

Lesson 4-2

Example 1 Find the Greatest Common Factor Find the GCF of 18 and 24.

Method 1 List the factors of the numbers.

factors of 18: 1, 2, 3, 6, 9, 18

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

The common factors of 18 and 24 are 1, 2, 3, and 6.
So, the greatest common factor or GCF is 6.

Method 2 Use prime factorization.

Write the prime factorization. Then circle the common factors.

$$18 = 2 \cdot 3 \cdot 3$$

$$24 = 2 \cdot 2 \cdot 2 \cdot 3$$

The greatest common factor or GCF of 18 and 24 is $2 \cdot 3$ or 6.

Example 2 Find the GCF of Three Numbers Find the GCF of 18, 24, and 54.

Method 1 List the factors of the numbers.

factors of 18: 1, 2, 3, 6, 9, 18

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

factors of 54: 1, 2, 3, 6, 9, 18, 27, 54

The common factors of 18, 24, and 54 are 1, 2, 3, and 6.
So, the greatest common factor is 6.

Method 2 Use prime factorization.

Write the prime factorization. Then circle the common factors.

$$18 = 2 \times 3 \times 3$$

$$24 = 2 \times 2 \times 2 \times 3$$

$$54 = 2 \times 3 \times 3 \times 3$$

The common prime factors are 2 and 3. So, the GCF is 2×3 , or 6.

Example 3 Use the GCF to Solve a Problem

MARCHING BAND In a marching band formation, 32 clarinet players are to march in front of 24 trumpet players. Both groups must have the same number of students in each row. Find the greatest number of students in each row.

The greatest number of students in each row is the GCF of the number of students in each group.

$$32 = 2 \times 2 \times 2 \times 2 \times 2$$

$$24 = 2 \times 2 \times 2 \times 3$$

The GCF of 32 and 24 is 2^3 , or 8.

So, there should be 8 students in each row.