-3w}{-x - y}$?

a. $-\frac{3w}{-x - y}$ b. $\frac{3w}{x + y}$ c. $-\frac{-3w}{x + y}$

For Exercises 67–75, solve for the indicated variable. (See Example 6.)