

GCF and LCM

A **common factor** is a whole number that is a factor of two or more nonzero whole numbers. The greatest of the common factors is the **greatest common factor (GCF)**.

For the choir described above, the greatest number of groups that can be formed is given by the GCF of 24, 60, and 36. You can use one of two methods to find the GCF.

Method 1: List the factors of each number. Identify the greatest number that is on every list.

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
 Factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
 Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

The common factors are 1, 2, 3, 4, 6, and 12. The GCF is 12

Method 2: Write the prime factorization of each number. The GCF is the product of the common prime factors.

$24 = 2 \cdot 2 \cdot 2 \cdot 3$
 $60 = 2 \cdot 2 \cdot 3 \cdot 5$
 $36 = 2 \cdot 2 \cdot 3 \cdot 3$

The common prime factors are 2, 2, and 3. The GCF is 12

Relatively Prime: Two or more numbers are **relatively prime** if their greatest common factor is 1.

Example 1: Find the greatest common factor of the numbers. Then tell whether the numbers are relatively prime.

A. 24, 45

List the factors of each number. Identify the greatest number that the lists have in common.

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Factors of 45: 1, 3, 5, 9, 15, 45

The GCF is 3. So, the numbers are not relatively prime.

B. 35, 54

Write the prime factorization of each number.

$35 = 5 \cdot 7$

$54 = 2 \cdot 3 \cdot 3 \cdot 3$

There are no common prime factors. However, two numbers always have 1 as a common factor. So, the GCF is 1, and the numbers are relatively prime.

Least Common Denominator: The **least common denominator (LCD)** of two or more fractions is the least common multiple of the denominators.

You can use the LCD to compare and order fractions.