

Factoring Quadratics (steps 1 & 2)

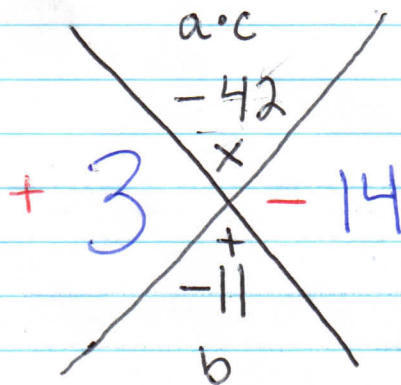
Steps for factoring quadratics

- 1) Factor out a GCF (if possible)
- 2) Use the "diamond" to split the bx term
- 3) Factor by grouping

(ex) Factor completely
 $ax^2 + bx + c$
 $2x^2 - 11x - 21$

$$\begin{aligned} a &= 2 \\ b &= -11 \\ c &= -21 \end{aligned}$$

$$\begin{array}{r} -42 \\ \hline +1 \cdot -42 \\ +2 \cdot -21 \\ +3 \cdot -14 \end{array}$$



① Factor out GCF
↳ not possible

② Diamond

- 1) Identify a , b and c
- 2) set up diamond
- 3) solve the diamond
- 4) split the bx term

$$2x^2 - 11x - 21$$

$$2x^2 + 3x - 14x - 21$$

③ Factor by grouping

$$\begin{aligned} &(2x^2 + 3x) + (-14x - 21) \\ &x(2x + 3) + -7(2x + 3) \end{aligned}$$

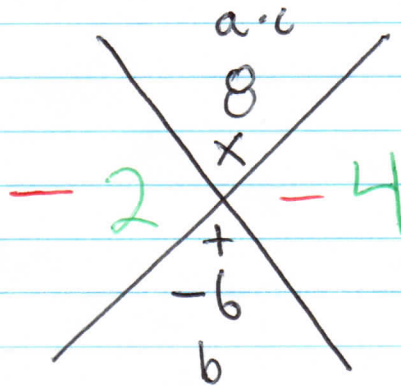
$$\boxed{(x - 7)(2x + 3)}$$

(ex) $5x^2 - 30x + 40$

$5(x^2 - 6x + 8)$

① Factor out GCF

$a = 1$
 $b = -6$
 $c = 8$



② Diamond

-8

$-1 \cdot -8$

$-2 \cdot -4$

$5(x^2 - 6x + 8)$

$5(x^2 - 2x - 4x + 8)$

③ Factor by grouping

$5(x^2 - 2x) + (-4x + 8)$

$(5)x(x - 2) + -4(x - 2)$

$5(x - 4)(x - 2)$