Algebra 1 8.7

Factor trinomials with a leading coefficient
Solve quadratic equations by factoring

coefficient
leading coefficient
x-factor
factor by grouping
prime polynomial
zero product property
whiteboards

$x^2 + 8x + 12$

$(x+6)(x+2)$

$\left(\frac{2x^2}{x} + \frac{3x}{x}\right) + \left(\frac{10x}{5} + \frac{15}{5}\right)$

$x(2x+3) + 5(2x+3)$

$(2x+3)(x+5)$

Quiz 8.5-8.6

$x^2 + 6x - 16$

LC: no x factor

30

1 30

2 15

−3 −10

6 5

$5x^2 - 13x + 6$

$(5x^2 + \overline{3}x) + \overline{10}x + 6$

$x(5x - 3) - 2(5x - 3)$

$(x - 2)(5x - 3)$

What is different about this one?
More complicated: x-factor is not helpful. (Why?)
What are factor pairs for 30?
Factor by grouping

Factor pairs and re-write

What are factor pairs for 28?

28

1 28

2 14

4 7

Example 1 Factor $ax^2 + bx + c$

Factor each trinomial.

a. $7x^2 + 29x + 4$

$7 \cdot 4 = 28$

$1 + 28 = 29$

$(7x^2 + x) + 28x + 4$

$x(7x + 1) + 4(7x + 1)$

$(7x + 1)(x + 4)$

b. $3x^2 + 15x + 18$

$3x^2 + 6x + 9x + 18$

54

1	54
2	27
3	18
6	9

Factor pairs for 54

GuidedPractice

1A. $5x^2 + 13x + 6$

Is there a GCF? Always check first...

1B. $6x^2 + 22x - 8$

Example 2 Factor $ax^2 - bx + c$

Factor $3x^2 - 17x + 20$.

GuidedPractice

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2A. $2n^2 - n - 1$

Is there a GCF?

2B. $10y^2 - 35y + 30$

Some things are just not factorable: but you have to try everything first...

Example 3 Determine Whether a Polynomial is Prime

Factor $4x^2 - 3x + 5$, if possible. If the polynomial cannot be factored using integers, write *prime*.

GCF
x-factor
factor by grouping

GuidedPractice

Factor each polynomial, if possible. If the polynomial cannot be factored usin integers, write *prime*.

3A. $4r^2 - r + 7$

3B. $2x^2 + 3x - 5$

How is this problem different?

6. $3x^2 + 17x + 20 = 0$

5. $2x^2 + 9x + 9 = 0$