MATHEMATICS I

Numerals in parentheses designate individual content standards that are eligible for assessment in whole or in part. Underlined numerals (e.g., 1) indicate standards eligible for assessment on two or more end-of-course assessments.
Course emphases are indicated by:

- ★ Major Content;
- + Supporting Content;
- ✓ Additional Content.

Not all content standards in a listed domain or cluster are assessed.

Number and Quantity

Quantities« (N-Q)

- + Reason quantitatively and use units to solve problems (1, 2, 3)

Algebra

Seeing Structure in Expressions (A-SSE)

- ★ Interpret the structure of expressions
- + Write expressions in equivalent forms to solve problems

Creating Equations« (A-CED)

- ★ Create equations that describe numbers or relationships (1, 2, 3, 4)

Reasoning with Equations and Inequalities (A-REI)

- ★ Solve equations and inequalities in one variable (3)
- ✓ Solve systems of equations (5, 6)
- ★ Represent and solve equations and inequalities graphically (10, 11, 12)

Functions

Interpreting Functions (F-IF)

- ★ Understand the concept of a function and use function notation (1, 2, 3)
- ★ Interpret functions that arise in applications in terms of the context (4, 5, 6)
- + Analyze functions using different representations (7, 9)

Building Functions (F-BF)

- ★ Build a function that models a relationship between two quantities (1, 2)

Linear, Quadratic, and Exponential Models (F-LE)

- + Construct and compare linear, quadratic, and exponential models and solve problems (1, 2, 3)
- + Interpret expressions for functions in terms of the situation they model (5)

Geometry

Congruence (G-CO)

- + Experiment with transformation in the plane (1, 2, 3, 4, 5)
- ★ Understand congruence in terms of rigid motions (6, 7, 8)
- ★ Prove geometric theorems (9, 10, 11)

Statistics

Interpreting categorical and quantitative data (S-ID)

- + Summarize, represent, and interpret data on a single count or measurement variable (1, 2, 3)
- ✓ Summarize, represent, and interpret data on two categorical and quantitative variables (5, 6)
- ★ Interpret linear models (7, 8, 9)

Key Advances from Grades K–8

- Students build on previous work with solving linear equations and systems of linear equations in two ways: (a) They extend to more formal solution methods, including attending to the structure of linear expressions, and (b) they solve linear inequalities.

- Students formalize their understanding of the definition of a function, particularly their understanding of linear functions, emphasizing the structure of linear expressions. Students

also begin to work on exponential functions, comparing them to linear functions.

- Work with congruence and similarity motions that started in grades 6-8 progresses. Students also consider sufficient conditions for congruence of triangles.

- Work with the bivariate data and scatter plots in grades 6-8 is extended to working with lines of best fit.

Discussion of Mathematical Practices in Relation to Course Content

- Modeling with mathematics (MP.4) should be a particular focus as students see the purpose and meaning for working with linear and exponential equations and functions.

- Using appropriate tools strategically (MP.5) is also important as students explore those models in a variety of ways, including with technology. For example, students might be given a set of data points and experiment with graphing a line that fits the data.

- As Mathematics I continues to develop a foundation for more formal reasoning, students should engage in the practice of constructing viable arguments and critiquing the reasoning of others (MP.3).

Fluency Recommendations

Algebra/Geometry

High school students should become fluent in solving characteristic problems involving the analytic geometry of lines, such as finding the equation of a line given a point and a slope. This fluency can support students in solving less routine mathematical problems involving linearity, as well as in modeling linear phenomena (including modeling using systems of linear inequalities in two variables).

Geometry

High school students should become fluent in using geometric transformation to represent the relationships among geometric objects. This fluency provides a powerful tool for visualizing relationships, as well as a foundation for exploring ideas both within geometry (e.g., symmetry) and outside of geometry (e.g., transformations of graphs).

Statistics

Students should be able to create a visual representation of a data set that is useful in understanding possible relationships among variables.

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