### Objectives

#### (A) Amazing Arithmetic Arrays – Patterns
- Search mathematical arrays for content and patterns and create their own arrays to see if the pattern holds true.

**Performance:** 1.6, 4.1  
**Knowledge:** (MA) 4  
**MAGLE:** AR.1.A (Gr. 5)  
**NETS:** (3-5) 8  
**DOK:** 3

**In-class self-evaluation**
- Teacher will evaluate conclusions drawn from 3x3 arrays using a scoring guide.

#### (B) Zip, Zap, Zop - Logic
- Use logical reasoning and strategy to guess the numbers chosen by their partners in the fewest tries possible.

**Performance:** 1.6, 3.6  
**Knowledge:** (MA) 4  
**MAGLE:** AR.1.A (Gr. 5)  
**NETS:** (3-5) 8  
**DOK:** 3

**In-class self-evaluation**

### Assessment/Evaluation

- In-class self-evaluation
- Teacher will evaluate conclusions drawn from 3x3 arrays using a scoring guide

### Instructional Activities

- Study array and list at least 10 patterns
- Share findings
- Compare and contrast patterns in 3 arrays
- Fill in blank arrays
- Explore patterns
- Draw numerical conclusions

- Play zip, zap, zop as a class
- Students play in pairs, recording clues and guesses
- Extend the game by allowing 3 and 4 digit numbers
- Students will show strategies to the class
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| **(C) The Square Challenge – Problem Solving**  
  - Use problem solving challenges to find the number of squares of all sizes in a 6x6 grid  
  - Use information to determine how many squares are on an 8x8 checkerboard  

Performance: 1.6, 4.6  
Knowledge: (MA) 4  
MAGLE: AR.1.A (Gr. 5)  
NETS: N/A  
DOK: 3  

Teacher will evaluate paragraphs using a scoring guide  
Students will:  
- count all sizes of squares in 6x6 grid in small groups  
- use complete sentences to explain their findings  
- use manipulatives to check their findings  
- determine patterns in 6x6 grid  
- apply patterns to 8x8 grid  
- explain in a paragraph |

| **(D) Lines, Triangles and Squares - Geometry**  
  - Find all regions a square can be divided into with any number of straight lines  
  - Discover geometric principles  
  - Find algebraic explanations for the work  

Performance: 1.6, 3.6  
Knowledge: (MA) 4  
MAGLE: GSR.1.C (Gr. 5)  
NETS: N/A  
DOK: 3  

Teacher will evaluate paragraphs using a scoring guide  
Students will:  
- Divide squares into regions using 3 straight lines, 4 straight lines, 5 straight lines and use toothpicks as manipulatives  
- Record findings in a chart  
- Write an explanation of findings in a paragraph |

| **(E) Set Counting – Counting Sets**  
  - Find all possible ways to put objects into 2 and 3 sets  
  - Discover benefits of a systematic approach to problem solving as opposed to trial and error  

Performance: 3.6  
Knowledge: (MA) 1  
MAGLE: AR.3.A (Gr. 6)  
NETS: N/A  
DOK: 4  

- In-class self-evaluation  
- Teacher will evaluate paragraphs using a scoring guide  
Students will:  
- place 14 objects into 2 sets as many ways as possible  
- plan an organized approach to creating sets  
- test their approach by putting objects into 3 sets  
- share approach with class  
- write a paragraph explaining the benefit of their approach |
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| (F) **Tinkering with Twos – Problem Solving**  
  - Combine twos with various mathematical operations to make number sentences resulting in the numbers 2-10  
  - Discover order of operations  
  
  **Performance:** 3.6  
  **Knowledge:** (MA) 1  
  **MAGLE:** NO.1.C; M.2.C (All Gr. 6)  
  **NETS:** (3-5) 8  
  **DOK:** 4 | Peer-evaluation of extensions |  
  - Teacher introduces order of operations  
  - Combine 5 twos with one or more arithmetic symbols so the resulting answer is 1-10  
  - Write complete sentences describing the process used  
  - Create an extension problem, trade papers and solve each other’s extensions |