

**LESSON** **Practice A**  
**4-2** **Factors and Prime Factorization**

List all of the factors of each number.

1. 6

\_\_\_\_\_

2. 9

\_\_\_\_\_

3. 10

\_\_\_\_\_

4. 12

\_\_\_\_\_

5. 21

\_\_\_\_\_

6. 18

\_\_\_\_\_

7. 16

\_\_\_\_\_

8. 25

\_\_\_\_\_

9. 31

\_\_\_\_\_

Write the prime factorization of each number.

10. 9

\_\_\_\_\_

11. 25

\_\_\_\_\_

12. 8

\_\_\_\_\_

13. 14

\_\_\_\_\_

14. 12

\_\_\_\_\_

15. 15

\_\_\_\_\_

16. 5

\_\_\_\_\_

17. 20

\_\_\_\_\_

18. 26

\_\_\_\_\_

19. There are 12 chairs in the meeting hall and an odd number of tables. What are all the possible ways the chairs could be arranged so that each table has the same number of chairs?

\_\_\_\_\_

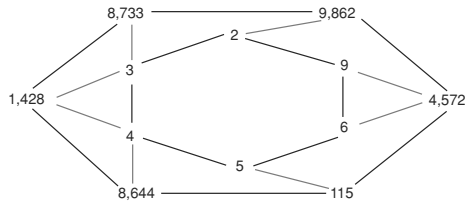
20. What are two different ways that 9 can be written as a product of two numbers?

\_\_\_\_\_

**LESSON 4-1 Puzzles, Twisters & Teasers**

**4-1 Monkey's Web**

Monkeys swinging among the trees created webs of tangled vines. There is an inner web and an outer web. It's your job to connect them so that the monkeys can run between them. Two points in the web can be connected by a straight line only if the number in the outer ring is evenly divisible by the number in the inner ring. Two points cannot be connected if the straight line would cross through the inner ring.



- 9,862 was divisible by 2 = P
- 8,733 was divisible by 3 = I
- 8,644 was divisible by 4 = S
- 4,572 was divisible by 9, 6 = M
- 115 was divisible by 5 = T



To solve the riddle, fill in the letters that match your answers below.

What happened when Monkey 3 married Monkey 5?

They became P R I M E M A T E S

Copyright © by Holt, Rinehart and Winston. All rights reserved.

11

Holt Mathematics

**LESSON 4-2 Practice A**

**4-2 Factors and Prime Factorization**

List all of the factors of each number.

- |                                   |                             |                                   |
|-----------------------------------|-----------------------------|-----------------------------------|
| 1. 6<br><u>1; 2; 3; 6</u>         | 2. 9<br><u>1; 3; 9</u>      | 3. 10<br><u>1; 2; 5; 10</u>       |
| 4. 12<br><u>1; 2; 3; 4; 6; 12</u> | 5. 21<br><u>1; 3; 7; 21</u> | 6. 18<br><u>1; 2; 3; 6; 9; 18</u> |
| 7. 16<br><u>1; 2; 4; 8; 16</u>    | 8. 25<br><u>1; 5; 25</u>    | 9. 31<br><u>1; 31</u>             |

Write the prime factorization of each number.

- |   |   |  |
|---|---|--|
| 10. 9<br><u><math>3^2</math></u>        | 11. 25<br><u><math>5^2</math></u>         | 12. 8<br><u><math>2^3</math></u>         |
| 13. 14<br><u><math>2 \cdot 7</math></u> | 14. 12<br><u><math>2^2 \cdot 3</math></u> | 15. 15<br><u><math>3 \cdot 5</math></u>  |
| 16. 5<br><u>5</u>                       | 17. 20<br><u><math>2^2 \cdot 5</math></u> | 18. 26<br><u><math>2 \cdot 13</math></u> |

19. There are 12 chairs in the meeting hall and an odd number of tables. What are all the possible ways the chairs could be arranged so that each table has the same number of chairs?  
12 chairs at 1 table or 4 chairs at 3 tables

20. What are two different ways that 9 can be written as a product of two numbers?

Possible responses:  $9 \cdot 1$ ;  $1 \cdot 9$ ;  $3 \cdot 3$

Copyright © by Holt, Rinehart and Winston. All rights reserved.

12

Holt Mathematics

**LESSON 4-2 Practice B**

**4-2 Factors and Prime Factorization**

List all of the factors of each number.

- |   |  |  |
|---|--|--|
| 1. 15<br><u>1; 3; 5; 15</u>                             | 2. 24<br><u>1; 2; 3; 4; 6; 8; 12; 24</u>         | 3. 33<br><u>1; 3; 11; 33</u>                 |
| 4. 72<br><u>1; 2; 3; 4; 6; 8; 9; 12; 18; 24; 36; 72</u> | 5. 48<br><u>1; 2; 3; 4; 6; 8; 12; 16; 24; 48</u> | 6. 95<br><u>1; 5; 19; 95</u>                 |
| 7. 66<br><u>1; 2; 3; 6; 11; 22; 33; 66</u>              | 8. 87<br><u>1; 3; 29; 87</u>                     | 9. 36<br><u>1; 2; 3; 4; 6; 9; 12; 18; 36</u> |

Write the prime factorization of each number.

- |  |  |   |
|--|--|---|
| 10. 44<br><u><math>2^2 \cdot 11</math></u> | 11. 56<br><u><math>2^3 \cdot 7</math></u>    | 12. 42<br><u><math>2 \cdot 3 \cdot 7</math></u> |
| 13. 39<br><u><math>3 \cdot 13</math></u>   | 14. 36<br><u><math>2^2 \cdot 3^2</math></u>  | 15. 125<br><u><math>5^3</math></u>              |
| 16. 85<br><u><math>5 \cdot 17</math></u>   | 17. 100<br><u><math>2^2 \cdot 5^2</math></u> | 18. 32<br><u><math>2^5</math></u>               |

19. James has an assigned seat for his flight to Denver. The seats on the plane are numbered 1–49. James's seat number is an odd number greater than 10 that is a factor of 100. What is his seat number for the flight?  
25
20. Linda writes the prime factorization of 40 as  $2 \cdot 2 \cdot 2 \cdot 5$  on the board. Phil writes the prime factorization of 40 as  $2^3 \cdot 5$ . Who is correct?  
They both are.

Copyright © by Holt, Rinehart and Winston. All rights reserved.

13

Holt Mathematics

**LESSON 4-2 Practice C**

**4-2 Factors and Prime Factorization**

List all of the factors of each number.

- |   |   |
|---|---|
| 1. 92<br><u>1; 2; 4; 23; 46; 92</u>   | 2. 356<br><u>1; 2; 4; 89; 178; 356</u>                          |
| 3. 180<br><u>1; 2; 3; 4; 5; 6; 9; 10; 12; 15; 18; 20; 30; 36; 45; 60; 90; 180</u> | 4. 550<br><u>1; 2; 5; 10; 11; 22; 25; 50; 55; 110; 275; 550</u> |

Write the prime factorization of each number.

- |   |  |  |
|---|--|--|
| 5. 225<br><u><math>3^2 \cdot 5^2</math></u> | 6. 333<br><u><math>3^2 \cdot 37</math></u> | 7. 124<br><u><math>2^2 \cdot 31</math></u>         |
| 8. 216<br><u><math>2^3 \cdot 3^3</math></u> | 9. 423<br><u><math>3^2 \cdot 47</math></u> | 10. 810<br><u><math>2 \cdot 3^4 \cdot 5</math></u> |

Write each number as a product in two different ways. Possible answers given.

- |  |   |  |
|--|---|--|
| 11. 81<br><u><math>1 \cdot 81</math>; <math>9 \cdot 9</math></u> | 12. 117<br><u><math>1 \cdot 117</math>; <math>3 \cdot 39</math></u> | 13. 375<br><u><math>1 \cdot 375</math>; <math>3 \cdot 125</math></u> |
| <u><math>3 \cdot 27</math></u>                                   | <u><math>9 \cdot 13</math></u>                                      | <u><math>5 \cdot 75</math>; <math>15 \cdot 25</math></u>             |

14. You and your friend are going to split the houses in your neighborhood for newspaper delivery. Which would you prefer, the odd-numbered houses or the prime-numbered houses? Explain.

If students want more houses, they should choose odd numbers.

If they want fewer houses, they should choose prime numbers,

because there are fewer prime numbers than odd numbers.

15. Selma cannot remember her locker number! She knows that her locker number is prime, and that it is a factor of 435. What are all of Selma's possible locker numbers?

3, 5, or 29

Copyright © by Holt, Rinehart and Winston. All rights reserved.

14

Holt Mathematics