SCIENCE

Strand A: The Nature of Matter

Standard 1: The student understands that all matter has observable, measurable properties.

Benchmarks
SC.A.1.3.1 The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light).
SC.A.1.3.2 The student understands the difference between weight and mass.

Strand B: Energy

Standard 1: The student recognizes that energy may be changed in form with varying efficiency.

Benchmarks
SC.B.1.3.1 The student identifies forms of energy and explains that they can be measured and compared.
SC.B.1.3.2 The student knows that energy cannot be created or destroyed, but only changed from one form to another.
SC.B.1.3.4 The student knows that energy conversions are never 100% efficient (i.e., some energy is transformed to heat and is unavailable for further useful work).

Strand C: Force and Motion

Standard 2: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

Benchmarks
SC.C.2.3.3 The student knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude.
SC.C.2.3.5 The student understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force.
SC.C.2.3.7 The student knows that gravity is a universal force that every mass exerts on every other mass.
Strand H: The Nature of Science

Standard 1: The student uses the scientific processes and habits of mind to solve problems.

Benchmarks
SC.H.1.3.4 The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator’s credibility with other scientists and society.
SC.H.1.3.5 The student knows that a change in one or more variables may alter the outcome of an investigation.

Standard 3: The student understands that science, technology, and society are interwoven and independent.

Benchmarks
SC.H.3.3.1 The student knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.
SC.H.3.3.4 The student knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values.
**Strand B: Measurement**

**Standard 1:** The student measures quantities in the real world and uses the measures to solve problems.

**Benchmark**
MA.B.1.3.2 The student uses concrete and graphic models to derive formulas for finding rates, distance, time, and angle measures.

**Standard 2:** The student compares, contrasts, and converts within systems of measurement.

**Benchmark**
MA.B.2.3.1 The student uses direct (measured) and indirect (nonmeasured) measures to compare a given characteristic in either metric or customary units.

**Standard 3:** The student estimates measurements in real-world problem situations.

**Benchmark**
MA.B.3.3.1 The student solves real-world and mathematical problems involving estimates of measurements including length, time, weight/mass, temperature, money, perimeter, area, and volume, in either customary or metric units.

**Standard 4:** The student selects and uses appropriate units and instruments for measurement to achieve the degree of precision and accuracy required in real-world situations.

**Benchmarks**
MA.B.4.3.1 The student selects appropriate units of measurement and determines and applies significant digits in a real-world context. (Significant digits should relate to both instrument precision and to the least precise unit of measurement.)

MA.B.4.3.2 The student selects and uses appropriate instruments, technology, and techniques to measure quantities in order to achieve specified degrees of accuracy in a problem situation.

**Strand C: Geometry and Spatial Sense**

**Standard 1:** The student describes, draws, identifies, and analyzes two- and three-dimensional shapes.

**Benchmark**
MA.C.1.3.1 The student understands the basic properties of, and relationships pertaining to, regular and irregular geometric shapes in two and three dimensions.

**Standard 3:** The student uses coordinate geometry to locate objects in both two and three dimensions and to describe objects algebraically.

**Benchmark**
MA.C.3.3.1 The student represents and applies geometric properties and relationships to solve real-world and mathematical problems.
Strand D: Algebraic Thinking

Standard 1: The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions.

Benchmarks
MA.D.1.3.1 The student describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.
MA.D.1.3.2 The student creates and interprets tables, graphs, equations, and verbal descriptions to explain cause-and-effect relationships.

Strand E: Data Analysis and Probability

Standard 1: The student understands and uses the tools of data analysis for managing information.

Benchmark
MA.E.1.3.1 The student collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations.

Standard 3: The student uses statistical methods to make inferences and valid arguments about real-world situations.

Benchmark
MA.E.3.3.1 The student formulates hypotheses, designs experiments, collects and interprets data, and evaluates hypotheses by making inferences and drawing conclusions based on statistics (range, mean, median, mode) and tables, graphs, and charts.
**Strand A: Reading**

**Standard 1: The student uses the reading process effectively.**

**Benchmark**

LA.A.1.3.3 The student demonstrates consistent and effective use of interpersonal and academic vocabularies in reading, writing, listening, and speaking.

**Standard 2: The student constructs meaning from a wide range of texts.**

**Benchmark**

LA.A.2.3.5 The student locates, organizes, and interprets written information for a variety of purposes, including classroom research, collaborative decision making, and performing a school or real-world task.

**Strand B: Writing**

**Standard 2: The student writes to communicate ideas and information effectively.**

**Benchmark**

LA.B.2.3.1 The student writes text, notes, outlines, comments and observations that demonstrate comprehension of content and experiences from a variety of media.

**Strand C: Listening, Viewing, and Speaking**

**Standard 1: The student uses listening strategies effectively.**

**Benchmarks**

LA.C.1.3.1 The student listens and uses information gained for a variety of purposes, such as gaining information from interviews, following direction, and pursuing personal interest.

LA.C.1.3.4 The student uses responsive listening skills, including paraphrasing, summarizing, and asking questions for elaboration and clarification.

**Standard 3: The student uses speaking strategies effectively.**

**Benchmarks**

LA.C.3.3.2 The student asks questions and makes comments and observations that reflect understanding and application of content, processes, and experiences.

LA.C.3.3.3 The student speaks for various occasions, audiences, and purposes, including conversations, discussions, projects, and informational, persuasive, or technical presentations.