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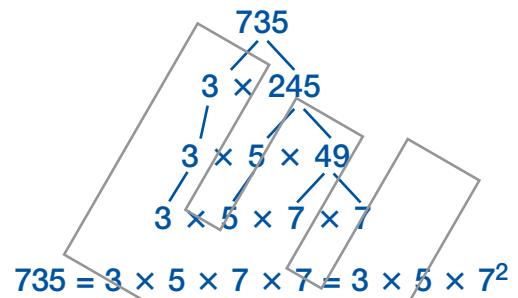
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The factors of a number are the numbers by which it can be divided evenly.

A **prime number**, such as 5, has only two factors, 1 and itself.

A **composite number**, such as 8, has more than two factors.

A **factor tree** shows the **prime factorization** of a number, that is, as the product of prime numbers. You can write the prime factorization with exponents.



Find the prime factorization of each number using a factor tree. Then write it with exponents.

1.  $\begin{array}{c} 50 \\ \swarrow \searrow \end{array}$

2.  $\begin{array}{c} 26 \\ \swarrow \searrow \end{array}$

3.  $\begin{array}{c} 84 \\ \swarrow \searrow \end{array}$

50 = \_\_\_\_\_

26 = \_\_\_\_\_

84 = \_\_\_\_\_

4.  $\begin{array}{c} 77 \\ \swarrow \searrow \end{array}$

5.  $\begin{array}{c} 150 \\ \swarrow \searrow \end{array}$

6.  $\begin{array}{c} 378 \\ \swarrow \searrow \end{array}$

77 = \_\_\_\_\_

150 = \_\_\_\_\_

378 = \_\_\_\_\_

Write the prime factorization of each number. Use exponents.

7. 22 \_\_\_\_\_

13. 90 \_\_\_\_\_

8. 30 \_\_\_\_\_

14. 225 \_\_\_\_\_

9. 60 \_\_\_\_\_

15. 231 \_\_\_\_\_

10. 54 \_\_\_\_\_

16. 85 \_\_\_\_\_

11. 80 \_\_\_\_\_

17. 184 \_\_\_\_\_

12. 210 \_\_\_\_\_

18. 261 \_\_\_\_\_

Solve.

19. The prime factorization of a whole number is one factor raised to the third power. The number is greater than 300 and less than 400. What is the number?

20. The prime factorization of a whole number is one factor raised to the fifth power. The number is greater than 200 and less than 300. What is the number?

Percent (%) means *per hundred*. Percent is a ratio of some number to 100 ( $\frac{n}{100}$ ). Ratios, fractions, and decimals can all be written as percents.

$$3 \text{ to } 10 = 3:10 = \frac{3}{10} = \frac{30}{100} = 0.30 = 0.3 = 30\%$$

Percents can name numbers larger than 1 or smaller than 0.01.

$$1\frac{3}{4} = 175\%$$

$$0.5\% = 0.005$$

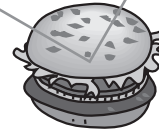
Write each decimal as a fraction with a denominator of 100 and as a percent.

1.  $0.45 =$  \_\_\_\_\_ 2.  $0.03 =$  \_\_\_\_\_ 3.  $0.86 =$  \_\_\_\_\_

4.  $0.456 =$  \_\_\_\_\_ 5.  $0.1 =$  \_\_\_\_\_ 6.  $0.93 =$  \_\_\_\_\_

7.  $1.2 =$  \_\_\_\_\_ 8.  $0.004 =$  \_\_\_\_\_ 9.  $0.025 =$  \_\_\_\_\_

10. About 0.55 of the calories in a burger come from fat. \_\_\_\_\_



Write each fraction as a percent.

11.  $\frac{1}{2} =$  \_\_\_\_\_ 12.  $\frac{1}{4} =$  \_\_\_\_\_ 13.  $\frac{3}{4} =$  \_\_\_\_\_

14.  $\frac{9}{10} =$  \_\_\_\_\_ 15.  $\frac{7}{20} =$  \_\_\_\_\_ 16.  $\frac{5}{8} =$  \_\_\_\_\_

17.  $\frac{5}{4} =$  \_\_\_\_\_ 18.  $\frac{7}{1,000} =$  \_\_\_\_\_ 19.  $\frac{2}{250} =$  \_\_\_\_\_

20. Only  $\frac{3}{1,000}$  of the population likes anchovy pizza. \_\_\_\_\_



Write each percent as a fraction with a denominator of 100 and as a decimal.

21.  $20\% =$  \_\_\_\_\_ 22.  $10\% =$  \_\_\_\_\_ 23.  $15\% =$  \_\_\_\_\_

24.  $37\% =$  \_\_\_\_\_ 25.  $64\% =$  \_\_\_\_\_ 26.  $4\% =$  \_\_\_\_\_

27.  $250\% =$  \_\_\_\_\_ 28.  $10.9\% =$  \_\_\_\_\_ 29.  $0.1\% =$  \_\_\_\_\_

30. A certain cereal contains 18% sugar. \_\_\_\_\_

