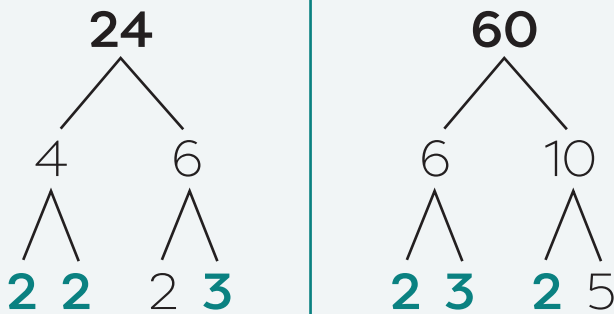


Find the Greatest Common Factor By Prime Factorization #1

The **greatest common factor (GCF)** of two numbers is the greatest whole number that divides both numbers evenly. One way to find the GCF is by finding the prime factorization of each number. This method is especially useful for finding the GCF of two large numbers.

Let's try an example. Find the GCF of 24 and 60.

First, find the prime factorization of both numbers.



Then, identify the prime factors that the two numbers have in common, and multiply those shared prime factors to find the GCF.

Here, the prime factors that 24 and 60 have in common are **2, 2, and 3**.

Multiply the shared prime factors to find the GCF: $2 \cdot 2 \cdot 3 = 12$

So, the GCF of 24 and 60 is **12**!

Note: If there is only one prime factor that the two numbers share, that number is the GCF!

Factor trees will vary.

Try it out! Find the greatest common factor by prime factorization for each pair of numbers below.

Prime factorization of 36: $36 = 6 \times 6 = 2 \times 3 \times 2 \times 3$

Prime factorization of 42: $42 = 6 \times 7 = 2 \times 3 \times 7$

GCF: 6

Prime factorization of 52: $52 = 2 \times 26 = 2 \times 2 \times 13$

Prime factorization of 84: $84 = 4 \times 21 = 2 \times 2 \times 3 \times 7$

GCF: 4

Prime factorization of 56: $56 = 4 \times 14 = 2 \times 2 \times 2 \times 7$

Prime factorization of 70: $70 = 10 \times 7 = 2 \times 5 \times 7$

GCF: 14

Prime factorization of 48: $48 = 6 \times 8 = 2 \times 3 \times 2 \times 2 \times 2$

Prime factorization of 72: $72 = 8 \times 9 = 2 \times 2 \times 2 \times 3 \times 3$

GCF: 24