



Factoring Completely

Video Notes

[Video Link](#)

Factoring Completely

What background knowledge will I need?

- Factoring:
 - GCF
 - Difference of Perfect Squares
 - Trinomials (3 separate videos - unFOIL, Geometric Model, Decomposition)
 - Factoring by Grouping

Factor:

$$\begin{array}{l} \underline{5x^2 + 75x + 180} \\ \text{GCF} \\ 5(x^2 + 15x + 36) \\ \downarrow \\ 5(x + 3)(x + 12) \end{array}$$

$+3x$
 $+12x$

36
1 36
2 18
3 12
4 9
6 6

$5(x + 3)(x + 12)$

Questions to ask yourself when factoring:

- ✓ → Is there a GCF? *yes!* x
- x → Is it a difference of perfect squares? *binomial (2)* x
- ✓ → Is it a factorable trinomial? *subtraction perfect squares* x
- x → Can I factor by grouping? *yes!* x
- Is it completely factored? *yes!*

Factor:

$$-12x^3y + 26x^2y - 10xy$$

GCF:

$$-2xy(6x^2 - 13x + 5)$$

Factor trinomial

$$\begin{array}{r} 6 \\ 1 \overline{) 6} \\ 2 \end{array}$$

$$\begin{array}{r} 5 \\ 1 \overline{) 5} \end{array}$$

✓ → Is it a factorable trinomial?

✗ → Is it a difference of perfect squares?

✗ → Can I factor by grouping?

→ Is it completely factored?

Questions to ask yourself when factoring:

Factor:

$$a^3b^2 + 3a^2b^2c - 5a^2b - 15abc$$

GCF:

$$ab^2(a^2b + 3abc - 5a - 15c)$$

Factor by grouping:

$$ab(a^2b + 3abc - 5a - 15c)$$

$$ab(ab(a+3c) - 5(a+3c))$$

$$ab(a+3c)(ab-5)$$

Questions to ask yourself when factoring:

✓ → Is there a GCF? yes!

✗ → Is it a difference of perfect squares?

✗ → Is it a factorable trinomial?

→ Can I factor by grouping?

→ Is it completely factored?

Yes!

$$ab(a+3c)(ab-5)$$