

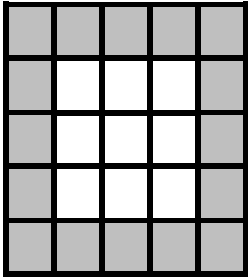
THE BORDERS PROBLEM

PART 3 (USING VARIABLES)

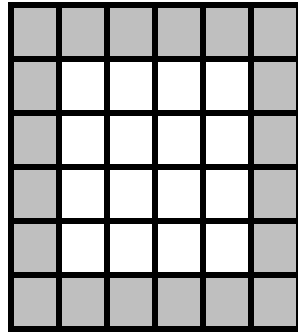
LEARNING TARGETS:

(LT4) I can find and compare multiple ways of solving problems.

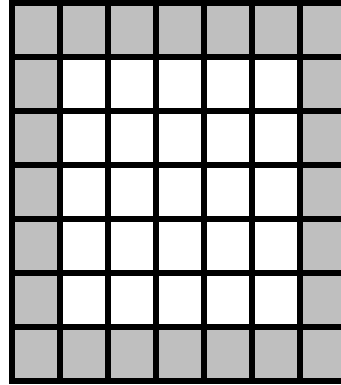
(LT5) I can represent real situations with numbers, operations and **VARIABLES**



5 x 5



6 x 6



7 x 7

- (1) What do you think is the most important thing that changes as the squares get bigger?
- (2) Use Larke/Kailey/Lily's method to write expressions that find the number of boxes in the border of each of the above squares [Method: $(10 \times 4) - 4$ for a 10×10].
 - a. 5 x 5:
 - b. 6 x 6:
 - c. 7 x 7:
- (3) Which numbers in these expressions change as the squares get bigger? Which numbers stay the same?
- (4) Write an expression that could find the number of boxes in the border of ANY size square, using a variable to replace the number that changes.
- (5) What does the variable you chose represent? (BE SPECIFIC!)

TRY IT WITH OTHER METHODS!

(1) Holden/Inaki/Eddie's method [$4 + (8 \times 4)$ for a 10×10 square]

- a. Write an expression using this method for counting the border of a 5×5 square:

- b. Write an expression using this method for counting the border of a 6×6 square:

- c. Write an expression using this method for counting the border of a 7×7 square:

- d. Which numbers in these expressions change as the squares get bigger? Which numbers stay the same?

- e. Write an expression that could find the number of boxes in the border of ANY size square, using a variable to replace the number that changes.

- f. What does the variable you chose represent? (BE SPECIFIC!)

(2) Miranda/Chauncie/Kyle's method [$10 + 10 + 8 + 8$ for a 10×10 square]

- a. Write an expression using this method for counting the border of a 5×5 square:

- b. Write an expression using this method for counting the border of a 6×6 square:

- c. Write an expression using this method for counting the border of a 7×7 square:

- d. Which numbers in these expressions change as the squares get bigger? Which numbers stay the same?

- e. Write an expression that could find the number of boxes in the border of ANY size square, using a variable to replace the number that changes.

- f. What does the variable you chose represent? (BE SPECIFIC!)

(3) CHALLENGE! Write an expression for Miranda/Chauncie/Kyle's method that only uses one variable.