REVIEW: Greatest Common Factor

Name _____

Key Concept and Vocabulary

The **greatest common factor (GCF)** of two or more positive monomials is the product of their common prime factors.

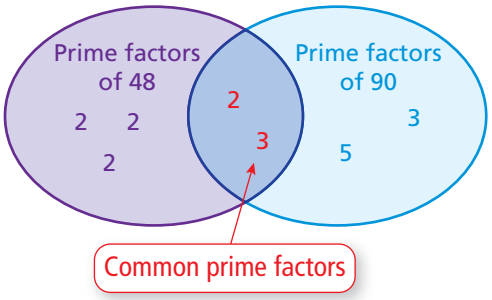
Prime factorization:

$165 = 3 \cdot 5 \cdot 11$

$210 = 2 \cdot 3 \cdot 5 \cdot 7$

The GCF of 165 and 210 is $3 \cdot 5 = 15$.

Visual Model



GCF $= 2 \cdot 3 \cdot 6$

Skill Examples

1. $15 = 3 \cdot 5$
$30 = 2 \cdot 3 \cdot 5$
GCF $= 3 \cdot 5 = 15$

2. $20 = 2 \cdot 2 \cdot 5$
$28 = 2 \cdot 2 \cdot 7$
GCF $= 2 \cdot 2 = 4$

3. $48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
$90 = 2 \cdot 3 \cdot 3 \cdot 5$
GCF $= 2 \cdot 3 = 6$

4. $18x^3 = 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x$
$21x^2 = 3 \cdot 7 \cdot x \cdot x$
GCF $= 3 \cdot x \cdot x = 3x^2$

Application Example

5. You have 48 red flowers, 60 yellow flowers, and 84 white flowers. You want to make flower arrangements that have the same number of each color. What is the greatest number of arrangements that you can make if every flower is used?

$48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
$60 = 2 \cdot 2 \cdot 3 \cdot 5$
$84 = 2 \cdot 2 \cdot 3 \cdot 7$
} GCF $= 2 \cdot 2 \cdot 3 = 12$

∴ You can make 12 arrangements.

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Check your answers at BigIdeasMath.com.

Find the greatest common factor.

6. $36 =$ $2 \cdot 2 \cdot 3 \cdot 3$ GCF $=$ 9
$45 =$ $3 \cdot 3 \cdot 5$

7. $70 =$ $2 \cdot 5 \cdot 7$ GCF $=$ 14
$98 =$ $2 \cdot 7 \cdot 7$

8. $42 =$ $2 \cdot 3 \cdot 7$ GCF $=$ 21
$105 =$ $3 \cdot 5 \cdot 7$

9. $154 =$ $2 \cdot 7 \cdot 11$ GCF $=$ 77
$231 =$ $3 \cdot 7 \cdot 11$

10. $27y =$ $3 \cdot 3 \cdot 3 \cdot y$ GCF $=$ $27y$
$54y^3 =$ $2 \cdot 3 \cdot 3 \cdot 3 \cdot y \cdot y \cdot y$

11. $56m^5 =$ $2 \cdot 2 \cdot 2 \cdot 7 \cdot m \cdot m \cdot m \cdot m \cdot m$ GCF $=$ $4m^4$
$68m^4 =$ $2 \cdot 2 \cdot 17 \cdot m \cdot m \cdot m \cdot m$

12. **CLOTH** You have two pieces of cloth. One piece is 80 inches wide and the other is 96 inches wide. You want to cut both pieces into strips of equal width that are as wide as possible. How wide should you cut each strip? width $=$ 16 inches