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?

$x^2 + 5x + 4$

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

GuidedPractice

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

30

$1 \quad 30$

$2 \quad 15$

$3 \quad 10$

$5 \quad 6$

$5x^2 + 3x + 10x + 6$

$x \quad x \quad 2 \quad 2$

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

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

Is there a GCF? Always check first...

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

$2(3x^2 + 11x - 4)$

$3x^2 + 11x - 4$

-12

$-1 \quad 12$

$2 \quad 6$

$3 \quad 4$

$3x^2 - 1x + 12x - 4$

$x(3x-1) + 4(3x-1)$

$2(3x-1)(x+4)$

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

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

$3x^2 - 5x + -12x + 20$

$3x$ / x | $-5x$ / x | $-12x$ / -4 | 20 / -4

$x(3x - 5) - 4(3x - 5)$

$(3x - 5)(x - 4)$

60

1 60
2 30
3 20
4 15
-5 -12
6 10

GuidedPractice

2

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

Is there a GCF?

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

$5(2y^2 - 7y + 6)$

$5(\quad)(\quad)$

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~~

20
1 20
2 10
4 5

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

$3x^2 + 5x + 12x + 20 = 0$

$x(3x + 5) + 4(3x + 5) = 0$

$(3x + 5)(x + 4) = 0$

$3x + 5 = 0$ $\quad x + 4 = 0$

$3x = -5$ $\quad x = -4$

$x = \frac{-5}{3}$

60

1 60

2 30

3 20

4 15

5 12

6 10

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

WB 8.7 skills

11-24 all