

**Content Standard A4
Fourth Grade Level
Functions and Relationships**

*Students understand mathematical facts, concepts, principles and theories.
They represent, analyze, and use mathematical patterns, relations, and functions using a
variety of representations including tables, equations and graphs.*

State Mathematics Performance Standards 3 rd -5 th	KGBSD Performance Standards	Grade Level Expectations (GLE's)
<p>M4.2.1 Use patterns and their extensions to make predictions and solve problems; describe patterns found in the number system including those formed by multiples, factors, perfect squares, and powers of 10.</p> <p>M4.2.2 Generate and solve simple functions by identifying and applying multiplication and division patterns.</p> <p>M4.2.3 Use a calculator to find a missing item in a number sequence.</p> <p>M4.2.4 Use words, lists, and table to represent and analyze patterns.</p> <p>M4.2.5 Explain the purpose of variables and use them in open sentences to express relationships and describe simple functions.</p>	<p>1.1 Describe and <u>extend patterns</u> found in the number system for example, those formed by multiples and factors. Use them to make predictions and solve problems</p> <p>2.1 Use multiplication and division patterns to solve functions</p> <p>3.1 Use a calculator to help identify patterns which predict a future value</p> <p>4.1 Use words, lists, tables and charts to represent and analyze number patterns</p> <p>5.1 Use understanding of patterns to find simple functions (“What’s my rule?”)</p>	<p><u>Functions and Relationships: Describing Patterns and Functions</u> The student demonstrates conceptual understanding of functions, patterns, or sequences by</p> <p>[4] F&R-1 extending patterns that use addition, subtraction, multiplication, or symbols, up to 10 terms, represented by models (function machine), tables, sequences, or in problem situations (M4.2.1)</p> <p>[4] F&R-2 [using rules to express the generalization of a pattern using words, lists, or tables L] (M4.2.4)</p> <p>[4] F&R-3 [using manipulatives, including a calculator, as tools when describing, extending, or representing a number sequence L] (M4.2.1 &M4.2.3)</p> <p><u>Functions and Relationships: Modeling and Solving Equations and Inequalities</u> The student demonstrates algebraic thinking by</p> <p>[4] F&R-4 using an open number sentence (addition, subtraction or multiplication) to solve for an unknown represented by a box or circle (e.g., $9 \cdot \square = 36$, $\square \cdot 8 = 56$, $3 \cdot 6 = \square$, $25 \cdot \square = 25$, $4 + \square = 12$, $7 - 2 = \square$)</p>