

Mathematics In Context[®]

A Connected Curriculum for Grades 5-8

New Standards Project

Correlated With

Mathematics in Context[®]

Plan B (Grade 6-8)



National Science Foundation

Opinions expressed are those of the authors and
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New Standards Project

Mathematics Content and Performance Descriptions

M1—Number and Operation Concepts

	Topic	<i>Mathematics in Context Units</i>
M1-a	Consistently and accurately adds, subtracts, multiplies, divides, and exponentiation rational numbers	Some of the Parts (6) Measure for Measure (6) Per Sense (6) Grasping Sizes (*) Fraction Times (6) More or Less (7) Ratios and Rates (7) Cereal Numbers (7) Powers of Ten (8) Reflections on Number (*)
M1-b	Understands the inverse relationships between addition and subtraction, multiplication and division, and exponentiation and root-extraction	Operations (7) Expressions and Formulas (6) Building Formulas (7) Graphing Equations (8) Reflections on Number (*)
M1-c	Consistently and accurately computes with, applies and converts the different kinds and 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)	Some of the Parts (6) Measure for Measure (6) Per Sense (6) Grasping Sizes (*) Fraction Times (6) More or Less (7) Ratios and Rates (7) Cereal Numbers (7) Powers of Ten (8) Reflections on Number (*)
M1-d	Is familiar with characteristics of numbers (divisibility, prime factorization) and with properties of operations (commutativity and associativity)	Reflections on Number (*)
M1-e	Interprets percent as part of 100, and as means of computation of different sizes or changing sizes	Per Sense (6) More or Less (7) Fraction Times (6) Ratio and Rates (7)
M1-f	Reasons proportionally to solve problems involving equivalent fractions or equal ratios	Some of the Parts (6) Grasping Sizes (*) More or Less (7) Ratios and Rates (7)
M1-g	Orders numbers with the $>$ and $<$ relationships and by location on a number line and has a sense of the magnitudes of numbers	Some of the Parts (6) Measure for Measure (6) Per Sense (6) Dry and Wet Numbers (*) Operations (7)

M2—Geometry and Measurement Concepts

	Topic	<i>Mathematics in Context Units</i>
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	Figuring all the Angles (6) Reallotment (6) Made to Measure (*) Packages and Polygons (7) Triangles and Beyond (7) Looking at an Angle (8) Triangles and Patchwork (8) Going the Distance (*)
M2-b	Identifies with similar and congruent shapes and uses transformations	Operations (7) Triangles and Beyond (7) Triangles and Patchwork (8)
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	Reallotment (6) Made to Measure (*) Packages and Polygons (7)
M2-d	Recognizes the similarity and rotational and bilateral symmetry in two- and three-dimensional figures	Triangles and Beyond (7) Triangles and Patchwork (8)
M2-e	Analyzes and generalizes geometric patterns such as tessellations and sequences of shapes	Triangles and Beyond (7) Triangles and Patchwork (8) Patterns and Figures (8)
M2-f	Measures angles, weights, capacities, times, and temperatures; uses appropriate units	Figuring all the Angles (6) Made to Measure (*) Tracking Graphs (7)
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)	Measure for Measure (6) Reallotment (6) Made to Measure (*)
M2-h	Reasons proportionally in situations with similar figures	Ratios and Rates (7) Triangles and Beyond (7) Triangles and Patchwork (8)
M2-i	Reasons proportionally with measurements to interpret maps and to make smaller and larger scale drawings	Grasping Sizes (*) Figuring All the Angles (6) Made to Measure (*) Ratios and Rates (7) Ways to Go (8) Looking at an Angle (8) Going the Distance (*)
M2-j	Models situations geometrically to formulate and solve problems	Side Seeing (6) Figuring All the Angles (6) Reallotment (6) Made to Measure (*) Packages and Polygons (7) Triangles and Beyond (7) Looking at an Angle (8) Triangles and Patchwork (8) Going the Distance (*)

M3—Function and Algebra Concepts

	Topic	<i>Mathematics in Context Units</i>
M3-a	Discovers, describes, and generalizes patterns including linear, simple quadratic, and exponential relationships, representing them with variables and expressions	Patterns and Symbols (6) Expressions and Formulas (6) Comparing Quantities (6) Ups and Downs (8) Building Formulas (7) Decision Making (7) Graphing Equations (8) Patterns and Figures (8) Growth (*)
M3-b	Represents relationships with tables and graphs, in the coordinate plane, and verbal or symbolic rules	Patterns and Symbols (6) Expressions and Formulas (6) Tracking Graphs (7) Comparing Quantities (6) Ups and Downs (8) Building Formulas (7) Decision Making (7) Graphing Equations (8) Patterns and Figures (8) Growth (*)
M3-c	Analyzes tables, graphs, and rules to determine functional relationships	Patterns and Symbols (6) Expressions and Formulas (6) Ups and Downs (8) Building Formulas (7) Decision Making (7) Graphing Equations (8) Patterns and Figures (8) Growth (*)
M3-d	Finds solutions for unknown quantities in linear equations	Comparing Quantities (6) Decision Making (7) Ups and Downs (8) Building Formulas (7) Graphing Equations (8) Get the Most Out of It (8)

M4—Statistics and Probability Concepts

	Topic	<i>Mathematics in Context Units</i>
M4-a	Collects and organizes data and displays with appropriate tables, charts, and graphs	Fraction Times (6) Picturing Numbers (*) Dealing with Data (7) Statistics and the Environment (*) Insights into Data (8)
M4-b	Analyzes data with respect to characteristics of frequency and distribution	Picturing Numbers (*) Dealing with Data (7) Statistics and the Environment (*) Insights into Data (8)
M4-c	Appropriately analyzes central tendencies of data with mean and median	Picturing Numbers (*) Dealing with Data (7) Statistics and the Environment (*) Insights into Data (8)
M4-d	Makes conclusions and recommendations based on data analysis	Picturing Numbers (5) Dealing with Data (7) Statistics and the Environment (*) Insights into Data (8) Digging Numbers (*)
M4-e	Critiques the conclusions and recommendations of others' statistics	Picturing Numbers (*) Dealing with Data (7) Statistics and the Environment (*) Insights into Data (8) Digging Numbers (*)
M4-f	Considers the effects of sampling procedures and of missing or incorrect information on reliability	Dealing with Data (7) Statistics and the Environment (*) Insights into Data (8) Digging Numbers (*)
M4-g	Formulates hypotheses to answer a question and uses data to test hypotheses	Take a Chance (6) Great Expectations (8)
M4-h	Recognizes equally likely outcomes, constructs sample spaces, and determines probabilities of events	Take a Chance (6) Ways to Go (7) Great Expectations (8)
M4-i	Makes predictions based on experimental or theoretical probabilities	Take a Chance (5) Ways to Go (8) Great Expectations (8)
M4-j	Predicts the result of a series of trials, once the probability for one trial is known	Take a Chance (6) Ways to Go (8) Great Expectations (8)

M5—Problem Solving and Mathematical Reasoning

	Topic	<i>Mathematics in Context</i> Units
M5-a	Formulates and solves a variety of meaningful problems	All <i>Mathematics in Context</i> units
M5-b	Extracts pertinent information from situations and figures out what additional information is needed	All <i>Mathematics in Context</i> units
M5-c	Uses and invents a variety of approaches and understands and evaluates those of others	All <i>Mathematics in Context</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>Mathematics in Context</i> units
M5-e	Determines, where helpful, how to break a problem into simpler parts	All <i>Mathematics in Context</i> units
M5-f	Integrates concepts and techniques from different areas of mathematics	All <i>Mathematics in Context</i> units
M5-g	Values and works effectively on teams when the nature of the task or the allotted time deems cooperation to be appropriate	All <i>Mathematics in Context</i> units
M5-h	Makes sensible reasonable estimates	All <i>Mathematics in Context</i> units
M5-i	Makes justified, logical statements	All <i>Mathematics in Context</i> units
M5-j	Formulates conjectures and argues (short of a formal proof) why if must be or seems true	All <i>Mathematics in Context</i> units
M5-k	Verifies and interprets results with respect to the original problem situation	All <i>Mathematics in Context</i> units
M5-l	Generalizes solutions and strategies to new problem situations	All <i>Mathematics in Context</i> units

M6—Mathematical Skill and Tools

	Topic	<i>Mathematics in Context Units</i>
M6-a	Computes accurately with arithmetic operations on rational numbers	Some of the Parts (6) Measure for Measure (6) Per Sense (6) Fraction Times (6) More or Less (7) Ratios and Rates (7) Cereal Numbers (7) Reflections on Number (*)
M6-b	Knows order of operations for arithmetic computations	Expressions and Formulas (6) Operations (7) Powers of Ten (8) Building Formulas (7) Graphing Equations (8)
M6-c	Estimates numerically and spatially	Some of the Parts (6) Measure for Measure (6) Per Sense (6) Figuring All the Angles (6) Take a Chance (6) Fraction Times (6) More or Less (7) Ratios and Rates (7) Reallotment (6) Made to Measure (*) Cereal Numbers (7) Growth (*) Going the Distance (8) Insights into Data (8) Digging Numbers (*)
M6-d	Measures length, area, volume, weight, time, and temperature accurately	Figuring All the Angles (6) Reallotment (6) Made to Measure (*) Packages and Polygons (7) Cereal Numbers (7) Triangles and Beyond (7) Looking at an Angle (8) Going the Distance (8)
M6-e	Refers to geometric shapes and terms correctly	Figuring All the Angles (6) Reallotment (6) Made to Measure (*) Packages and Polygons (7) Cereal Numbers (7) Triangles and Beyond (7) Looking at an Angle (8) Triangles and Patchwork (8) Going the Distance (*)

M6—Mathematical Skill and Tools (con't)

	Topic	<i>Mathematics in Context Units</i>
M6-f	Uses equations, formulas, and simple algebraic notation appropriately	Patterns and Symbols (6) Expressions and Formulas (6) Comparing Quantities (6) Ups and Downs (8) Building Formulas (7) Decision Making (7) Graphing Equations (8) Get the Most Out of It (8) Patterns and Figures (8) Growth (*)
M6-g	Organizes data on charts and graphs, including scatter plots, bar line, and circle graphs and Venn diagrams	Picturing Numbers (*) Dealing with Data (7) Fraction Times (6) Statistics and the Environment (*) Insights into Data (8)
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>Mathematics in Context</i> units

M7—Mathematical Communication

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

M8—Putting Mathematics to Work

	Topic	<i>Mathematics in Context Units</i>
M8-a	Data study based on civic, economic, or social issues	Dealing with Data (7) Fraction Times (6) Statistics and the Environment (*) Insights into Data (8) Digging Numbers (*)
M8-b	Mathematical model of physical phenomena, often used in science studies	Tracking Graphs (7) Insights into Data (8) Growth (*) Digging Numbers (*)
M8-c	Design of a physical structure	Side Seeing (*) Packages and Polygons (7)
M8-d	Management and planning	Decision Making (7) Statistics and the Environment (*) Get the Most Out of It (8)
M8-e	Pure mathematics investigation	Patterns and Figures (8) Growth (*)
M8-f	Other kinds of projects putting mathematics to work chosen by student or teacher. Each project includes: <ul style="list-style-type: none"> • A question and plan • A detailed description of how the project was carried out • Mathematical analysis of results • A presentation or report 	Statistics and the Environment (*) Insights into Data (8)