

GRADE: 6

Big Idea 1: BIG IDEA 1

Develop an understanding of and fluency with multiplication and division of fractions and decimals.

BENCHMARK CODE	BENCHMARK
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

Big Idea 2: BIG IDEA 2

Connect ratio and rates to multiplication and division.

BENCHMARK CODE	BENCHMARK
MA.6.A.2.1	Use reasoning about multiplication and division to solve ratio and rate problems. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

Big Idea 3: BIG IDEA 3

Write, interpret, and use mathematical expressions and equations.

BENCHMARK CODE	BENCHMARK
MA.6.A.3.4	Solve problems given a formula. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

Supporting Idea 5: Number and Operations

Number and Operations

BENCHMARK CODE	BENCHMARK
MA.6.A.5.1	Use equivalent forms of fractions, decimals, and percents to solve problems. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

GRADE: 7

Big Idea 3: BIG IDEA 3

Develop an understanding of operations on all rational numbers and solving linear equations.

BENCHMARK CODE	BENCHMARK
MA.7.A.3.1	Use and justify the rules for adding, subtracting, multiplying, dividing, and finding the absolute value of integers. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

GRADE: 8

Big Idea 1: BIG IDEA 1

Analyze and represent linear functions, and solve linear equations and systems of linear equations.

BENCHMARK CODE	BENCHMARK
MA.8.A.1.1	Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range, and the difference between discrete and continuous data. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
MA.8.A.1.2	Interpret the slope and the x- and y-intercepts when graphing a linear equation for a real-world problem. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.8.A.1.3	Use tables, graphs, and models to represent, analyze, and solve real-world problems related to systems of linear equations. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
MA.8.A.1.4	Identify the solution to a system of linear equations using graphs. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.8.A.1.5	Translate among verbal, tabular, graphical, and algebraic representations of linear functions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.8.A.1.6	Compare the graphs of linear and non-linear functions for real-world situations. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

Big Idea 3: BIG IDEA 3

Analyze and summarize data sets.

BENCHMARK CODE	BENCHMARK
MA.8.S.3.1	Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

Supporting Idea 4: Algebra

Algebra

BENCHMARK CODE	BENCHMARK
MA.8.A.4.1	Solve literal equations for a specified variable. <i>Cognitive Complexity:</i> Level 1: Recall

GRADE: 9-12

Body of Knowledge: ALGEBRA

Standard 1: Real and Complex Number Systems

Expand and deepen understanding of real and complex numbers by comparing expressions and performing arithmetic computations, especially those involving square roots and exponents. Use the properties of real numbers to simplify algebraic expressions and equations, and convert between different measurement units using dimensional analysis.

BENCHMARK CODE	BENCHMARK
MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers). <i>Cognitive Complexity:</i> Level 1: Recall
MA.912.A.1.2	Compare real number expressions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.912.A.1.3	Simplify real number expressions using the laws of exponents. <i>Cognitive Complexity:</i> Level 1: Recall
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers) using multi-step and real-world problems. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

Standard 10: Mathematical Reasoning and Problem Solving

In a general sense, all of mathematics is problem solving. In all of mathematics, use problem-solving skills, choose how to approach a problem, explain the reasoning, and check the results.

BENCHMARK CODE	BENCHMARK
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

Standard 3: Linear Equations and Inequalities

Solve linear equations and inequalities.

BENCHMARK CODE	BENCHMARK
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make

	<p>predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.</p> <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
MA.912.A.3.12	<p>Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>
MA.912.A.3.13	<p>Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>
MA.912.A.3.8	<p>Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>
MA.912.A.3.9	<p>Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>

Body of Knowledge: STATISTICS

Standard 1: Formulating Questions

Learn to define appropriate questions for research and to pose questions in a form that can be answered by collecting and analyzing data.

BENCHMARK CODE	BENCHMARK
MA.912.S.1.1	<p>Formulate an appropriate research question to be answered by collecting data or performing an experiment.</p> <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
MA.912.S.1.2	<p>Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>

Standard 2: Data Collection

Learn key methods for collecting data and basic sampling principles.

BENCHMARK CODE	BENCHMARK
MA.912.S.2.1	<p>Compare the difference between surveys, experiments, and observational studies and what types of questions can and cannot be answered by a particular design.</p> <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
MA.912.S.2.3	<p>Identify sources of bias, including sampling and nonsampling errors.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>

Standard 3: Summarizing Data (Descriptive Statistics)

Learn to work with summary measures of sets of data, including measures of the center, spread, and strength of relationship between variables. Learn to distinguish between different types of data and to

Select the appropriate visual form to present different types of data.

BENCHMARK CODE	BENCHMARK
MA.912.S.3.1	<p>Read and interpret data presented in various formats. Determine whether data is presented in appropriate format, and identify possible corrections. Formats to include:</p> <ul style="list-style-type: none"> • bar graphs • line graphs • stem and leaf plots • circle graphs • histograms • box and whiskers plots • scatter plots • cumulative frequency (ogive) graphs <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts</p>
MA.912.S.3.2	<p>Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following:</p> <ul style="list-style-type: none"> • bar graphs • line graphs • stem and leaf plots • circle graphs • histograms • box and whisker plots • scatter plots • cumulative frequency (ogive) graphs <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

Standard 4: Analyzing Data

Learn to use simulations of standard sampling distributions to determine confidence levels and margins of error. Develop measures of association between two numerical or categorical variables. Use technological tools to find equations of regression lines and correlation coefficients.

BENCHMARK CODE	BENCHMARK
MA.912.S.4.1	<p>Explain and interpret the concepts of confidence level and "margin of error."</p> <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning</p>