In a code such as 5.2.4.D.1, the “5” indicates the science standards, the “2” indicates the physical science standard within the set of science standards, the “4” indicates a first grade cumulative progress indicator, the “D” indicates a “strand” or theme within the science standards, and the “1” indicates the first of the first grade cumulative progress indicators within the “D” strand.
III. Scope and Sequence: Grade 1 – Balance and Motion

In completing the work in Investigation 1 of Balance and Motion, students are expected to develop understandings and skills including:

Objects can be balanced in many ways.

A stable position is one that is steady; the object is not falling over.

Counterweights can help balance an object.

A mobile is a system of balanced beams and objects.

In doing so they begin to acquire knowledge and abilities such as:

Distinguish a force that acts by direct contact with an object (e.g., by pushing or pulling) from a force that can act without direct contact (e.g., the attraction between a magnet and a steel paper clip). (5.2.2.E.3)

Demonstrate through modeling that motion is a change in position over a period of time. (5.2.4.E.1)

Identify the force that starts something moving or changes its speed or direction of motion. (5.2.4.E.2)

Observe balanced objects.

Observe stable balanced systems.

Compare balanced systems and representations of balanced systems.

Organize materials to make various balanced systems.

Communicate observations of balance and stability, using precise vocabulary.

In doing so they begin to acquire knowledge and abilities such as:
Use outcomes of investigations to build and refine questions, models, and explanations. (5.1.4.A.2)

Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments. (5.1.4.A.3)

Design and follow simple plans using systematic observations to explore questions and predictions. (5.1.4.B.1)

Measure, gather, evaluate, and share evidence using tools and technologies. (5.1.4.B.2)

Formulate explanations from evidence. (5.1.4.B.3)

Communicate and justify explanations with reasonable and logical arguments. (5.1.4.B.4)

Monitor and reflect on one’s own knowledge regarding how ideas change over time. (5.1.4.C.1)

Revise predictions or explanations on the basis of learning new information. (5.1.4.C.2)

Present evidence to interpret and/or predict cause-and-effect outcomes of investigations. (5.1.4.C.3)

Actively participate in discussions about student data, questions, and understandings. (5.1.4.D.1)

Work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories. (5.1.4.D.2)

Demonstrate how to safely use tools, instruments, and supplies. (5.1.4.D.3)

In completing the work in Investigation 2 of *Balance and Motion*, students are expected to develop understandings and skills including:

**Objects and systems that turn on a central axis exhibit rotational motion.**
The amount and position of mass affect how an object rotates.

There are different ways to initiate rotational motion.

The motion of an object can be changed by pushing or pulling.

In doing so they begin to acquire knowledge and abilities such as:

- Investigate and model the various ways that inanimate objects can move. (5.2.2.E.1)
- Predict an object’s relative speed, path, or how far it will travel using various forces and surfaces. (5.2.2.E.2)
- Demonstrate through modeling that motion is a change in position over a period of time. (5.2.4.E.)
- Identify the force that starts something moving or changes its speed or direction of motion. (5.2.4.E.2)

Observe several expressions of rotational motion.

Compare the actions of several different top designs.

Observe rotation of a system falling through air.

Organize materials to make systems that exhibit rotational motion.

Communicate observations and comparisons of rotational motion, using precise vocabulary.

In doing so they begin to acquire knowledge and abilities such as:

- Use outcomes of investigations to build and refine questions, models, and explanations. (5.1.4.A.2)
III. Scope and Sequence: Grade 1 – Balance and Motion

Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments. (5.1.4.A.3)

Design and follow simple plans using systematic observations to explore questions and predictions. (5.1.4.B.1)

Measure, gather, evaluate, and share evidence using tools and technologies. (5.1.4.B.2)

Formulate explanations from evidence. (5.1.4.B.3)

Communicate and justify explanations with reasonable and logical arguments. (5.1.4.B.4)

Monitor and reflect on one’s own knowledge regarding how ideas change over time. (5.1.4.C.1)

Revise predictions or explanations on the basis of learning new information. (5.1.4.C.2)

Present evidence to interpret and/or predict cause-and-effect outcomes of investigations. (5.1.4.C.3)

Actively participate in discussions about student data, questions, and understandings. (5.1.4.D.1)

Work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories. (5.1.4.D.2)

Demonstrate how to safely use tools, instruments, and supplies. (5.1.4.D.3)

In completing the work in Investigation 3 of Balance and Motion, students are expected to develop understandings and skills including:

**Wheels and spheres roll down a slope.**

**Axles support wheels.**
III. Scope and Sequence: Grade 1 – Balance and Motion

Wheel-and-axle systems with wheels of different sizes roll toward the smaller wheel.

The amount and location of an added weight can change the way a system rolls.

In doing so they begin to acquire knowledge and abilities such as:

- Investigate and model the various ways that inanimate objects can move. (5.2.2.E.1)
- Predict an object’s relative speed, path, or how far it will travel using various forces and surfaces. (5.2.2.E.2)
- Demonstrate through modeling that motion is a change in position over a period of time. (5.2.4.E.1)
- Identify the force that starts something moving or changes its speed or direction of motion. (5.2.4.E.2)

Observe several expressions of linear motion.

Observe several kinds of objects and systems that roll.

Compare the paths followed by rolling systems with different-sized wheels.

Organize materials to make systems that roll in different ways.

Communicate observations and comparisons of rolling motion, using precise vocabulary.

In doing so they begin to acquire knowledge and abilities such as:

- Use outcomes of investigations to build and refine questions, models, and explanations. (5.1.4.A.2)
- Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments. (5.1.4.A.3)
III. Scope and Sequence: Grade 1 – Balance and Motion

Design and follow simple plans using systematic observations to explore questions and predictions. (5.1.4.B.1)

Measure, gather, evaluate, and share evidence using tools and technologies. (5.1.4.B.2)

Formulate explanations from evidence. (5.1.4.B.3)

Communicate and justify explanations with reasonable and logical arguments. (5.1.4.B.4)

Monitor and reflect on one’s own knowledge regarding how ideas change over time. (5.1.4.C.1)

Revise predictions or explanations on the basis of learning new information. (5.1.4.C.2)

Present evidence to interpret and/or predict cause-and-effect outcomes of investigations. (5.1.4.C.3)

Actively participate in discussions about student data, questions, and understandings. (5.1.4.D.1)

Work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories. (5.1.4.D.2)

Demonstrate how to safely use tools, instruments, and supplies. (5.1.4.D.3)