

Connections to Standards in PLTW Launch

PLTW curriculum is designed to empower students to thrive in an evolving world. As a part of the design process when developing and updating our curriculum, we focus on connections to a variety of standards. PLTW Launch modules connect to standards in the following:

Next Generation Science Standards	Page 2
Computer Science Teachers Association K-12 Computer Science Standards	Page 12
International Society for Technology in Education Standards for Students	Page 16
Common Core State Standards English Language Arts - Second Grade	Page 20
Common Core State Standards Mathematics - Second Grade	Page 22

Next Generation Science Standards

Matter and Its Interactions

2-PS1-1

Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

2-PS1-2

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

2-PS1-3

Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

2-PS1-4

Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Ecosystems: Interactions, Energy, and Dynamics

2-LS2-1

Plan and conduct an investigation to determine if plants need sunlight and water to grow.

- | | |
|--|--|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

2-LS2-2

Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Biological Evolution: Unity and Diversity

2-LS4-1

Make observations of plants and animals to compare the diversity of life in different habitats.

- | | |
|--|--|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Earth's Place in the Universe

2-ESS1-1

Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Earth's Systems

2-ESS2-1

Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

2-ESS2-2

Develop a model to represent the shapes and kinds of land and bodies of water in an area.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

2-ESS2-3

Obtain information to identify where water is found on Earth and that it can be solid or liquid.

- Materials Science: Properties of Matter
 - Materials Science: Form and Function
 - The Changing Earth
 - Grids and Games
 - Living Things: Diversity of Life
-

Engineering Design

K-2-ETS1-1

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

K-2-ETS1-2

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

K-2-ETS1-3

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

- Materials Science: Properties of Matter
 - Materials Science: Form and Function
 - The Changing Earth
 - Grids and Games
 - Living Things: Diversity of Life
-

Science and Engineering Practices

Asking Questions and Defining Problems

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

Next Generation Science Standards

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

Using Mathematics and Computational Thinking

Mathematical and computational thinking in K–2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

Next Generation Science Standards

Engaging in Argument from Evidence

Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Disciplinary Core Ideas (K-2)

Physical Science

PS1.A Structure and Properties of Matter

• Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

PS1.A Structure and Properties of Matter

• Different properties are suited to different purposes.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

PS1.B Chemical Reactions

• Heating and cooling substances cause changes that are sometimes reversible and sometimes not.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

PS1.A Structure and Properties of Matter

- A great variety of objects can be built up from a small set of pieces.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Life Science

LS2.A Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow.

- | | |
|--|--|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

LS2.A Interdependent Relationships in Ecosystems

- Plants depend on animals for pollination or to move their seeds around.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

LS4.D Biodiversity and Humans

- There are many different kinds of living things in any area, and they exist in different places on land and in water.

- | | |
|--|--|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Earth and Space Science

ESS1.C The History of Planet Earth

- Some events on Earth occur very quickly; others can occur very slowly.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

ESS2.A Earth Materials and Systems

- Wind and water change the shape of the land.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

ESS2.B Plate Tectonics and Large-scale System Interactions

- Maps show where things are located. One can map the shapes and kinds of land and water in any area.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

ESS2.C The Roles of Water in Earth's Surface Processes

- Water is found in many types of places and in different forms on Earth.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Engineering, Technology, and Applications of Science

ETS1.A Defining and Delimiting Engineering Problems

- Asking questions, making observations, and gathering information are helpful in thinking about problems.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

ETS1.A Defining and Delimiting Engineering Problems

- Before beginning to design a solution, it is important to clearly understand the problem.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

ETS1.B Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

ETS1.C Optimizing the Design Solution

• Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Crosscutting Concepts (K-2)

Patterns – Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.

• Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Cause and Effect: Mechanism and Prediction – Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

• Events have causes that generate observable patterns.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

• Simple tests can be designed to gather evidence to support or refute student ideas about causes.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Systems and System Models – A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

• Objects and organisms can be described in terms of their parts.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

- Systems in the natural and designed world have parts that work together.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Energy and Matter: Flows, Cycles, and Conservation – Tracking energy and matter flows, into, out of, and within systems helps one understand their system’s behavior.

- Objects may break into smaller pieces, be put together into larger pieces, or change shapes.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Structure and Function – The way an object is shaped or structured determines many of its properties and functions.

- The shape and stability of structures of natural and designed objects are related to their function(s).

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Stability and Change – For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

- Things may change slowly or rapidly.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Connections to Nature of Science (K-2)

Science Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world.

- | | |
|--|--|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Next Generation Science Standards

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

- Scientists search for cause and effect relationships to explain natural events.
 - Materials Science: Properties of Matter
 - Materials Science: Form and Function
 - The Changing Earth
 - Grids and Games
 - Living Things: Diversity of Life

Science Addresses Questions About the Natural and Material World

- Scientists study the natural and material world.
 - Materials Science: Properties of Matter
 - Materials Science: Form and Function
 - The Changing Earth
 - Grids and Games
 - Living Things: Diversity of Life

Connections to Engineering, Technology, and Applications of Science (K-2)

Influence of Engineering, Technology, and Science on Society and the Natural World

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.
 - Materials Science: Properties of Matter
 - Materials Science: Form and Function
 - The Changing Earth
 - Grids and Games
 - Living Things: Diversity of Life

Computer Science Teachers Association K-12 Computer Science

In Spring 2023 PLTW submitted all necessary documentation required by the Computer Science Teachers Association (CSTA) for a crosswalk review of our Launch and Gateway curricula by the CSTA Standards Review Team. While we anticipate approval and validation by CSTA, the review is pending.

Computing Systems

Devices

1A-CS-01

Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Hardware & Software

1A-CS-02

Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Troubleshooting

1A-CS-03

Describe basic hardware and software problems using accurate terminology.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Networks and the Internet

Cybersecurity

1A-NI-04

Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Computer Science Teachers Association K-12 Computer Science

Data and Analysis

Storage

1A-DA-05

Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Collection Visualization & Transformation

1A-DA-06

Collect and present the same data in various visual formats.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Inference & Models

1A-DA-07

Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Algorithms and Programming

Variables

1A-AP-09

Model the way programs store and manipulate data by using numbers or other symbols to represent information.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Computer Science Teachers Association K-12 Computer Science

Control

1A-AP-10

Develop programs with sequences and simple loops, to express ideas or address a problem.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Modularity

1A-AP-11

Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Program Development

1A-AP-12

Develop plans that describe a program's sequence of events, goals, and expected outcomes.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

1A-AP-13

Give attribution when using the ideas and creations of others while developing programs.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

1A-AP-14

Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

1A-AP-15

Using correct terminology, describe steps taken and choices made during the iterative process of program development.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Impacts of Computing

Culture

1A-IC-16

Compare how people live and work before and after the implementation or adoption of new computing technology.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Social Interactions

1A-IC-17

Work respectfully and responsibly with others online.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Safety Law & Ethics

1A-IC-18

Keep login information private, and log off of devices appropriately.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Empowered Learner

1a

Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

1c

Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Digital Citizen

2a

Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

2b

Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

2d

Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Knowledge Constructor

3d

Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |
-

Innovative Designer

4a

Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

4b

Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

4c

Students develop, test and refine prototypes as part of a cyclical design process.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

4d

Students exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Computational Thinker

5a

Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

5c

Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

5d

Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Creative Communicator

6a

Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

6b

Students create original works or responsibly repurpose or remix digital resources into new creations.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

International Society for Technology in Education Standards for Students

6c

Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

6d

Students publish or present content that customizes the message and medium for their intended audiences.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Global Collaborator

7a

Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

7b

Students use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

7c

Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Common Core State Standards English Language Arts - Second Grade

Reading Literature

Key Ideas and Details

CCSS.ELA-LITERACY.RL.2.1

Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.RL.2.7

Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Reading Informational Text

Key Ideas and Details

CCSS.ELA-LITERACY.RI.2.1

Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

CCSS.ELA-LITERACY.RI.2.3

Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Common Core State Standards English Language Arts - Second Grade

Writing

Research to Build and Present Knowledge

CCSS.ELA-LITERACY.W.2.7

Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

CCSS.ELA-LITERACY.W.2.8

Recall information from experiences or gather information from provided sources to answer a question.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

Speaking and Listening

Comprehension and Collaboration

CCSS.ELA-LITERACY.SL.2.1

Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

CCSS.ELA-LITERACY.SL.2.2

Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input checked="" type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input checked="" type="checkbox"/> The Changing Earth | |

© Copyright 2010 National Governors Association Center for Best Practices and Council of Chief State School Officers. All rights reserved.

Common Core State Standards Mathematics - Second Grade

Operations and Algebraic Thinking

Add and subtract within 20.

CCSS.MATH.CONTENT.2.OA.B.2

Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |
-

Number and Operations in Base Ten

Use place value understanding and properties of operations to add and subtract.

CCSS.MATH.CONTENT.2.NBT.B.5

Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

- | | |
|--|---|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input checked="" type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |
-

Measurement and Data

Measure and estimate lengths in standard units.

CCSS.MATH.CONTENT.2.MD.A.1

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

- | | |
|--|--|
| <input type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |
-

Represent and interpret data.

CCSS.MATH.CONTENT.2.MD.D.10

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Materials Science: Properties of Matter | <input type="checkbox"/> Grids and Games |
| <input type="checkbox"/> Materials Science: Form and Function | <input checked="" type="checkbox"/> Living Things: Diversity of Life |
| <input type="checkbox"/> The Changing Earth | |

Common Core State Standards Mathematics - Second Grade

Mathematical Practices

CCSS.MATH.PRACTICE.MP1

Make sense of problems and persevere in solving them.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

CCSS.MATH.PRACTICE.MP2

Reason abstractly and quantitatively.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

CCSS.MATH.PRACTICE.MP3

Construct viable arguments and critique the reasoning of others.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

CCSS.MATH.PRACTICE.MP4

Model with mathematics.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

CCSS.MATH.PRACTICE.MP5

Use appropriate tools strategically.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

CCSS.MATH.PRACTICE.MP6

Attend to precision.

- Materials Science: Properties of Matter
- Materials Science: Form and Function
- The Changing Earth
- Grids and Games
- Living Things: Diversity of Life

References

Computer Science Teachers Association. (2017). *CSTA K-12 Computer Science Standards, revised 2017*. <http://www.csteachers.org/standards>

International Society for Technology in Education. (2016). *ISTE standards for students*. <http://www.iste.org/standards/for-students>

National Governors Association Center for Best Practices, & Council of Chief State School Officers. (2010). *Common Core State Standards*. National Governors Association Center for Best Practices, Council of Chief State School Officers.

NGSS Lead States. (2013). *Next Generation Science Standards: For states, by states*. National Academies Press.