

New Standards Project

Interactive Mathematics Program Correlation

Interactive Mathematics Program
Developed By:

**New Standards Project
Mathematics Content and Performance Descriptions**

<u>Topic</u>	<u>Interactive Mathematics Program</u>	
M1- Number and Operation Concepts		
M1-a)	consistently and accurately adds, subtracts, multiplies, divides and exponentiation rational numbers.	<i>All Interactive Mathematics Program Units</i>
M1-b)	understands the inverse relationships between addition and subtraction, multiplication and division and exponentiation and root extraction.	Patterns (1): “Marcella’s Bagels”; Overland Trail (1): “Fair Share on Chores”; Solve It! (2): Whole Unit
M1-c)	consistently and accurately computes with, applies and converts the different kinds of forms of rational numbers- integers (both whole numbers and negative integers) and other positive and negative rationals (written as decimals, as percents, or as proper, improper, or mixed fractions)	<i>All Interactive Mathematics Program Units</i>
M1-d)	is familiar with characteristics of numbers (divisibility, prime factorization) and with properties of operations (commutativity and associativity)	Solve It! (2): “Divisor Counting”
M1-e)	interprets percent as a part of 100, and as means of computation of different sizes or changing sizes	The Game of Pig (1): Rug Diagrams
M1-f)	reasons proportionally to solve problems involving equivalent fractions or equal ratios	Shadows (2): Whole Unit; The Game of Pig (1): Whole Unit
M1-g)	orders numbers with the $>$ and $<$ relationships and by location on a number line and has a sense of the magnitudes of numbers	Patterns (1): “Hot and Cold Cubes”; Overland Trail (2): “Family Constraints”; Cookies! (2): Whole Unit

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M2- Geometry and Measurement Concepts

M2-a)	is familiar with assorted two- and three dimensional objects, including squares, triangles, other polygons, circles, cubes, rectangular prisms (boxes), pyramids, spheres, and cylinders	Patterns (1): “Pattern Block Angles”; Shadows (2): Whole unit; Do Bees Build it Best? (2): Whole Unit; Solve It! (2): Area Models
M2-b)	identifies with similar and congruent shapes and uses transformations	Shadows (1): Whole Unit
M2-c)	recognizes the differences between measures of length, area, and volume and the corresponding uses of units, square units, and cubic units of measure	Do Bees Build it Best? (2): Whole Unit
M2-d)	recognizes similarity and rotational and bilateral symmetry in two and three dimensional figures	
M2-e)	analyzes and generalizes geometric patterns such as tessellations and sequences of shapes	Patterns (1): Pattern Block activities; Do Bees Build it Best? (2): Tessellation Pictures,” “Possible Patches”
M2-f)	measures angles, weights, capacities, times and temperatures using appropriate units	<i>All Interactive Mathematics Program Units</i>
M2-g)	chooses appropriate units of measure and converts with ease between like units (e.g. inches and miles) within a system (standard or metric)	<i>Many Interactive Mathematics Program Units, especially Overland Trail</i> (1)
M2-h)	reasons proportionally in situations with similar figures	Shadows (1): Whole Unit
M2-i)	reasons proportionally with measurement to interpret maps and to make smaller and larger scale drawings	Shadows (1): “From Top to Bottom”
M2-j)	models situations geometrically to formulate and solve problems	Shadows (1): Whole Unit; Solve It! (2): Factoring, multiplying polynomials

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M3 - Functions and Algebra Concepts

M3-a)	discovers, describes and generalizes Patterns , including linear, simple quadratic and exponential relationships, representing them with variables and expressions	All <i>Interactive Mathematics Program</i> Units
M3-b)	represents relationships with tables and graphs, in the coordinate plane, the verbal or symbolic rules	All <i>Interactive Mathematics Program</i> Units
M3-c)	analyzes tables, graphs, and rules to determine functional relationships	All <i>Interactive Mathematics Program</i> Units
M3-d)	finds solutions for unknown quantities in linear equations	Most <i>Interactive Mathematics Program</i> Units, especially Solve It! (2)

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M4- Statistics and Probability Concepts

M4-a)	collects and organizes data and displays with appropriate tables, charts, and graphs	All <i>Interactive Mathematics Program</i> Units
M4-b)	analyses data with respect to characteristics of frequency and distribution	All <i>Interactive Mathematics Program</i> Statistics Units
M4-c)	appropriately analyses central tendencies of data with mean and median	All <i>Interactive Mathematics Program</i> Statistics Units
M4-d)	makes conclusions and recommendations based on data analysis	All <i>Interactive Mathematics Program</i> Statistics Units
M4-e)	critiques the conclusions and recommendations of others' statistics	All <i>Interactive Mathematics Program</i> Statistics Units
M4-f)	considers the effects of sampling procedures and of missing or incorrect information on reliability	All <i>Interactive Mathematics Program</i> Statistics Units
M4-g)	formulates hypotheses to answer a question and uses data to test hypotheses	All <i>Interactive Mathematics Program</i> Statistics Units
M4-h)	recognizes equally likely outcomes, constructs sample spaces and determines probabilities of events	All <i>Interactive Mathematics Program</i> Statistics Units
M4-i)	makes predictions based on experimental or theoretical probabilities	All <i>Interactive Mathematics Program</i> Statistics Units
M4-j)	predicts the result of a series of trials, once the probability for one trial is known	Most <i>Interactive Mathematics Program</i> Statistics Units

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M5 - Problem Solving and Mathematical Reasoning

M5-a)	formulates and solves a variety of meaningful problems	All <i>Interactive Mathematics Program</i> Units
M5-b)	extracts pertinent information from situations and figures out what additional information is needed	All <i>Interactive Mathematics Program</i> Units
M5-c)	uses and invents a variety of approaches and understands and evaluates those of others	All <i>Interactive Mathematics Program</i> Units
M5-d)	invokes problem-solving strategies, such as illustrating with sense-making sketches to clarify situations or organizing information in the table	All <i>Interactive Mathematics Program</i> Units
M5-e)	determines, where helpful, how to break a problem into simpler parts	All <i>Interactive Mathematics Program</i> Units
M5-f)	integrates concepts and techniques from different areas of mathematics	All <i>Interactive Mathematics Program</i> Units
M5-g)	values and works effectively on teams when the nature of the task or the allotted times deems cooperation to be appropriate	All <i>Interactive Mathematics Program</i> Units
M5-h)	makes sensible reasonable estimates	All <i>Interactive Mathematics Program</i> Units
M5-i)	makes justifies logical statements	All <i>Interactive Mathematics Program</i> Units
M5-j)	formulates conjectures and argues (short of formal proof) why if must be or seems true	All <i>Interactive Mathematics Program</i> Units
M5-k)	verifies and interprets results with respect to the original problem situation	All <i>Interactive Mathematics Program</i> Units
M5-l)	generalizes solutions and strategies to new problem situations	All <i>Interactive Mathematics Program</i> Units

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M6- Mathematical Skill and Tools

M6-a)	computes accurately with arithmetic operations on rational numbers	All <i>Interactive Mathematics Program</i> Units
M6-b)	knows order of operations for arithmetic computations	All <i>Interactive Mathematics Program</i> Units, especially Patterns (1)
M6-c)	estimates numerically and spatially	Overland Trail (1): If I Could See this Thing
M6-d)	measures length, area, volume, weight, time, and temperature correctly	The Pit and the Pendulum (1): Whole Unit; Shadows (1): Whole Unit; Do Bees Build it Best? (2): Whole Unit
M6-e)	refers to geometric shapes and terms correctly	All <i>Interactive Mathematics Program</i> Units
M6-f)	uses equations, formulas, and simple algebraic notation appropriately	All <i>Interactive Mathematics Program</i> Units
M6-g)	organizes data on charts and graphs, including scatter plots, bar line, and circle graphs and Venn diagrams	All <i>Interactive Mathematics Program</i> Units
M6-h)	uses recall, mental computations, pencil and paper, measuring devices, mathematics texts, manipulatives, calculators, computers, and peers, as appropriate, to achieve solutions	All <i>Interactive Mathematics Program</i> Units

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M7- Mathematical Communication

M7-a)	uses mathematical language and representations- numerical tables and equations and formulas, charts, and graphs and diagrams- with appropriate accuracy	<i>All Interactive Mathematics Program Units</i>
M7-b)	organizes work, explains facets of solution, labels drawings, etc. for clarity to the audience (reader or listener)	<i>All Interactive Mathematics Program Units</i>
M7-c)	uses mathematical language to make complex situations easier to understand	<i>All Interactive Mathematics Program Units</i>
M7-d)	exhibits developing reasoning abilities by justifying statements and defending work	<i>All Interactive Mathematics Program Units</i>
M7-e)	shows understanding of concepts by explaining ideas not only to teachers and assessors but to students or younger siblings	<i>All Interactive Mathematics Program Units</i>
M7-f)	comprehends mathematics from reading assignments and from other sources	<i>All Interactive Mathematics Program Units</i>

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M8- Putting Mathematics to Work

M8-a)	data study, based on civic, economic or social issues	The Pit and the Pendulum (1): “The Soft Drink Test”; Overland Trail (1): If I Could See This Thing”; Meadows or Malls? (3): Whole Unit
M8-b)	mathematical model of physical phenomena, often using in scientific studies	The Pit and the Pendulum (1): Whole Unit Shadows (1): Whole Unit; Solve It! (2): “Where’s Speedy?”; Do Bees Build it Best? (2): Whole Unit Fireworks! (3): Whole Unit
M8-c)	design of a physical structure	
M8-d)	management and planning	Overland Trail (1): “Out of Action”, “POW 10: On Your Own”; Meadows or Malls? (3): Whole Unit
M8-e)	pure mathematics investigation	Shadows (1): “A Parallel Proof”; Solve It! (2): “A Digital Proof”; All About Alice (2): “More About Lewis Carroll”
M8-f)	other kinds of projects putting mathematics to work chosen by student or teacher	Cookies! (2): “Making Your Own Linear Programming Problem”; Is There Really a Difference? (2): Whole Unit

Each Project Includes:

- a question and plan
- a detailed description of how the project was carried out
- mathematics analysis of results
- a presentation or report