The Border Problem   Name: _____

Learning Goals
- Describe border growth in different ways.
- Write about the border's growth.
- Use variables to create different, but equal, algebraic expressions.

Phet Link: https://phet.colorado.edu/sims/html/area-builder/latest/area-builder_en.html

1. **Open Explore**: Take some time to play around with it. What are 3 things that you notice?

    a. _____

    b. _____

    c. _____

2. Using the smaller colored squares, create three larger **squares**

Side Length	Area	Border (not perimeter!)	Picture

3. Where do you see the area in your shapes?

4. Where do you see the border in your shapes?

5. <u>Without using the sim</u>, write a <u>description</u> for calculating the border of a square that is 10 x 10?

💬 **Compare your results from questions 4-5 with your partner and** 🛑

Write down two different strategies for finding the border from the white board:

1.	2.

Quick Write!
1. What is a variable?
2. What is an expression?
3. How can we rewrite any border strategy above using variables?

Rewrite the two strategies above using variables:

1.	2.

With some algebraic manipulation, each strategy is equivalent to: _____

Using the expression above, calculate the border of a 75 x 75 square:

Challenge:
Using words, numbers and variables, describe the pattern for the blue squares shown in the squares: