

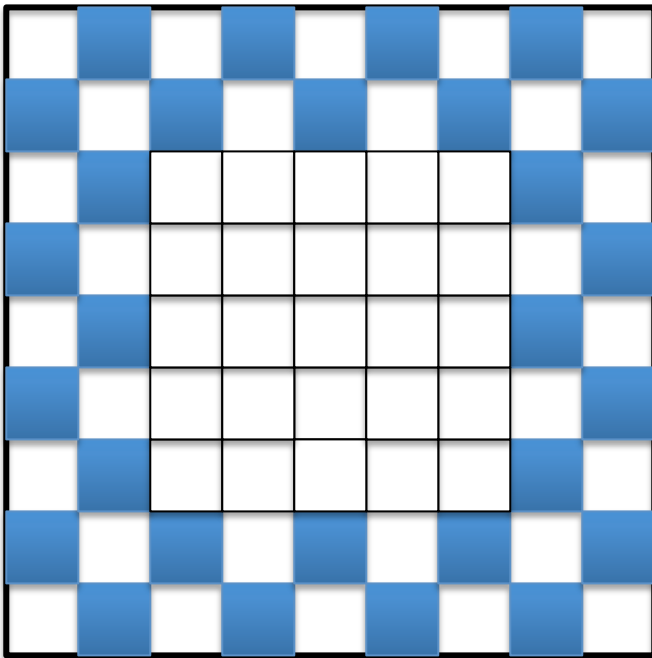
# 1.1 Checkerboard Borders

## *A Develop Understanding Task*

In preparation for back to school, the school administration has planned to replace the tile in the cafeteria. They would like to have a checkerboard pattern of tiles two rows wide as a surround for the tables and serving carts.

Below is an example of the boarder that the administration is thinking of using to surround a square 5 x 5 set of tiles.

- A. Find the number of colored tiles in the checkerboard border. Track your thinking and find a way of calculating the number of colored tiles in the border that is quick and efficient. Be prepared to share your strategy and justify your work.

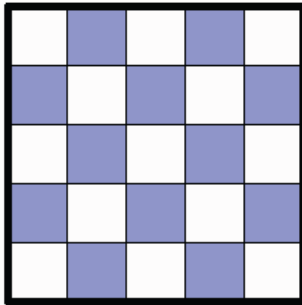


©2012 www.flickr.com/photos/jima

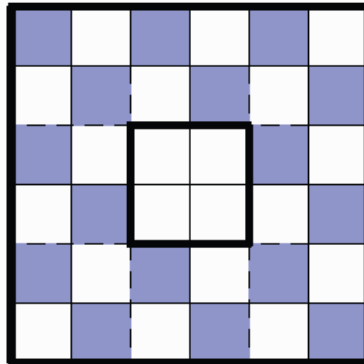


Does the method you used in Part A still “work” if we change the size of the large middle white square? Test it out on each of the lunchrooms below. For each lunchroom:

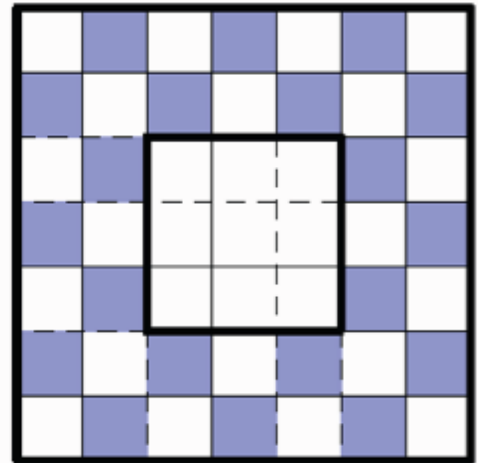
- 1) Draw your method of grouping
- 2) Write an expression for the number of colored tiles
- 3) Give the total number of colored tiles.



**Lunchroom 1**



**Lunchroom 2**



**Lunchroom 3**

- B. The contractor that was hired to lay the tile in the cafeteria is trying to generalize a way to calculate the number of colored tiles needed for a checkerboard border surrounding a square of tiles with dimensions  $n \times n$ . Find an expression for the number of colored border tiles needed for any  $n \times n$  square center.

