5-2 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.

$60 = 2 \times 2 \times 3 \times 5$
$42 = \phantom{2 \times {}} 2 \times 3 \times 7$

Method 2 Divide by prime numbers.
Divide both 42 and 60 by 2.
Then divide the quotients by 3.

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        7    10
    3)21    30
   2)42    60   ← Start here.
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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

2. 60, 45

3. 24, 72

4. 32, 48

5. 100, 30

6. 54, 36

7. 3, 97, 5

8. 4, 20, 24

9. 36, 9, 45