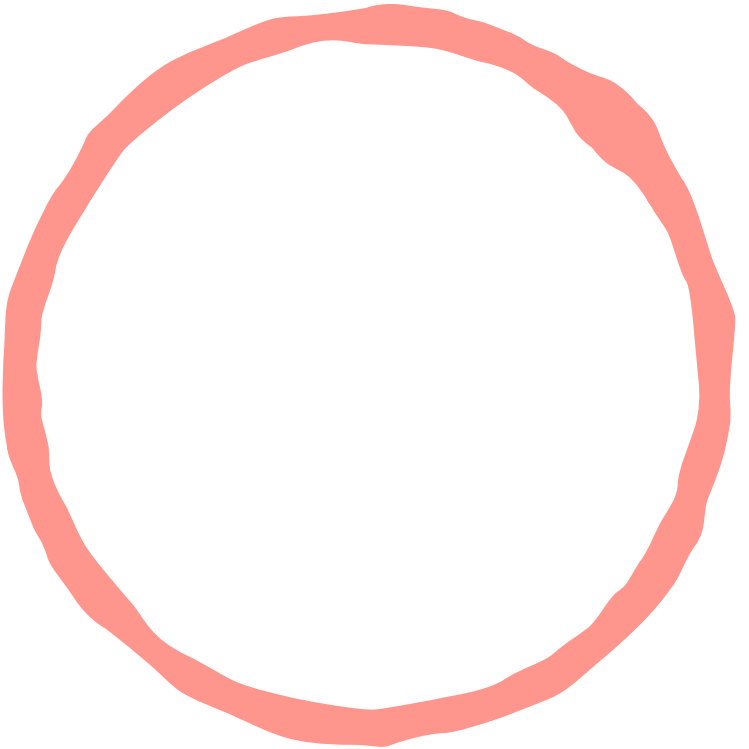
factoring trinomials

F O I L

Example.



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

Exercise 2.

factoring trinomials

First **O**uter **I**nner **L**ast

Example. $25x^2 + 20x + 4$

- possible factors of $25x^2$ are $\{x, 25x\}$ or $\{5x, 5x\}$ and possible factors of 4 are $\{1, 4\}$ or $\{2, 2\}$
- try each pair of factors until we find a combination that works (or exhausts all possible pairs)
- look for a combination that gives sum of the products of the outside terms and the inside terms equal to $20x$

Factors of $25x^2$	Factors of 4	Resulting Binomials	Product of Outside Terms	Product of Inside Terms	Sum of Products
$\{x, 25x\}$	$\{1, 4\}$	$(x + 1)(25x + 4)$	$4x$	$25x$	$29x$
		$(x + 4)(25x + 1)$	x	$100x$	$101x$
$\{x, 25x\}$	$\{2, 2\}$	$(x + 2)(25x + 2)$	$2x$	$50x$	$52x$
$\{5x, 5x\}$	$\{2, 2\}$	$(5x + 2)(5x + 2)$	$10x$	$10x$	$20x$

- Answer: $(5x + 2)(5x + 2)$ (check via FOIL)
- **Exercise 2.** Factor the polynomial $21x^2 - 41x + 10$

solving quadratic equations by factoring