Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 4* / Grade 4 (Math Regional Curriculum)

Wednesday, October 31, 2012, 10:30AM

Standard/Module: Proficiency in Operations & Alg. Thinking - 4.OA.5 (Week 9, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%)

4th Grade Proficiency Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 4th Grade , Operations & Algebraic Thinking

4.OA Generate and analyze patterns.

- 5. 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.

Enduring Understandings	Essential Questions
1. Number and shape patterns can be created using a given rule. 2. There are other features of a pattern besides its given rule. 3. Patterns involving numbers or symbols eit her repeat or grow.	1. How do we generate a number pattern following a given rule? 2. How do we generate a shape pattern following a given rule? 3. What are other features of a pattern other than its rule? 4. What are some strategies you use when trying to find the rule of a pattern?

Critical Content

1. Number pattern
2. Shape pattern
3. Rule of pattern

4. Features of pattern

Skills	Vocabulary
1. Students will generate a number or shape pattern that follows a given rule. 2. Students will identify features of each pattern other than the rule itself.	Tier 2: rule Tier 3: generate, analyze, number pattern, shape pattern, features

Stage 2: Assessment Evidence

Assessments

Patterns
Formative: Performance: Skill Demonstration

Given a number or shape and a rule students will generate the pattern and describe mathematical features of the pattern.

Stage 3: Learning Plan

Learning Activities	Resources
A t-chart is a tool to help students see number patterns.	From PBS Teachers: Snake Patterns –s-s-s: Students will use given rules to generate several stages of a pattern and will be able to predict the outcome for any stage. http://www.pbs.org/teachers/mathline/lessonplans/atmp/snake/snake_procedure.shtm
As students generate numeric patterns for rules, they should be	nctm.org (Illuminations) Patterns that Grow – Growing Patterns. Students use numbers to make growing patterns. They create, analyze, and describe growing patterns and then record them. They also analyze a special growing pattern called Pascal's triangle. nctm.org (Illuminations): Patterns that Grow – Exploring Other Number Patterns. Students analyze numeric patterns, including Fibonacci numbers. They also describe

able to "undo" the pattern to determine if the rule works with all of the numbers generated. For example, given the rule, "Add 4" starting with the number 1, the pattern 1, 5, 9, 13, 17, … is generated. In analyzing the pattern, students need to determine how to get from one term to the next term. Teachers can ask students,"How is a number in the sequence related to the one that came before it?", and "If they started at the end of the pattern, will this relationship be the same?" Students can use this type of questioning in analyzing numbers patterns to determine the rule. Have a group of students create a rule	numeric patterns and then record them in table form. nctm.org (Illuminations): Patterns that Grow – Looking Back and Moving Forward. In this final lesson of the unit, students use logical thinking to create, identify, extend, and translate patterns. They make patterns with numbers and shapes and explore patterns in a variety of mathematical contexts. www.illustrativemathematics.org

Differentiation Opportunities

Provide patterns that involve shapes so that students can determine the rule for the pattern. Shapes may be more concrete for some students to see patterns with.

Provide opportunities for students to work with another student or a group of students to simply share strategies of how to determine the rule or generate the pattern following the rule. Partners can be

grouped by ability and rules or patterns can be scaffolded.

An extension of this standard could include using repeating shape patterns to make predictions and extend simple repeating patterns.

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