Unit 4b-Algebra: Generate and Analyze Patterns

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 4**
Length: **MP4 Topic 14 14-1 to 14-4**
Status: **Published**

Essential Questions

- How can you use a rule to continue a pattern?
- How can you use a table to extend a pattern?
- How can you use a repeating pattern to predict a shape?

Big Ideas

- **Extend and Analyze Patterns:** Students develop an understanding of patterns. Students apply an addition or subtraction rule to generate one or more numbers in a number sequence. Students extend patterns in tables, with a focus on multiplication or division rules. For both, they analyze the patterns and look for features not given in the rule. Students will extend repeating patterns that consist of either shapes or numbers. They use the given rule to predict a term in the pattern.
- **Solve Pattern Problems:** Students will connect their work across the lessons to solve problems. Students extend shape patterns. Students will describe the shape pattern using a table, find a feature in the pattern, make a prediction, and solve a problem.

CSDT Technology Connection

8.1.5.DA.3 Organize and present collected data visually to communicate insights gained from different views of the data.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1– 100 is a multiple of a

given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

4.OA.C.5 [M] Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Number and Operations in Base Ten

4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, (and multiply two two-digit numbers), using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

7. Look for and make use of structure.