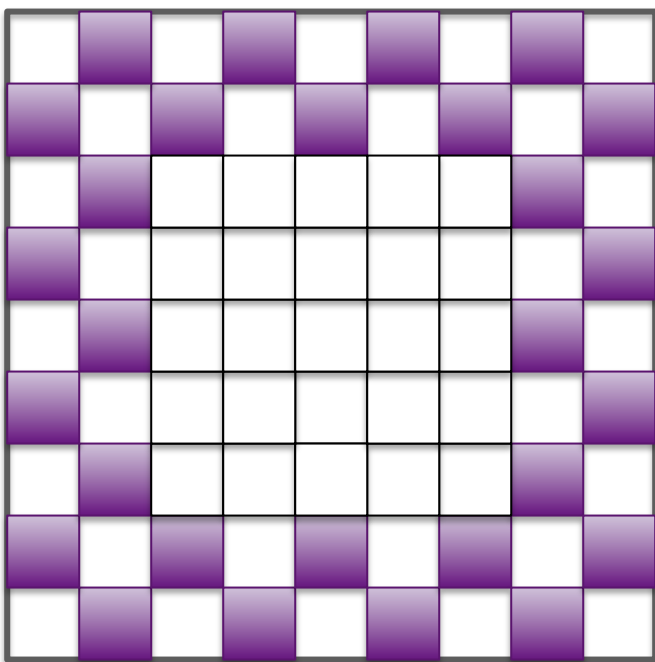# 1.1 Checkerboard Borders

A Develop Understanding Task

In preparation for back to school, the school administration plans 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.

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 any dimensions. To represent this general situation, the contractor started sketching the square below.

Find an expression for the number of colored border tiles needed for any N x N square center.

N

N