

It's a Wild Ride Math Content Standards

Standard – The student will:	Content Knowledge and Skills:	Applications in Wild Ride Unit:
01. Understand and use a variety of problem-solving skills.	a. Use a variety of strategies, including common mathematical formulas to compute problems drawn from real-world situations.	i. The Formulas ii. The Architect Experience iii. The Stations
	b. Recognize pertinent information for problem solving.	i. The Formulas
	c. Make predictions and decisions based on information.	i. The Architect Experience ii. The At-Home RC Project
02. Use reasoning skills to recognize problems and express them mathematically.	a. Use a variety of methods, such as words, numbers, symbols charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.	i. The Formulas w/Accompanying Graphic Organizers
	b. Apply solutions and strategies to new problem situations.	i. The Architect Experience ii. The At-Home Roller Coaster Project
03. Apply appropriate technology and models to find solutions to problems.	a. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.	i. Stations ii. Revisiting Linear Equations w/Graphing Calculators iii. The Effects of Slope iv. Analysis of Roller Coaster Components
	b. Use computer applications to display and manipulate data.	i. Roller Coaster Statistics ii. Analysis of Roller Coaster Components
04. Communicate results using appropriate terminology and methods.	a. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.	i. Graph Match i. <u>A Visual Approach to Algebra</u> Scenarios
	b. Use appropriate notation.	i. The Formulas ii. The At-Home RC Project

CONCEPTS AND PRINCIPLES OF MEASUREMENT.

Rationale: The first step in scientific investigation is understanding the measurable attributes of objects.

Standard – The student will:	Content Knowledge and Skills:	Applications in Wild Ride Unit:
01. Understand and use U.S. customary and metric measurements.	a. Select and use appropriate units and tools to make formal measurements using both systems.	i. The Mini Architect Experience ii. The Architect Experience
	b. Convert unit of measurement within each system.	i. The Architect Experience
02. Apply concepts of rates and other derived or indirect measurements.	a. Use rates to make indirect measurements.	i. The Mini Architect Experience ii. The Architect Experience iii. Using Formulas
03. Apply the concepts of ratios and proportions.	a. Understand and use proportions, ratios, and scales.	i. The Mini Architect Experience ii. The Architect Experience
04. Apply dimensional analysis.	a. Understand units and their relationship to one another and to real-world applications.	i. The Architect Experience ii. The Formulas

CONCEPTS AND LANGUAGE OF ALGEBRA.

Rationale: Algebra is the language of mathematics and science. Through the use of variables and operations, algebra allows students to form abstract models from contextual information.

Standard – The student will:	Content Knowledge and Skills:	Applications in Wild Ride Unit:
01. Use algebraic symbolism as a tool to represent mathematical relationships.	a. Understand and use variables in expressions, equations, and inequalities.	i. The Wave and Bouncing Balls
02. Solve algebraic equations and inequalities.	a. Solve 1- and 2-step equations and inequalities using inverse operations.	i. The Formulas
	b. Explore graphical representation to show simple linear equations.	i. The Wave and Bouncing Balls ii. The Effects of Slope

CONCEPTS AND PRINCIPLES OF GEOMETRY.

Rationale: The study of geometry helps students represent and make sense of the world by discovering relationships and developing spatial sense.

Standard – The student will:	Content Knowledge and Skills:	Applications in Wild Ride Unit:
	a. Explore and model the effects of reflections, translations, and rotations on various shapes.	i. The Mini Architect Experience
01. Apply the geometry of right triangles.	a. Investigate right triangle geometry using the Pythagorean Theorem.	i. Investigation of Slope ii. The Effects of Slope
02. Apply graphing in two dimensions.	a. Use the coordinate plane as it relates to real-world applications.	i. The Wave and Bouncing Balls ii. The Effects of Slope

DATA ANALYSIS, PROBABILITY AND STATISTICS.

Rationale: With society's expanding use of data for prediction and decision-making, it is important that students develop an understanding of the concepts and processes used in analyzing data.

Standard – The student will:	Content Knowledge and Skills:	Applications in Wild Ride Unit:
01. Understand data analysis.	a. Analyze and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).	i. Roller Coaster Statistics
	b. Explain and justify conclusions drawn from tables, charts, and graphs.	i. The Architect Experience based on Roller Coaster Statistics
	c. Understand and use appropriate vocabulary.	i. Roller Coaster Statistics
02. Collect, organize, and display data.	a. Collect, organize, and display data with appropriate notation in tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).	i. Analysis of Roller Coaster Components
03. Apply simple statistical measurements.	a. Choose and calculate the appropriate measure of central tendency – mean, median, and mode.	i. Roller Coaster Statistics

FUNCTIONS AND MATHEMATICAL MODELS.

Rationale: One of the central themes of mathematics is the study of patterns, relationships, and functions. Exploring patterns helps students develop mathematical power.

Standard – The student will:	Content Knowledge and Skills:	Applications in Wild Ride Unit:
01. Understand the concept of functions.	a. Extend patterns and identify a rule (function) that generates the pattern using real numbers.	i. The Wave and Bouncing Balls
	b. Use functional relationships to explain how a change in one quantity results in a change in another.	i. The Wave and Bouncing Balls
	c. Understand and use appropriate vocabulary.	i. The Wave and Bouncing Balls ii. The Formulas
02. Represent equations, inequalities, and functions in a variety of formats.	a. Represent a set of data in a table, as a graph, and as a mathematical relationship.	i. The Wave and Bouncing Balls
03. Apply functions to a variety of problems.	a. Use patterns and functions to represent and solve problems.	i. The Wave and Bouncing Balls