# Looking for Shortcuts: Part 2

Consider: Say we want to expand and simplify the expression $(x + 1)^2$.

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

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

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 in section **A** and **B** below.
   How to do this is shown at right.

**A**

$(x + 1)^2 =$

$(x + 2)^2 =$

$(x + 3)^2 =$

$(x + 4)^2 =$
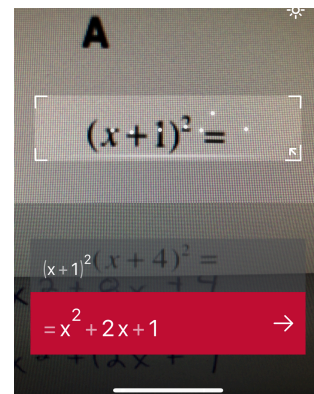
$\left(x + 5\right)^2 =$

**B**

$(x - 1)^2 =$

$(x - 2)^2 =$

$(x - 3)^2 =$

$(x - 4)^2 =$

$\left(x - 5\right)^2 =$



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

2. Using Photomath, expand the expressions shown in parts **C** and **D**.

$(2x + 2)^2 =$

$(2x + 3)^2 =$

$(2x - 2)^2 =$

$(2x - 3)^2 =$

PREDICT: Don't use Photomath. What will $(3x + 2)^2$ be? How about $(4x - 3)^2$ ?

MAKE RULES: If $\left(a + b\right)^2$ then the answer is... If $\left(a - b\right)^2$ then the answer is...

This is a shortcut for

Now, <u>go to this IXL page</u> and earn a 100% SmartScore. You can do it!