

Remember! \downarrow $ax^2 + bx + c$ \downarrow \downarrow



FACTORING TRINOMIALS WHEN $a \neq 1$

REVIEW: MULTIPLY!

$$(x+3)(x+1)$$

$$x^2 + x + 3x + 3$$



$$x^2 + 4x + 3$$

$$(2x+3)(5x+1)$$

$$10x^2 + 2x + 15x + 3$$



$$10x^2 + 17x + 3$$

FACTOR!

$$x^2 + 4x + 3$$

WHAT MULTIPLIES TO GET 3

AND ADDS TO GET

$$\frac{4}{1}$$

$$\underline{1, 3}$$

$$\frac{4}{1 \overline{) 3}}$$

$$(x+1)(x+3)$$



FACTORED!

PROBLEM DONE!

FACTOR: BUT $a \neq 1$!!

~~THE~~ FIRST STEP IS TO MULTIPLY THE CONSTANT (c) WITH (a)

$$\underline{10x^2 + 17x + 3}$$

$$10 \times 3 = 30$$

WHAT MULTIPLIES TO GET 30 AND ADDS TO GET 17

$$\underline{(x + 2)(x + 15)}$$

$$\begin{array}{r|l} 1 & 30 \\ 2 & 15 \\ 3 & 10 \\ 5 & 6 \end{array}$$

SINCE $a \neq 1$ WE HAVE TO DO A LITTLE WORK TO GET BACK. WE NEED TO DIVIDE OUT THE 10

$$(x + \frac{2}{10})(x + \frac{15}{10})$$

$$(x + \frac{1}{5})(x + \frac{3}{2})$$



$$\underline{(5x + 1)(2x + 3)}$$

↑
FACTORED FORM!

NOW SIMPLIFY YOUR FRACTIONS (YOU CAN USE YOUR CALCULATOR)

NOW FLIP YOUR DENOMINATORS TO THE FRONT COEFFICIENT SO WE HAVE NO MORE FRACTIONS!

EXAMPLE 2: $6x^2 - 19x + 15$

WHAT MULTIPLIES TO GET 90 AND ADDS TO GET -19

1, 90

2, 45

3, 30

5, 18

6, 15

9, 10

$$\left(x - \frac{9}{6}\right)\left(x - \frac{10}{6}\right)$$

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

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

REMEMBER THAT IF $a \neq 1$ you MUST DIVIDE BY a

SIMPLIFY FRACTIONS

↑ FINAL ANSWER

REWRITE SO DENOMINATORS ARE IN THE FRONT!

~ multi-modal

~ pacing

~ formative check

~ reduce anxiety