1.3 Exercises

Concept Check

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

1. When numbers are multiplied, the answer is called the _____.
2. Another way of looking at multiplication is as if it were repeated _____.
3. When a number is multiplied by 0, the answer is always _____.
4. $7 \cdot 12 = 12 \cdot 7$ is an example of the _____ property of multiplication.
5. According to the associative property of multiplication, the _____ of the numbers can be changed.
6. To find the area of a rectangle, multiply the _____ by 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. The numbers being multiplied are called the divisors.
8. According to the multiplicative identity, $1 \cdot 25 = 52$.
9. According to the distributive property, $4 \cdot (7 + 2) = 4 \cdot 7 + 4 \cdot 2$.
10. The associative property of multiplication indicates that length can be multiplied by width or width can be multiplied by length to get the same answer.

Practice

Multiply. See Examples 3 through 5.

1. $\begin{array}{r} 84 \\ \times\ 2 \\ \hline \end{array}$
2. $\begin{array}{r} 21 \\ \times\ 6 \\ \hline \end{array}$
3. $\begin{array}{r} 27 \\ \times\ 6 \\ \hline \end{array}$
4. $\begin{array}{r} 48 \\ \times\ 9 \\ \hline \end{array}$
5. $2(427)$
6. $3(108)$
7. $4 \cdot 702$
8. $3 \cdot 503$
9. $\begin{array}{r} 44 \\ \times 40 \\ \hline \end{array}$
10. $\begin{array}{r} 93 \\ \times 30 \\ \hline \end{array}$
11. $\begin{array}{r} 42 \\ \times 56 \\ \hline \end{array}$
12. $\begin{array}{r} 76 \\ \times 26 \\ \hline \end{array}$
13. $51 \cdot 83$
14. $35 \cdot 84$
15. $(17)(62)$
16. $(74)(31)$
17. $\begin{array}{r} 106 \\ \times\ 72 \\ \hline \end{array}$
18. $\begin{array}{r} 207 \\ \times 83 \\ \hline \end{array}$
19. $\begin{array}{r} 114 \\ \times\ 25 \\ \hline \end{array}$
20. $\begin{array}{r} 116 \\ \times\ 21 \\ \hline \end{array}$

21. 430×50

22. 180×30

23. 420×104

24. 210×301

25. 4321×765

26. 3517×284

27. 3463×1743

28. 4251×2386

29. $13 \cdot 7 \cdot 0$

30. $(96)(0)(4)$

31. $830 \cdot 10 \cdot 1$

32. $(260)(70)(1)$

For each statement, state the property of multiplication illustrated and show that the statement is true by performing the multiplication. See Example 1.

33. $8 \cdot 0 = 0$

34. $0 \cdot 17 = 0$

35. $2 \cdot (3 \cdot 6) = (2 \cdot 3) \cdot 6$

36. $3 \cdot (1 \cdot 7) = (3 \cdot 1) \cdot 7$

37. $2 \cdot (6 \cdot 8) = 2 \cdot (8 \cdot 6)$

38. $(7 \cdot 3) \cdot 4 = (3 \cdot 7) \cdot 4$

39. $5 \cdot 1 = 5$

40. $1 \cdot 19 = 19$

Multiply using the technique of multiplying by powers of ten. See Example 6.

41. $30 \cdot 30$

42. $50 \cdot 50$

43. $25 \cdot 100$

44. $47 \cdot 1000$

45. $20 \cdot 200$

46. $50 \cdot 700$

47. $20 \cdot 8000$

48. $40 \cdot 2000$

49. 3000×500

50. 7000×800

51. $80,000 \times 4\,000$

52. $90,000 \times 7\,000$

Rewrite each expression by using the distributive property and then simplify. See Example 2.

53. $3(9+7)$

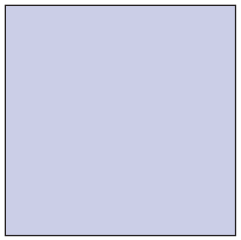
54. $9(2+9)$

55. $6(3+11)$

56. $7(8+4)$

Calculate the area of each rectangle. See Example 7.

57.



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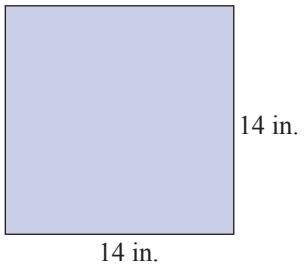

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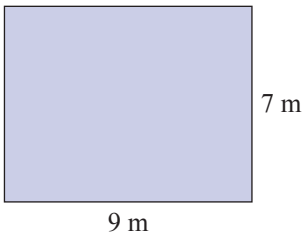

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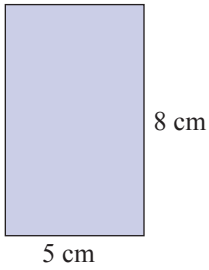

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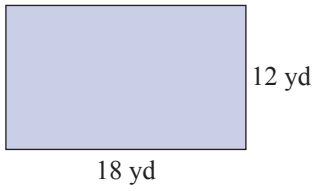

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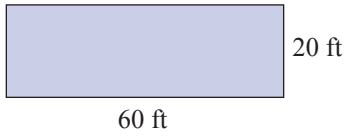


Applications

Solve.

63. The Math Club members decided to attend the national meeting of the NCTM (National Council of Teachers of Mathematics) and had a book sale to raise money for the event. Registration fees were $85 per member and the club had 35 members. How much money did the club need to raise for registration fees?

64. Students at the local community college must pay $83 for a math textbook. If there are 43 students in the class, find the total amount the class will spend on textbooks.

65. A network television station has approximately 18 minutes of commercial time in each hour. How many minutes of commercial time does the network have in a one-day programming schedule of 20 hours? In one week?

66. A group of 15 friends are gathering at a restaurant. The restaurant is having a special where each person can order a three-course meal for $35. If all 15 friends order this special, how much will the total bill be?

67. If one regular pack of candy contains 250 calories, how many calories are there in 37 packs of the same candy?

68. A sandwich shop buys 372 loaves of bread for the week. If each loaf of bread has 24 slices, how many slices of bread were purchased?

69. Your company bought 18 new cars, each with air conditioning and anti-lock brakes, at a price of $15,800 per car. How much did your company pay for these cars?

70. According to the US Fish and Wildlife Service, migratory birds are imported at a value of about $19 each. Suppose that about 800,000 live birds are imported each year. What is the total value of these imported birds?

71. It's lambing season at Fluffy Clouds Farm. There are 117 ewes expected to give birth in the next week. If each sheep is anticipated to have on average 2 lambs, what is the total expected number of lambs?

72. An artificial Christmas tree from a certain brand guarantees that there are 850 needle tips per branch. If the tree you are interested in from this brand has 42 branches, what is the total number of needle tips on the artificial Christmas tree?

The menu prices (to the nearest dollar) for certain items at a local fast food restaurant are shown in the table. Use this table to answer the following questions

Item	Price($)
Bacon Cheeseburger	4
Hamburger	3
French Fries	2
Onion Rings	3
Soda	1
Milkshake	2
Cookie	1

73. Sally and her two friends ordered 2 bacon cheeseburgers, 1 hamburger, 3 orders of French fries, and 3 milkshakes. What was the total cost of their order?

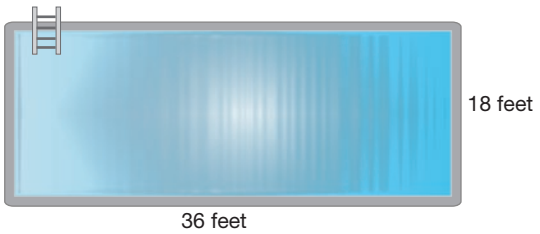
74. George is hungry and can't decide what to order. He is trying to decide between

a. 2 bacon cheeseburgers, 1 order of onion rings, 1 soda, and 2 cookies; or

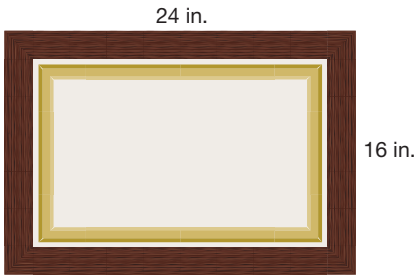
b. 1 bacon cheeseburger, 2 orders of French fries, 1 milkshake, and 1 cookie.

Which of the two orders is more expensive? By how much?

75. A rectangular pool measures 36 feet long by 18 feet wide. Find the area of the pool in square feet.

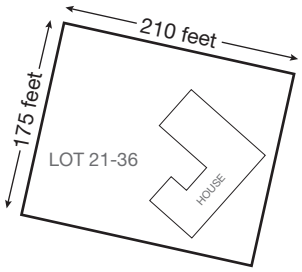


76. A painting is mounted in a rectangular frame (16 inches by 24 inches) and hung on a wall. How many square inches of wall space will the framed painting cover?



77. Cheyenne has been commissioned by her city to paint a mural on the side of a brick building and must calculate the area of the wall so she can plan and scale her mural. The side of the building measures 120 feet tall and 84 feet wide. Find the area of the mural.

78. A rectangular lot for a house measures 210 feet long by 175 feet wide. Find the area of the lot in square feet.



Writing & Thinking

79. Explain, in your own words, what the zero-factor law indicates.

80. Explain, in your own words, why 1 is called the multiplicative identity.

81. Name the property that uses both multiplication and addition and give an example of it.

82. Give an example of when you might use multiplication (other than in a class).

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