

1-2 Lesson Reading Guide***Prime Factors*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 28 in your textbook.
Write your answers below.

1. For what numbers can more than one rectangle be formed?
2. For what numbers can only one rectangle be formed?
3. For the numbers in which only one rectangle is formed, what do you notice about the dimensions of the rectangle?

Read the Lesson

4. The word *factorization* is made up of *factor* + a verb ending + a noun ending. Write a definition for each of the following mathematical terms:
 - a. factor
 - b. to factorize, or to factor
 - c. factorization
5. Is 9 a prime number or a composite number? Explain.

Remember What You Learned

6. Pick a number that has two or three digits. Explain to someone else how to use a factor tree to find the prime factors of the number. In your explanation, show how the rules of divisibility help you to do the factoring.

1-2 Study Guide and Intervention

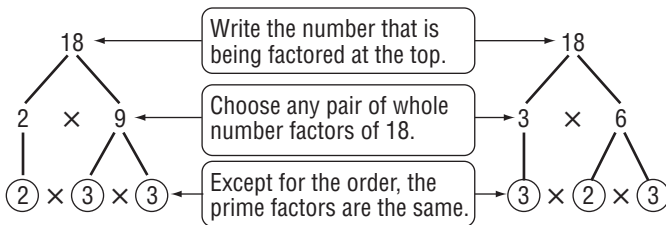
Prime Factors

Factors are the numbers that are multiplied to get a product. A product is the answer to a multiplication problem. A **prime number** is a whole number that has only 2 factors, 1 and the number itself. A **composite number** is a number greater than 1 with more than two factors.

Example 1 Tell whether each number is *prime*, *composite*, or *neither*.

Number	Factors	Prime or Composite?
15	1×15 3×5	Composite
17	1×17	Prime
1	1	Neither

Example 2 Find the prime factorization of 18.



18 is divisible by 2, because the ones digit is divisible by 2.

Circle the prime number, 2.

9 is divisible by 3, because the sum of the digits is divisible by 3.

Circle the prime numbers, 3 and 3.

The prime factorization of 18 is $2 \times 3 \times 3$.

Exercises

Tell whether each number is *prime*, *composite*, or *neither*.

- | | | |
|---------|--------|---------|
| 1. 7 | 2. 12 | 3. 29 |
| 4. 81 | 5. 18 | 6. 23 |
| 7. 54 | 8. 28 | 9. 120 |
| 10. 243 | 11. 61 | 12. 114 |

Find the prime factorization of each number.

- | | |
|---------|--------|
| 13. 125 | 14. 44 |
| 15. 11 | 16. 56 |

1-2 Skills Practice**Prime Factors**

Tell whether each number is *prime*, *composite*, or *neither*.

- | | | | |
|------|-------|--------|--------|
| 1. 0 | 2. 1 | 3. 2 | 4. 3 |
| 5. 4 | 6. 5 | 7. 6 | 8. 7 |
| 9. 8 | 10. 9 | 11. 10 | 12. 11 |

Find the prime factorization of each number.

- | | |
|--------|--------|
| 13. 9 | 14. 25 |
| 15. 28 | 16. 54 |
| 17. 34 | 18. 72 |
| 19. 55 | 20. 63 |

SCHOOL For Exercises 21–24, use the table below.

Marisa's History Test Scores	
Date	Test Score
January 28	67
February 15	81
March 5	97
March 29	100

21. Which test scores are prime numbers?
22. Which prime number is the least prime number?
23. Find the prime factorization of 100.
24. Find the prime factorization of 81.

1-2**Practice*****Prime Factors***

Tell whether each number is *prime*, *composite*, or *neither*.

1. 24

2. 1

3. 13

4. 25

5. 91

6. 0

7. 181

8. 145

Find the prime factorization of each number.

9. 16

10. 48

11. 66

12. 56

13. 80

14. 95

15. Find the least prime number that is greater than 50.

16. All odd numbers greater than 7 can be expressed as the sum of three prime numbers. Which three prime numbers have a sum of 43? Justify your answer.

17. **GARDENING** Julia wants to plant 24 tomato plants in rows. Each row will have the same number of plants in it. Find three possible numbers of rows and the number of plants in each row.

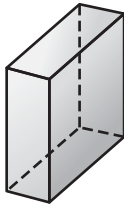
18. **SHOPPING** Jamal bought boxes of nails that each cost the same. He spent a total of \$42. Find three possible costs per box and the number of boxes that he could have purchased.

1-2 Word Problem Practice

Prime Factors

ANIMALS For Exercises 1–3, use the table that shows the height and weight of caribou.

CARIBOU	Height at the Shoulder		Weight	
	inches	centimeters	pounds	kilograms
Cows (females)	43	107	220	99
Bulls (males)	50	125	400	180

<p>1. Which animal heights and weights are prime numbers?</p>	<p>2. Write the weight of caribou cows in kilograms as a prime factorization.</p>
<p>3. ANIMALS Caribou calves weigh about 13 pounds at birth. Tell whether this weight is a prime or a composite number.</p>	<p>4. SPEED A wildlife biologist once found a caribou traveling at 37 miles per hour. Tell whether this speed is a prime or composite number. Explain.</p>
<p>5. GEOMETRY To find the area of a floor, you can multiply its length times its width. The measure of the area of a floor is 49. Find the most likely length and width of the room.</p>	<p>6. GEOMETRY To find the volume of a box, you can multiply its height, width, and length. The measure of the volume of a box is 70. Find its possible dimensions.</p> <div style="text-align: center;">  </div>

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Lesson 1-2