Then press [=]. The display will read 52.

Note: Do not confuse the [−] key and the [(−)] or [+/−] key. Subtraction always uses the [−] key. The other keys are used with negative numbers, which will be introduced in Chapter 8.

Example 14 Application: Adding and Subtracting Numbers

In pricing a new car, Jason found that he would have to pay a base price of $15,200 plus $1025 in taxes and $575 for license fees. If the bank loaned him $10,640, how much cash would Jason need to buy the car?

Solution

In this problem, experience tells us that we must add and subtract even though there are no specific directions to do so. First, we add Jason's expenses and then we subtract the amount of the bank loan.

Expenses

$$\begin{array}{rl} {\scriptstyle 1\ 1} & \\ 15{,}200 & \text{Base price} \\ 1025 & \text{Taxes} \\ +\quad 575 & \text{License fees} \\ \hline 16{,}800 & \text{Total expenses} \end{array}$$

Cash Needed

$$\begin{array}{rl} {\scriptstyle 7\ 10} & \\ 16{,}800 & \text{Total expenses} \\ -\ 10{,}640 & \text{Bank loan} \\ \hline 6160 & \text{Cash} \end{array}$$

Jason would need $6160 in cash to buy the car.

Now work margin exercise 14.

14. In pricing a new motorcycle, Alex found that he would have to pay a base price of $10,470 plus $630 in taxes and $70 for the license fee. If the bank loaned him $7530, how much cash would Alex need to buy the motorcycle?

Margin Exercise Answers

1. 689 **2.** 501 **3.** 185 **4.** $1777 **5. a.** Associative property of addition **b.** Commutative property of addition **c.** Additive identity property **6.** 58 yd **7.** 232 inches **8. a.** 9; 6 + 9 = 15 **b.** 4; 7 + 4 = 11 **c.** 6; 1 + 6 = 7 **9.** 44 **10.** 154 **11.** 658 **12.** 386 **13.** $36 **14.** $3640

1.2 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

1. When numbers are added, the result (or answer) is called the _____.
2. The numbers being added in an addition problem are called _____.
3. When the grouping of numbers is changed in an addition problem, the _____ property of addition is being utilized.
4. The _____ property of addition indicates that the order of two numbers being added can be changed.
5. Another name for the distance around a geometric figure is its _____.
6. The result in a subtraction problem is the _____.

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

7. A polygon is a geometric figure in a plane with two or more sides.

8. To find the perimeter of a rectangle, add the lengths of the four sides.

9. When subtracting, sometimes the digit being subtracted is larger than the digit it is being subtracted from and so "carrying" must occur.

10. If your bank account has a balance of \$743 and you want to withdraw \$115, you would use subtraction to find that the new balance would be \$628.

Practice

Find each sum mentally.

1. $7+(6+3)$

2. $(2+3)+7$

3. $3+2+5$

4. $8+9+5$

5. $4+9+7+5$

6. $6+2+9+1$

For each statement, state the property of addition illustrated and show that the statement is true by performing the addition. See Example 5.

7. $(2+3)+4=(3+2)+4$

8. $(8+1)+3=(1+8)+3$

9. $2+(1+6)=(2+1)+6$

10. $(8+7)+3=8+(7+3)$

11. $7+(6+0)=7+6$

12. $5+3=(5+0)+3$

Add. See Examples 1 through 3.

13.
$$\begin{array}{r} 24 \\ +54 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 15 \\ +43 \\ \hline \end{array}$$

15. $18+56$

16. $27+34$

17.
$$\begin{array}{r} 268 \\ +93 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 981 \\ +46 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 128 \\ +561 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 832 \\ +122 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 6530 \\ +9542 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 5791 \\ +6342 \\ \hline \end{array}$$

23. $9315+1185$

24. $8324+1958$

25.
$$\begin{array}{r} 21,442 \\ +32,462 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 19,213 \\ +54,642 \\ \hline \end{array}$$

27. $213,116 + 116,018$

28. $317,085 + 146,413$

29. $165 + 276 + 394$

30. $876 + 279 + 143$

31. $91 + 340 + 29 + 69$

32. $86 + 32 + 142 + 75$

33. $124,564 + 345,025 + 1,671,000$

34. $123,456 + 456,123 + 1,879,282$

Subtract. See Examples 8 through 11.

35. $42 - 31$

36. $89 - 76$

37. $275 - 131$

38. $468 - 217$

39. $61 - 48$

40. $74 - 29$

41. $52 - 27$

42. $83 - 54$

43. $126 - 32$

44. $139 - 67$

45. $543 - 167$

46. $474 - 286$

47. $900 - 307$

48. $600 - 368$

49. $3275 - 1744$

50. $5387 - 2643$

51. $\begin{array}{r} 4900 \\ -3476 \\ \hline \end{array}$

52. $\begin{array}{r} 8007 \\ -2136 \\ \hline \end{array}$

53. $\begin{array}{r} 5070 \\ -4376 \\ \hline \end{array}$

54. $\begin{array}{r} 7602 \\ -2985 \\ \hline \end{array}$

55. $\begin{array}{r} 7,085,076 \\ -4,278,432 \\ \hline \end{array}$

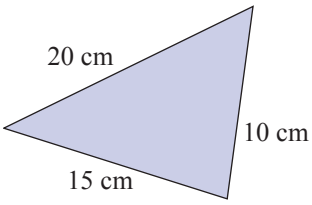
56. $\begin{array}{r} 6,543,222 \\ -2,742,663 \\ \hline \end{array}$

57. $\begin{array}{r} 4,000,000 \\ -2,993,042 \\ \hline \end{array}$

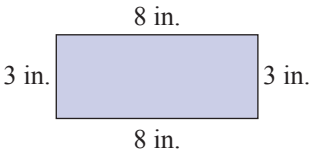
58. $\begin{array}{r} 8,000,000 \\ -647,561 \\ \hline \end{array}$

Calculate the perimeter of each geometric figure. See Example 6.

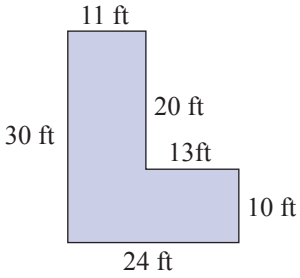
59.



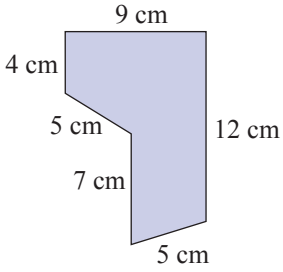
60.



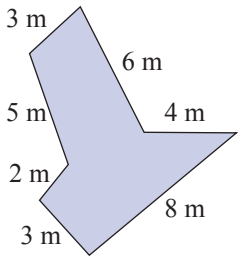
61.



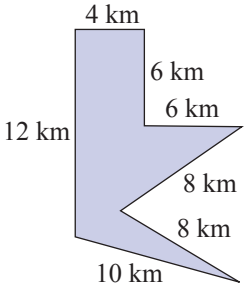
62.



63.



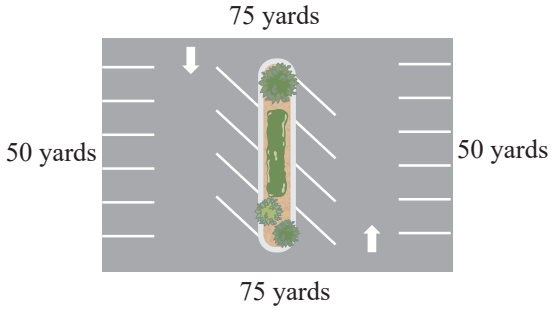
64.



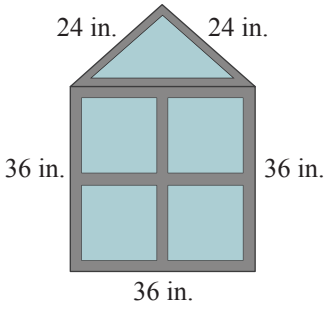
Applications

Solve.

65. Find the perimeter of a parking lot that is in the shape of a rectangle 50 yards wide and 75 yards long.



66. A window is in the shape of a triangle placed on top of a square. The length of each of two equal sides of the triangle is 24 inches and the third side is 36 inches long. The length of each side of the square is 36 inches long. Find the perimeter of the window.



67. The Magley family has the following monthly budget: $815 mortgage; $69 electric; $47 water; and $122 phone bills (including cell phones). What is the family's budget for each month for these expenses?

68. In one year, Stream Line Appliance Co. made 4217 gas stoves; 3947 electric stoves; and 9576 toasters. What was the total number of appliances Stream Line Appliance Co. produced that year?

69. Mr. Juarez kept the mileage records indicated in the table shown here. How many miles did he drive during the six months?

Month	Mileage
Jan.	546
Feb.	378
Mar.	496
Apr.	357
May	503
June	482

70. The Modern Products Corp. showed profits as indicated in the table for the years 2020–2023. What were the company's total profits for the years 2020–2023?

Year	Profits
2020	$1,078,416
2021	$1,270,842
2022	$2,000,593
2023	$1,963,472

71. Three friends rent a local party room for a holiday party. Due to the local fire code, the maximum occupancy of the party room is 125 people. Manuel invites 43 people, George invites 52 people, and Ali invites 27 people to the party. (Don't forget that the hosts are also attending!)

a. If everyone accepts the invitation and attends the party, how many people will be at the party?

b. If everyone accepts the invitation and attends the party, will they be within the maximum occupancy?

72. Theo is keeping track of how many visitors his website receives each day. The website receives 858 visitors on the first day, 723 visitors on the second day, and 1055 visitors on the third day. How many visitors did Theo's website receive during those three days?

73. What number should be added to 978 to get a sum of 1200?

74. What number should be added to 860 to get a sum of 1000?

75. An ice cream shop began the day with 32 gallons of mint chocolate chip ice cream. By closing time they had sold 14 gallons. How many gallons of mint chocolate chip ice cream were left?

76. A man is 36 years old, and his wife is 34 years old. Together, they have attended 28 years of school, including college. If the man attended 12 years of school, how many years did his wife attend?

77. The Kingston Construction Co. made a bid of $7,350,000 to build a stretch of freeway, but the Beach City Construction Co. made a lower bid of $6,870,000. How much lower was the Beach City bid?

78. Two printing companies bid on a print job for a new textbook with an initial run of 20,000 units. The first bid was for $134,400 and the second bid was $165,200. How much higher was the second bid?

79. Brad is interviewing for architecture jobs all over the country. For one job interview he has to fly to Chicago from Dallas. He found a round trip plane ticket for $250 plus $42 in taxes and fees. If the company agreed to reimburse him for $225 of his travel expenses, how much of the total ticket cost will he have to pay out of pocket?

80. Mason needs to change his train reservation. His new ticket price is $325 plus $21 in taxes. A total of $249 from his previous train ticket will be applied to the new purchase. How much will it cost Mason to switch his train reservation?

81. A couple sold their house for $135,000. They paid the realtor $8100, and other expenses of the sale came to $800. If they owed the bank $87,000 for the mortgage, what were their net proceeds from the sale?

82. Alexis decides to purchase a new bedroom set for $2150. She also decided to have it delivered to her house for an additional $90 fee. Taxes of $156 were then added. Because she purchased all the pieces together, the store is giving her a $300 discount. What was the total cost of the bedroom set?

83. Two landscaping companies made bids on the landscaping of a new apartment complex. Company A bid $550,000 for materials and plants and $225,000 for labor. Company B bid $600,000 for materials and plants and $182,000 for labor. Which company had the lower total bid? How much lower was it?

84. In pricing a four-door car, Pat found she would have to pay a base price of $19,500 plus $1170 in taxes and $250 for license fees. For a two-door of the same make, she would pay a base price of $18,700 plus $1122 in taxes and $230 for license fees. Including all expenses, how much cheaper was the two-door model?

85. The Smith family is creating a simple monthly budget to keep track of their spending habits. Each month they pay $1085 for their mortgage. Their average monthly utility bills are $104 for electric, $49 for water & sewer, and $109 for a cable TV, internet, and mobile phone bundle. They budget $550 per month for food. They also have a car payment of $295 per month, insurance payment of $65 per month, and they estimate $225 for fuel.

a. Fill in the table with the missing information.

Category	Expenses
Mortgage	$1085
Utilities	_____
Food	$550
Car costs	_____

b. How much money does the Smith family need to budget for these expenses each month?

c. If their combined family income is $3500 per month (after taxes), how much money do they have for other bills and expenses each month?

86. Daria has a small garden in her backyard. Lately she has had trouble with rabbits and deer eating her vegetables, so she wants to put a fence around the garden. The garden is in the shape of a rectangle with a length of 12 feet and a width of 8 feet.

a. How many feet of fencing will Daria need to buy?

b. After determining how much fencing she needs to buy, Daria realizes that she doesn't need to put any fencing on one side of the garden because it is along the side of her garage. The side next to garage has a length of 12 feet. With this new information, how many feet of fencing will Daria need to buy?

c. While at the home improvement store, a salesperson suggests that Daria install a gate in the fence so she doesn't have to climb over the fence to work in her garden. The gate that she picks out is 4 feet wide and will go in place of one section of fencing. Not including the length of the gate, many feet of fencing will Daria need to buy?

Writing & Thinking

87. List three properties of addition and give an example of each.

88. Explain when "carrying" should be used in addition with whole numbers and give an example.

89. Explain when "borrowing" would be used in subtraction and give an example.

90. Give an example when you might use subtraction (other than in a class).