

# Looking for Shortcuts: Part 1

Consider: Say we want to expand and simplify the expression  $(x + 2)(x - 2)$ .

Using the distributive property, from last class, we could figure out the answer this way:

$$\begin{aligned}(x + 2)(x - 2) \\ = x^2 + 2x - 2x - 4 \\ = x^2 - 4\end{aligned}$$

Hmm.  
That looks like a lot of work.  
Could there be a better (faster) way?

Let's find a better way. We can use [Photomath](#), to save time when investigating.

1. Using Photomath, expand the expressions below.  
How to do this is shown at right.

A

$$(x + 1)(x - 1) =$$

$$(x + 2)(x - 2) =$$

$$(x + 3)(x - 3) =$$

$$(x + 4)(x - 4) =$$

$$(x + 5)(x - 5) =$$

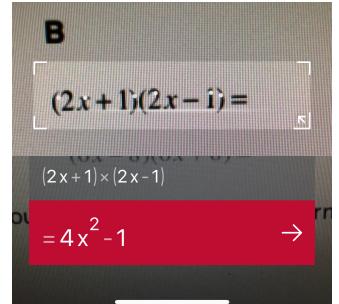
B

$$(2x + 1)(2x - 1) =$$

$$(2x + 2)(2x - 2) =$$

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

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



REFLECT: Describe any patterns you see. Note the *signs* of terms in your answers!

PREDICT: Don't use the Photomath software.

What will  $(5x + 3)(5x - 3)$  be?

How about  $(6x - 2)(6x + 2)$  be?

MAKE RULES: If  $(a + b)(a - b)$  then the answer is...

If  $(a - b)(a + b)$  then the answer is...

This is a shortcut for \_\_\_\_\_