Number Square Patterns

0	1	2	3	4	5
1	2	3	4	5	6
2	3	4	5	6	7
3	4	5	6	7	8
4	5	6	7	8	9
5	6	7	8	9	10

Draw an outline around any 2 by 2 square.

- Look at the numbers in the square. What patterns do you see?
- Use addition to find another pattern.
- Use multiplication to find another pattern.

Draw an outline around any 3 by 3 square.

- What patterns do you see?
- Use addition to find another pattern.
- Use multiplication to find a pattern with the four corner numbers.

Draw an outline around a larger square.

- What patterns do you see that are similar to the patterns you saw for the smaller squares?

Extensions:

- What is the sum of any three horizontally adjacent numbers?
- What is the sum of any three vertically adjacent numbers?
- What is the sum of any two-by-two square of numbers?
- What is the sum of any three-by-three array of numbers?
- What is the sum of any ten-by-ten array of numbers?
- What is the sum of any cross of five numbers?
- What is the sum of any three diagonally adjacent numbers?
- What is the sum of any four diagonally adjacent numbers?
- What is the sum of any five diagonally adjacent numbers?
- Find at least three more questions like these that and describe the rules for them.

The Math in This Problem:

In this investigation, students will perform various mathematical operations to discover patterns within numerically-ordered squares. This exercise will serve as an introduction to understanding mathematical pattern analysis, which is widely used when making educated guesses.