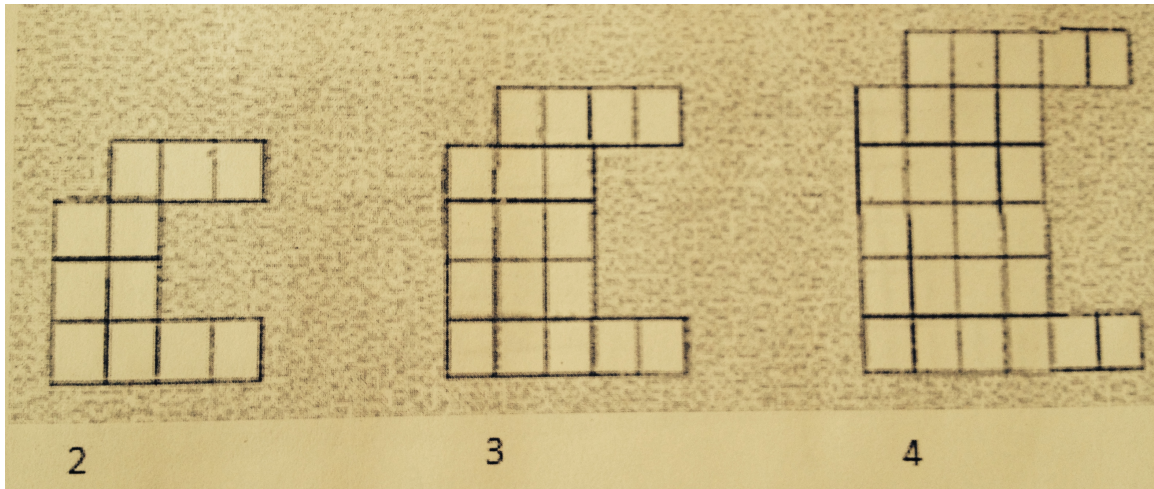Piles

Below are piles 2, 3, and 4.

1. Sketch and label the fifth and sixth pile.
2. Sketch and label the first pile.
3. How many square tiles are needed to construct each of these piles?
4. Describe with a written explanation how you would sketch or construct the 100th pile.
5. Using the picture directly, describe with words two different ways you could determine the number of tiles needed to make the pth tile in the sequence.
6. If you did not already do so, write a rule or formula that matches each of the ways you described in #4. Define your variables explicitly.
7. Share your results with a partner. How do you justify your expression? How do you verify results?
8. Sketch pile 0.
9. Would the 10th pile have an even number of squares or an odd number? Why? How do you know?
10. Would the nth pile have an even number of squares or an odd number? Why?
11. Is the pattern growing proportionally? Why or why not? If not, could you create a pattern that grows proportionally from the picture where p=2?