Factoring Quadratic Expressions - X-Method

Factoring in the form of ax^2+bx+c.

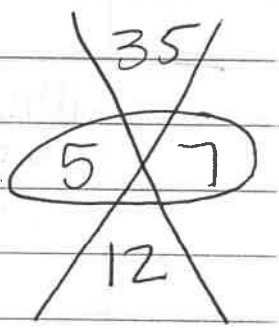
$$\underset{a}{1}x^2+\underset{b}{12}x+\underset{c}{35}$$

Steps:

1) Draw an "X" next to the problem.
2) Multiply "a·c" and place at the top of the "x".
3) Place "b" at the bottom of the "x"
4) Find two numbers that multiply to give "a·c" and add to give "b". Use the "table" button in the calculator, "Edit Function" and insert "a·c/x" as the equat and "start" at "1". This will give ya all the factor pairs.
5) Make a list of the factors and decide on the signs
6) Write your factors in each set of parenthesis.

1 5

1·35

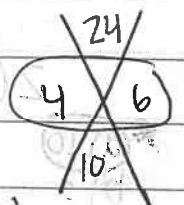


$(x+5)(x+7)$

EX) $x^2+10x+24$

a) 1
b) 10
c) 24

1·24



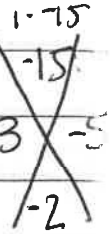
1 24
2 12
3 8
4 6

$(x+4)(x+6)$

EX) $x^2-2x-15$

a) 1
b) -2
c) -15

1·75



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

1 15
3 5

ex) $\frac{5x^2-10x-400}{5}$ $\frac{}{5}$ $\frac{}{5}$ * GCF alert

$5(x^2-2x-80)$

a) 1
b) -2
c) -80

1 · -80
-80
8 -10
-2

1 -80
2 -40
4 -20
5 -16
8 -10

$5(x+8)(x-10)$

What happens when "a" > 1

- Follow steps 1-5.
- After the factor pair is chosen, divide & simplify by the value of "a".
- Then complete the parenthesis. Fractions are not allowed, so kick the denominator to the front of the variable. $(x+\frac{3}{2})(2x+3)$

ex) $2x^2-13x+15$

* a) 2
b) -13
c) 15

2 · 15
30
$\frac{-3}{2}$ $\frac{-10}{2}=-5$
-13

-1 -30
-2 -15
-3 -10
-5 -6

$(x-\frac{3}{2})(x-5)$

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

ex) $\frac{10x^2+6x-36}{2}$ $\frac{}{2}$ $\frac{}{2}$

$2(10x^2+3x-18)$

* a) 10
b) 3
c) -18

10 · -18
-180
-12 15
10 3

1 -180
2 -90
3 -60
4 -45
5 -36
6 -30
9 -20
10 -18
12 -15

$(x-\frac{6}{5})(x-\frac{3}{2})$

$(5x-6)(2x-3)$