

## Vocabulary and Concept Check

- VOCABULARY** What is the prime factorization of a number?
- VOCABULARY** How can you use a factor tree to help you write the prime factorization of a number?
- WHICH ONE DOESN'T BELONG?** Which factor pair does not belong with the other three? Explain your reasoning.

2, 28

4, 14

6, 9

7, 8

## Practice and Problem Solving

Use divisibility rules to determine whether the number is divisible by 2, 3, 5, 6, 9, and 10. Use a calculator to check your answer.

4. 1044

5. 1485

6. 1620

7. 1709

List the factor pairs of the number.

1 8. 15

9. 22

10. 34

11. 39

12. 45

13. 54

14. 59

15. 61

Write the prime factorization of the number.

2 16. 16

17. 25

18. 30

19. 26

20. 84

21. 54

22. 65

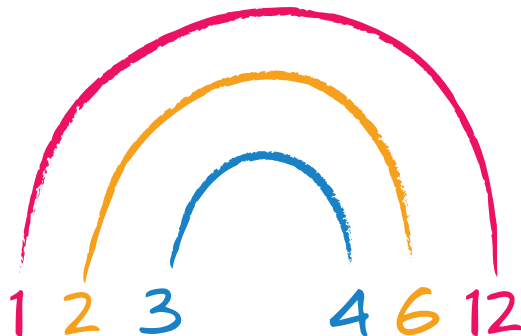
23. 77

**X**

The prime factorization of  
 $72 = 2 \cdot 2 \cdot 2 \cdot 9$   
 $= 2^3 \cdot 9.$

24. **ERROR ANALYSIS** Describe and correct the error in writing the prime factorization.

25. **FACTOR RAINBOW** You can use a factor rainbow to check whether a list of factors is correct. To create a factor rainbow, list the factors of a number in order from least to greatest. Then draw arches that link the factor pairs. For perfect squares, there is no connecting arch in the middle. So, just circle the middle number. A factor rainbow for 12 is shown. Create factor rainbows for 6, 24, 36, and 48.



Find the number represented by the prime factorization.

26.  $2^2 \cdot 3^2 \cdot 5$

27.  $3^2 \cdot 5^2 \cdot 7$

28.  $2^3 \cdot 11^2 \cdot 13$

Find the greatest perfect square that is a factor of the number.

3 29. 244

30. 650

31. 756

32. 1290

33. **CRITICAL THINKING** Is 2 the only even prime number? Explain.

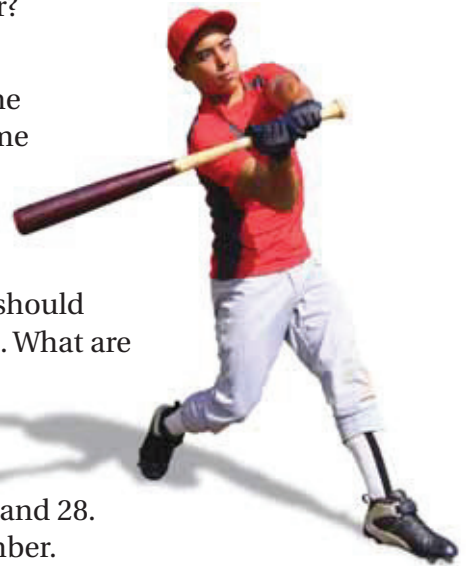
34. **BASEBALL** The coach of a baseball team separates the players into groups for drills. Each group has the same number of players. Is the total number of players on the baseball team *prime* or *composite*? Explain.

35. **SCAVENGER HUNT** A teacher divides 36 students into equal groups for a scavenger hunt. Each group should have at least 4 students but no more than 8 students. What are the possible group sizes?

36. **PERFECT NUMBERS** A *perfect number* is a number that equals the sum of its factors, not including itself. For example, the factors of 28 are 1, 2, 4, 7, 14, and 28. Because  $1 + 2 + 4 + 7 + 14 = 28$ , 28 is a perfect number. What are the perfect numbers between 1 and 28?

37. **BAKE SALE** One table at a bake sale has 75 cookies. Another table has 60 cupcakes. Which table allows for more rectangular arrangements when all the cookies and cupcakes are displayed? Explain.

38. **MODELING** The stage manager of a school play creates a rectangular acting area of 42 square yards. String lights will outline the acting area. To the nearest whole number, how many yards of string lights does the manager need to enclose this area?



Rectangular Prism



Volume = 40 cubic inches

39. **Volume** The volume of a rectangular prism can be found using the formula  $volume = length \times width \times height$ . Using only whole number dimensions, how many different prisms are possible? Explain.



## Fair Game Review What you learned in previous grades & lessons

Find the difference. (*Skills Review Handbook*)

40.  $192 - 47$

41.  $451 - 94$

42.  $3210 - 815$

43.  $4752 - 3504$

44. **MULTIPLE CHOICE** You buy 168 pears. There are 28 pears in each bag. How many bags of pears do you buy? (*Skills Review Handbook*)

(A) 5

(B) 6

(C) 7

(D) 28