

Factoring Trinomials 1

- it's really the reverse of FOILING

ex Factor $x^2 + 5x + 6$

\uparrow \swarrow
 need factors of +6
 that add up to +5

$= (x + 2)(x + 3)$

2	3
1	6
2	3
6	3
2	3

Check answer by foiling!

$$\begin{array}{r}
 (x+2)(x+3) \\
 \hline
 x^2 + 3x + 2x + 6 \\
 \hline
 x^2 + 5x + 6
 \end{array}$$

Factor:

ex 1) $x^2 + 8x + 12$

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

1	12
2	6
3	4
2	6
12	8

ex 2) $x^2 - 4x - 12$

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

-1	12
-2	6
-3	4
-12	-6
2	-4

ex 3) $x^2 + 7x + 12$

$(x + 3)(x + 4)$

1	-12
2	-6
3	-4
3	4
12	7

ex 4) $x^2 - x - 12$

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

-1	12
-2	6
-3	4
-12	-4
3	-1
1	12
2	6
3	-4

ex 5) $x^2 + 2x - 15$

$(x + 5)(x - 3)$

~~$\begin{array}{r} -15 \\ -3 \quad +5 \\ \hline 2 \end{array}$~~

$\begin{array}{r} 1 \quad 15 \\ 3 \quad 5 \end{array}$

ex 6) $x^2 - x - 20$

$(x + 4)(x - 5)$

~~$\begin{array}{r} -20 \\ +4 \quad -5 \\ \hline -1 \end{array}$~~

$\begin{array}{r} 1 \quad 20 \\ 2 \quad 10 \\ \hline +4 \quad -5 \end{array}$

ex 7) $x^2 + 2x - 35$

$(x - 5)(x + 7)$

~~$\begin{array}{r} -35 \\ -5 \quad +7 \\ \hline 2 \end{array}$~~

$\begin{array}{r} 1 \quad 35 \\ \hline 5 \quad 7 \end{array}$

ex 8) $x^2 - 8x + 15$

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

~~$\begin{array}{r} 15 \\ -3 \quad -5 \\ \hline -8 \end{array}$~~

$\begin{array}{r} 1 \quad 15 \\ 3 \quad 5 \end{array}$

ex 9) $x^2 + 6x + 5$

$(x + 1)(x + 5)$

~~$\begin{array}{r} 5 \\ 1 \quad 5 \\ \hline 6 \end{array}$~~

$\begin{array}{r} 1 \quad 5 \end{array}$

ex 10) $x^2 - 8x + 16$

$(x - 4)(x - 4)$

or $(x - 4)^2$

~~$\begin{array}{r} 16 \\ -4 \quad -4 \\ \hline -8 \end{array}$~~

$\begin{array}{r} 1 \quad 16 \\ 2 \quad 8 \\ \hline 4 \quad 4 \end{array}$

Gold WS #1-30

Gold WS finished
by Thursday

Quiz → Friday Feb 17

option 1:

All positive

ex. $x^2 + 5x + 6$

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

$$\begin{array}{r} 6 \mid +2 \\ +3 \\ \hline 5 \end{array}$$

Option 3:

Last is neg./middle is pos.

ex. $x^2 + x - 6$

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

$$\begin{array}{r} -6 \mid 3 \\ -2 \\ \hline +1 \end{array}$$

option 2:

Middle negative

ex. $x^2 - 5x + 6$

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

$$\begin{array}{r} 6 \mid -2 \\ -3 \\ \hline -5 \end{array}$$

Option 4:

Last + middle are neg.

ex. $x^2 - x - 6$

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

$$\begin{array}{r} -6 \mid 2 \\ -3 \\ \hline -1 \end{array}$$

Multiplying Polynomials Worksheet

Key

Multiply and simplify each of the following polynomials:

$$1. (x + 2)(x^2 + 3x + 4) = x^3 + 5x^2 + 10x + 8$$

$$2. (x - 3)(2x^2 + x - 5) = 2x^3 - 5x^2 - 8x + 15$$

$$-6x^2 \\ +1x^2$$

$$3. (2x - 1)(-4x^2 + 2x - 1) = -8x^3 + 8x^2 - 4x + 1$$

$$4. (3x^2 + 4x - 2)(x^2 + 6x - 3) = 3x^4 + 22x^3 + 13x^2 - 24x + 6$$

$$5. (2x^2 - x + 7)(-3x^2 + 2x - 5) = -6x^4 + 7x^3 - 33x^2 + 19x - 35$$