

Definition: In a multiplication expression, the quantities being multiplied are called the **FACTORS**. A number or expression can be factored into lowest terms. This means taking the non-prime factors to the lowest number possible.

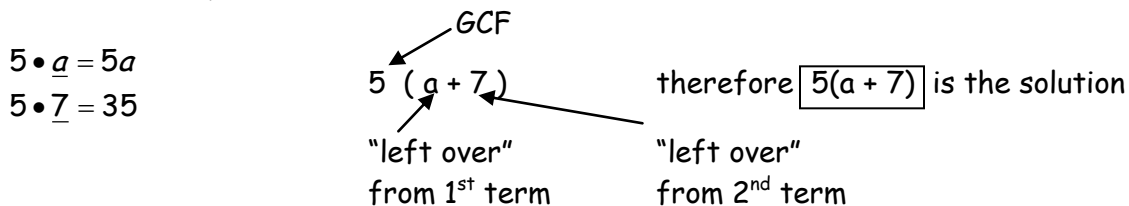
The **GREATEST COMMON FACTOR (GCF)** is the greatest number that is a factor of all the numbers.

Example 1: Find the GCF of 21 & 15. $21 = 3 \cdot 7$
 $15 = 3 \cdot 5$ **3** is the biggest number that they have in **COMMON** therefore the GCF is 3.

Example 2: Find the GCF of $w^2 z^4$ & $u^2 w^4$.
 $w^2 z^4 = \underbrace{w \cdot w}_{\text{common}} \cdot z \cdot z \cdot z \cdot z$ The common terms are $w \cdot w = w^2$, therefore w^2 is the GCF.
 $u^2 w^4 = u \cdot u \cdot \underbrace{w \cdot w}_{\text{common}} \cdot w \cdot w$

Example 3: $5a + 35$ GCF of $5a$ and 35 is **5**

When factoring polynomials, the first step is to find the GCF between the 2 terms. Once you have the GCF, the GCF gets "taken out" of the expression and the factors that are "left" stay in parentheses as an expression.



A sure way of knowing if your answer is correct is to use the **distributive property**.
 $5(a + 7) = 5a + 35$ ✓ **Factoring polynomials is just like doing the distributive property backwards!!

Factor out the Greatest Common Factor.

1. $2x^3 + 4x^2 - 6x$

2. $4x^2 y^2 + 16xy$

3. $6x^3 + 3x$

4. $4a^3 b - 12a^2 b^2 - 8ab^3$

Find the missing factor.

5. $y^5 = (\underline{\hspace{2cm}})(y^3)$

6. $c^7 = (\underline{\hspace{2cm}})(-c^3)$

7. $4x^3 - 7x^2 = (\underline{\hspace{2cm}})(4x - 7)$

8. $10x + 30 = (\underline{\hspace{2cm}})(2x + 6)$