

Answers:

- a. Because t represents the time required to go down to the lake, 1.8 hr is required for the trip to the lake.
- b. The time required for the return trip is $(4.8 - t)$ or $(4.8 \text{ hr} - 1.8 \text{ hr}) = 3 \text{ hr}$. Therefore, the time required to return to camp is 3 hr.
- c. The total distance equals the distance to the lake and back. The distance to the lake is $(2.5 \text{ mph})(1.8 \text{ hr}) = 4.5 \text{ mi}$. The distance back is $(1.5 \text{ mph})(3.0 \text{ hr}) = 4.5 \text{ mi}$. Therefore, the total distance the hiker walked is 9.0 mi.

Skill Practice

8. Jody drove a distance of 320 mi to visit a friend. She drives part of the time at 40 mph and part at 60 mph. The trip took 6 hr. Find the amount of time she spent driving at each speed.

Skill Practice Answers

8. Jody drove 2 hr at 40 mph and 4 hr at 60 mph.

Section 1.5**Practice Exercises**

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Study Skills Exercises

1. Look through the text and write down a page number that contains:
- a. Avoiding Mistakes _____ b. TIP box _____
- c. A key term (shown in bold) _____
2. Define the key terms.
- a. Sales tax b. Commission c. Simple interest

Review Exercises

For Exercises 3–11, solve the equations.

3. $7a - 2 = 11$ 4. $2z + 6 = -15$ 5. $4(x - 3) + 7 = 19$
6. $-3(y - 5) + 4 = 1$ 7. $5(b + 4) - 3(2b + 8) = 3b$ 8. $12c - 3c + 9 = 3(4 + 7c) - c$
9. $\frac{3}{8}p + \frac{3}{4} = p - \frac{3}{2}$ 10. $\frac{1}{4} - 2x = 5$ 11. $0.085(5)d - 0.075(4)d = 1250$

For the remaining exercises, follow the steps outlined in the Problem-Solving Flowchart found on page 49.

Concept 1: Introduction to Problem Solving

12. The larger of two numbers is 3 more than twice the smaller. The difference of the larger number and the smaller number is 8. Find the numbers.
13. One number is 3 less than another. Their sum is 15. Find the numbers.

14. The sum of 3 times a number and 2 is the same as the difference of the number and 4. Find the number.
15. Twice the sum of a number and 3 is the same as 1 subtracted from the number. Find the number.
16. The sum of two integers is 30. Ten times one integer is 5 times the other integer. Find the integers.
(Hint: If one number is x , then the other number is $30 - x$.)
17. The sum of two integers is 10. Three times one integer is 3 less than 8 times the other integer. Find the integers. (Hint: If one number is x , then the other number is $10 - x$.)

Concept 2: Applications Involving Consecutive Integers

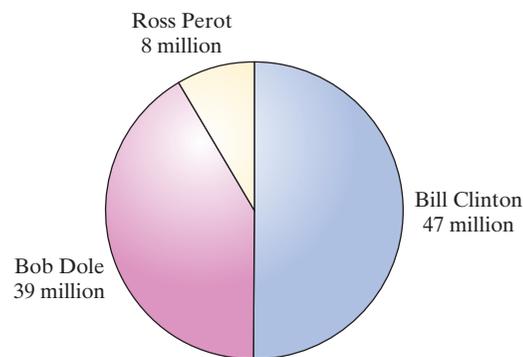
18. The sum of two consecutive page numbers in a book is 223. Find the page numbers.
19. The sum of the numbers on two consecutive raffle tickets is 808,455. Find the numbers on the tickets.
20. The sum of two consecutive odd integers is -148 . Find the two integers.
-  21. Three times the smaller of two consecutive even integers is the same as -146 minus 4 times the larger integer. Find the integers.
22. The sum of three consecutive integers is -57 . Find the integers.
23. Five times the smallest of three consecutive even integers is 10 more than twice the largest. Find the integers.

Concept 3: Applications Involving Percents and Rates

24. Leo works at a used car dealership and earns an 8% commission on sales. If he sold \$39,000 in used cars, what was his commission?
25. Alysha works for a pharmaceutical company and makes 0.6% commission on all sales within her territory. If the yearly sales in her territory came to \$8,200,000, what was her commission?
26. An account executive earns \$600 per month plus a 3% commission on sales. The executive's goal is to earn \$2400 this month. How much must she sell to achieve this goal?
27. If a salesperson in a department store sells merchandise worth over \$200 in one day, she receives a 12% commission on the sales over \$200. If the sales total \$424 on one particular day, how much commission did she earn?
28. Molly had the choice of taking out a 4-year car loan at 8.5% simple interest or a 5-year car loan at 7.75% simple interest. If she borrows \$15,000, which option will demand less interest?
29. Robert can take out a 3-year loan at 8% simple interest or a 2-year loan at $8\frac{1}{2}\%$ simple interest. If he borrows \$7000, which option will demand less interest?
30. If Ivory Soap is $99\frac{44}{100}\%$ pure, then what quantity of impurities will be found in a bar of Ivory Soap that weighs 4.5 oz (ounces)?

31. In the 1996 presidential election, a third party candidate received a significant number of votes. The figure illustrates the number of votes received for Bill Clinton, Bob Dole, and Ross Perot in that election. Compute the percent of votes received by each candidate. (Round to the nearest tenth of a percent.)
32. The total bill (including a 6% sales tax) to have a radio installed in a car came to \$265. What was the cost before tax?
33. Wayne County has a sales tax rate of 7%. How much does Mike's Honda Civic cost before tax if the total cost of the car *plus tax* is \$13,888.60?
34. The price of a swimsuit after a 20% markup is \$43.08. What was the price before the markup?
35. The price of a used textbook after a 35% markdown is \$29.25. What was the original price?
36. In 2006, 39.6 million people lived below the poverty level in the United States. This represents an 80% increase from the number in 2002. How many people lived below the poverty level in 2002?
37. In 2006, Americans spent approximately \$69 billion on weddings. This represents a 50% increase from the amount spent in 2001. What amount did Americans spend on weddings in 2001?

Number of votes by candidate—1996 Presidential election

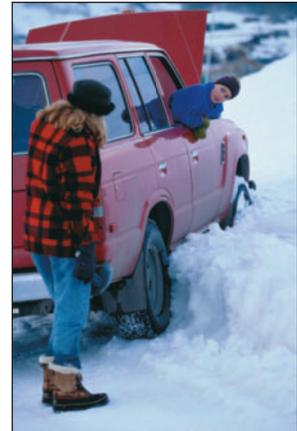


Concept 4: Applications Involving Principal and Interest

38. Darrell has a total of \$12,500 in two accounts. One account pays 8% simple interest per year, and the other pays 12% simple interest. If he earned \$1160 in the first year, how much did he invest in each account?
39. 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 year is \$1432?
40. 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 year, how much was deposited into each account?
41. 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 year her total interest was \$488. How much did Sienna deposit in her money market account?
42. A total of \$20,000 is invested between two accounts: one paying 4% simple interest and the other paying 3% simple interest. After 1 year the total interest was \$720. How much was invested at each rate?
43. 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 year was \$1140, how much did he deposit in each account?

Concept 5: Applications Involving Mixtures

44. For a car to survive a winter in Toronto, the radiator must contain at least 75% antifreeze solution. Jacques' truck has 6 L of 50% antifreeze mixture, some of which must be drained and replaced with pure antifreeze to bring the concentration to the 75% level. How much 50% solution should be drained and replaced by pure antifreeze to have 6 L of 75% antifreeze?
45. How many ounces of water must be added to 20 oz of an 8% salt solution to make a 2% salt solution?
46. 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?
47. 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?
48. For a performance of the play *Company*, 375 tickets were sold. The price of the orchestra level seats was \$25, and the balcony seats sold for \$21. If the total revenue was \$8875.00, how many of each type of ticket were sold?
49. 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 orange pekoe 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?
50. 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?
51. Two raffles are being held at a potluck dinner fund-raiser. One raffle ticket costs \$2.00 per ticket for a weekend vacation. The other costs \$1.00 per ticket for free passes to a movie theater. If 208 tickets were sold and a total of \$320 was received, how many of each type of ticket were sold?

**Concept 6: Applications Involving Distance, Rate, and Time**

52. Two cars are 192 miles apart and travel toward each other on the same road. They meet in 2 hr. One car travels 4 mph faster than the other. What is the average speed of each car?
53. Two cars are 190 miles apart and travel toward each other along the same road. They meet in 2 hr. One car travels 5 mph slower than the other car. What is the average speed of each car?
54. A Piper Cub airplane has an average air speed that is 10 mph faster than a Cessna 150 airplane. If the combined distance traveled by these two small planes is 690 miles after 3 hr, what is the average speed of each plane?
55. A woman can hike 1 mph faster down a trail to Archuletta Lake than she can on the return trip uphill. It takes her 3 hr to get to the lake and 6 hr to return. What is her speed hiking down to the lake?
56. Two boats traveling the same direction leave a harbor at noon. After 3 hr they are 60 miles apart. If one boat travels twice as fast as the other, find the average rate of each boat.
57. Two canoes travel down a river, starting at 9:00. One canoe travels twice as fast as the other. After 3.5 hr, the canoes are 5.25 miles apart. Find the average rate of each canoe.