Name _____ Date _____ Class _____

SKILL 6: Greatest Common Factor

Numbers often have common factors. The **greatest common factor (GCF)** of two numbers is the greatest number that is a factor of both of them.

Example 1

Find the greatest common factor (GCF) of 24 and 60.

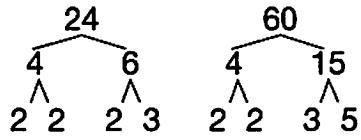
List all factors of 24: **1**, **2**, **3**, **4**, **6**, 8, **12**, 24
List all factors of 60: **1**, **2**, **3**, **4**, 5, **6**, 10, **12**, 15, 20, 30, 60

1, 2, 3, 4, 6, and 12 are common factors. The *greatest* common factor is 12.

Example 2

Find the greatest common factor of 24 and 60 by using the prime factorization of each number.

The greatest common factor is the product of the prime factors that the numbers have in common.



Prime factorization of 24: (2) × (2) × 2 × (3)

Prime factorization of 60: (2) × (2) × (3) × 5

The common prime factors are 2, 2, and 3. So, the greatest common factor (GCF) is 2 × 2 × 3, or 12.

Guided Practice

1. Find the GCF of 12 and 18 by listing all factors of each number.
   a. Factors of 12: _____
   b. Factors of 18: _____
   c. GCF: _____

2. Find the GCF of 18 and 90 by using their prime factorizations.
   a. Prime factorization of 18: _____
   b. Prime factorization of 90: _____
   c. The common prime factors of 19 and 90 are: _____, _____, and _____.
   d. The product of the common prime factors is _____.
   e. So, the GCF of 18 and 90 is _____.

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SKILL 6: Practice

Find the GCF of each pair of numbers by listing all factors of each number.

1. 28: _____

35: _____

GCF: _____

2. 16: _____

24: _____

GCF: _____

3. 30: _____

36: _____

GCF: _____

4. 24: _____

42: _____

GCF: _____

Find the GCF of each pair of numbers by using their prime factorizations.

5. 14: _____

35: _____

GCF: _____

6. 18: _____

27: _____

GCF: _____

7. 48: _____

54: _____

GCF: _____

8. 36: _____

48: _____

GCF: _____

9. 40: _____

80: _____

GCF: _____

10. 32: _____

36: _____

GCF: _____

Solve.

11. Marcel's age is a common factor of both 48 and 72. She is older than 12. How old is Marcel? _____

TEST PREP

12. Which is the GCF of 24 and 36? *Skill 6*

A 3 **C** 2

B 24 **D** 12

13. Which is the prime factorization of 56 using exponents? *Skill 5*

F 7×8 **H** $2^2 \times 7$

G $2^3 \times 7$ **J** 2×28