Factoring Trinomials

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Notice when you multiply two binomials, many times you get a trinomial.

ex: $(x + 2)(x + 3) = x^2 + 3x + 2x + 6 = x^2 + 5x + 6$

Let's figure out how to factor trinomials.

Ex 1.

Factor: $x^2 + 6x + 8$

Ex 2.

Factor: $2x^3 - 18x^2 + 40x$

Ex 3.

Factor: $z^2 - zw - 6w^2$

Ex 4.

Factor: $x^2 + x - 5$

Polynomials that can't be factored (over the integers) are called _____.

Grouping Method

To factor $ax^2 + bx + c$ using the **grouping method**:

1. Find factors of _____ whose sum is _____.

2. Rewrite _____ as using factors from step 1.

3. Factor by grouping.

Ex 5.

Factor: $8x^2 - 22x + 5$

Ex 6.

Factor: $3x^2 - 17x - 28$

Practice

1. Factor completely: $y^2 + 19y - 66$
2. Factor completely: $3x^3 - 15x^2 - 42x$
3. Factor completely: $-x^2 + 5x + 6$ (Hint: factor out a -1 first to make things easier)
4. Factor completely: $2x^2 - 7xy + 3y^2$
5. Factor completely: $6x^2 - 19x + 15$
6. Factor completely: $6x^6 + 19x^5 - 7x^4$

Q: What goes up and down but doesn't move?