

Core Content

Cluster Title: Generate and analyze patterns.
Standard 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. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
MASTERY Patterns of Reasoning:
<p>Conceptual:</p> <ul style="list-style-type: none"> Students will understand that number and shape patterns follow a given rule. Students will understand that there are sometimes features of the pattern that are not stated in the rule. <p>Procedural:</p> <ul style="list-style-type: none"> Students can complete a given number or shape pattern (e.g., 3, 6, 9, ____, ____, 18). Students can determine the rule of a given pattern (e.g., 3, 6, 9, 12, 15, 18, ... The rule is to skip count by 3 or multiples of 3). Students can generate a number pattern that follows a rule and state the rule. Students can generate a shape pattern that follows a rule and state the rule. Students can identify and state any alternate features of the pattern that are not stated in the rule. <p>Representational:</p> <ul style="list-style-type: none"> Students can demonstrate the ability to complete a given number or shape pattern using manipulatives, skip counting, pictures, journals, etc.

Supports for Teachers

Critical Background Knowledge
<p>Conceptual:</p> <ul style="list-style-type: none"> Students will possess an understanding of number sense. Students will know whether a number is odd or even. Students will understand the relationship between the four basic operations. Students have familiarity with number and shape patterns.

<p>Procedural:</p> <p>Students have concrete understanding of basic math facts. Students can solve math operations and sequences that include unknowns. Students can use mental math strategies.</p> <p>Representational:</p> <p>Students can use manipulatives, drawings, algorithms, and/or journaling to complete various patterns.</p>
<p>Academic Vocabulary and Notation</p> <p>number pattern, shape pattern, pattern rule, sequence, alternate</p>

Instructional Strategies Used	Resources Used
<p>Play “Count around the Room.” Give the counting rule (e.g., count by 7s) as well as the starting place (e.g., begin at 3). Students continue with a given pattern, each student giving a number of the pattern as you move around the room.</p>	<p>http://www.uen.org/3-6interactives/math.shtml#patterns A listing of online pattern games that students can play</p>
Assessment Tasks Used	
<p>Skill-based Task: Create 5 to 10 number and/or shape patterns. Students will write a rule that corresponds with each pattern.</p>	<p>Problem Task: A chicken laid 3 eggs on Wednesday, 6 eggs on Thursday, 12 eggs on Friday, 24 eggs on Saturday, and 48 eggs on Sunday. If this pattern continues, how many eggs will the chicken lay on Monday and on Tuesday? What is the rule demonstrated by this pattern?</p>