

4-2**Study Guide and Intervention*****Greatest Common Factor***

The **greatest common factor (GCF)** of two or more numbers is the largest number that is a factor of each number. The GCF of prime numbers is 1.

Example 1 Find the GCF of 72 and 108 by listing factors.

factors of 72: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

factors of 108: 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108

common factors: 1, 2, 3, 4, 6, 9, 12, 18, 36

The GCF of 72 and 108 is 36.

Example 2 Find the GCF of 42 and 60 using prime factors.

Method 1 Write the prime factorization.

$$60 = 2 \times \boxed{2} \times \boxed{3} \times 5$$

$$42 = \boxed{2} \times \boxed{3} \times 7$$

Method 2 Divide by prime numbers.

Divide both 42 and 60 by 2.

Then divide the quotients by 3.

$$\begin{array}{r} 7 \quad 10 \\ 3 \overline{)21} \quad 30 \\ 2 \overline{)42} \quad 60 \end{array} \leftarrow \text{Start here}$$

The common prime factors are 2 and 3. The GCF of 42 and 60 is 2×3 , or 6.

Exercises

Find the GCF of each set of numbers.

1. 18, 30 **6**

2. 60, 45 **15**

3. 24, 72 **24**

4. 32, 48 **16**

5. 100, 30 **10**

6. 54, 36 **18**

7. 3, 97, 5 **1**

8. 4, 20, 24 **4**

9. 36, 9, 45 **9**