2021 - 2022, Second Grade, Science, Quarter 1

Big Ideas/Key Concepts:

- Many animals use their body parts and senses in many important ways.
- Animals are classified based on their physical characteristics.
- Species have unique and diverse life cycles.
- Animals meet their needs by using their surroundings and other living things.
- Animals respond to changes in their environments.
- Traits are inherited from parents, but variations occur.

Standards	Student Friendly "I Can" Statements
From Molecules to Organisms: Structures and Processes	**From Molecules to Organisms: Structures and Processes**
2.LS1.1 Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.	I can observe and use evidence to explain how animals use their body parts and senses to meet their basic needs and interact with their habitats.
2.LS1.2 Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.	I can research animals to classify them according to their physical characteristics (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) and present my information.
2.LS1.3 Use simple graphical representations to show that species have unique and diverse life cycles.	I can use simple models to compare and contrast the unique and diverse life cycles of different species of animals.
Ecosystems: Interactions, Energy, and Dynamics	**Ecosystems: Interactions, Energy, and Dynamics**
2.LS2.1 Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.	I can make a model to show how animals depend on their habitats and other living things to meet their needs.

Standards	Student Friendly "I Can" Statements
2.LS2.2 Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).	I can compare how different animals meet their needs in their habitats. I can predict what happens to animals when the environment changes suddenly (e.g., wildfires). I can predict what happens to animals when the environment changes slowly (e.g., temperature change).
Heredity: Inheritance and Variation of Traits **2.LS3.1** Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.	**Heredity: Inheritance and Variation of Traits** I can use a Venn Diagram to show how physical traits between a parent and its offspring can be similar or different.

Embedded K-8 TN Computer Science Standards:

- **AIT.7** Infer and predict or propose relationships with data.
- **DC.1** Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology.
- **DC.2** Exhibit a positive mindset toward using technology that supports collaboration, learning, and productivity.
- **DC.3** Exhibit leadership for digital citizenship.

2021 - 2022, Second Grade, Science, Quarter 2

Big Ideas/Key Concepts:

- Earth's natural processes have a beginning and an end while some others are cyclical.
- Erosion is a problem which requires a human solution.
- Erosion changes the shape of a landform.
- Water is found in the ocean, rivers, streams, lakes, and ponds.
- Water can be found in liquid and solid states within bodies of water.
- By asking questions, making observations, and gathering accurate information, simple problems can be defined and solved.
- More complex problems need to be broken into smaller parts then pieced together again in order to reach a solution.

Standards	Student Friendly "I Can" Statements
Earth's Place in the Universe **2.ESS1.1** Recognize that some of Earth's natural processes are cyclical, while others have a beginning and an end. Some events happen quickly, while others occur slowly over time. **Earth's Systems** **2.ESS2.2** Observe and analyze how blowing wind and flowing water can move Earth materials (soil, rocks) from one place to another, changing the shape of a landform and affecting the habitats of living things.	**Earth's Place in the Universe** I can recognize that some of the natural processes that occur on Earth are cyclical, while others have a beginning and an end. I can differentiate that some natural events happen quickly, while others occur slowly over time. **Earth's Systems** I can investigate how blowing wind and flowing water can move Earth materials (soil, rocks) from one place to another. I can explain how blowing wind and flowing water can change the shape of a landform. I can explain how blowing wind and flowing water can affect the habitats of living things.

Standards	Student Friendly "I Can" Statements
2.ESS2.3 Compare simple maps of different land areas to observe the shapes and kinds of land (rock, soil, sand) and water (river, stream, lake, pond).	I can use simple maps of different areas to compare differences in the types of land (rock, soil, sand) and water (river, stream, lake, and pond).
2.ESS2.4 Use information obtained from reliable sources to explain that water is found in the ocean, rivers, streams, lakes, and ponds, and may be solid or liquid.	I can research and explain that water is found in the ocean, rivers, streams, lakes, and ponds, and may be solid or liquid.
2.ESS2.1 Compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	I can compare the effectiveness of different solutions designed to slow or prevent wind or water from changing the shape of the land.

Embedded K-8 TN Computer Science Standards:

- **AIT.5** Evaluate the accuracy, relevance, appropriateness, and bias of electronic information sources.
- **AIT.6** Collect, organize, analyze, and interpret data to identify solutions and/or make informed decisions.
- **DC.1** Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology.
- **DC.2** Exhibit a positive mindset toward using technology that supports collaboration, learning, and productivity.
- **DC.3** Exhibit leadership for digital citizenship.

2021 - 2022, Second Grade, Science, Quarter 3

Big Ideas/Key Concepts:

- There is a cause and effect relationship between vibrating materials and sound.
- Light and sound travel in waves and send signals, which can be observed and investigated.
- Waves move in regular patterns.
- Defining a problem, drafting a solution, breaking a problem apart, and evaluating different solutions for strengths and weaknesses are all parts of the engineering design process.

Standards	Student Friendly "I Can" Statements
Waves and Their Applications in Technologies for Information Transfer	**Waves and Their Applications in Technologies for Information Transfer**
2.PS4.1 Plan and conduct investigations to demonstrate the cause and effect relationship between vibrating materials (tuning forks, water, bells) and sound.	I can investigate the cause and effect relationship between vibrating materials (tuning forks, water, and bells) and sound.
2.PS4.2 Use tools and materials to design and build a device to understand that light and sound travel in waves and can send signals over a distance.	I can design and build a device to understand that light and sound travel in waves. I can design and build a device to understand that light and sound can send signals over a distance.
2.PS4.3 Observe and demonstrate that waves move in regular patterns of motion by disturbing the surface of shallow and deep water.	I can show that waves move in regular patterns across the surface of shallow and deep water.
Engineering Design	**Engineering Design**
2.ETS1.1 Define a simple problem that can be solved through the development of a new or improved object or tool by asking questions, making observations, and gather accurate information about a situation people want to change.	I can ask questions, make observations, and gather accurate information to define a situation people want to change.

Standards	Student Friendly "I Can" Statements
2.ETS1.2 Develop a simple sketch, drawing, or physical model that communicates solutions to others.	I can communicate my solutions to others by drawing, sketching, or constructing a model.
2.ETS1.3 Recognize that to solve a problem, one may need to break the problem into parts, address each part, and then bring the parts back together	I can solve a problem by focusing on each part of the problem, fixing it, and then bringing the parts back together.
2.ETS1.4 Compare and contrast solutions to a design problem by using evidence to point out strengths and weaknesses of the design.	I can use evidence to find strengths and weaknesses of solutions to a design problem. I can compare the effectiveness of different solutions by pointing out their strengths and weaknesses.
Links Among Engineering, Technology, Science, and Society	**Links Among Engineering, Technology, Science, and Society**
2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.	I can use appropriate tools to make observations, record data, and refine design ideas.
2.ETS2.2 Predict and explain how human life and the natural world would be different without current technologies.	I can predict and explain how human life and the natural world would be different without current technologies.

Embedded K-8 TN Computer Science Standards:

- **AIT.1** Identify and define problems and form significant questions for investigation.
- **AIT.2** Develop a plan to use technology to find a solution and create projects.
- **DC.1** Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology.
- **DC.2** Exhibit a positive mindset toward using technology that supports collaboration, learning, and productivity.
- **DC.3** Exhibit leadership for digital citizenship.
- **DC.4** Recognize and describe the potential risks and dangers associated with various forms of online communications (e.g., cell phones, social media, digital photos).
- **DC.5** Explain responsible uses of technology and digital information; describe possible consequences of inappropriate use such as copyright infringement and piracy.

2021 - 2022, Second Grade, Science, Quarter 4

Big Ideas/Key Concepts:

- Pushes and pulls can be evaluated when objects collide and are connected.
- Multiple pushes and pulls can have a variety of effects on an object's movement or non-movement.
- Friction is both a way to produce heat and a way to increase/decrease the motion of an object.

Standards	Student Friendly "I Can" Statements
Motion and Stability: Forces and Interactions	**Motion and Stability: Forces and Interactions**
2.PS2.1 Analyze the push or the pull that occurs when objects collide or are connected.	I can design and carry out an investigation to explore the effects of pushing and pulling on one or more objects. I can analyze the push or pull that occurs when objects collide or are connected to one another.
2.PS2.2 Evaluate the effects of different strengths and directions of a push or a pull on the motion of an object.	I can evaluate the effects of different strengths of a push or pull on an object's motion. I can evaluate the effects of different directions of a push or pull on an object's motion.
2.PS2.3 Recognize the effect of multiple pushes and pulls on an object's movement or non-movement.	I can recognize the effect of multiple pushes and pulls on an object's movement or non-movement.
Energy	**Energy**
2.PS3.1 Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.	I can demonstrate how energy is related to a force (push or pull) that makes things go faster. I can demonstrate how increased energy results in faster speeds that

Standards	Student Friendly "I Can" Statements
2.PS3.2 Make observations and conduct experiments to provide evidence that friction produces heat and reduces or increases the motion of an object.	can cause a bigger change in the shape of colliding objects. I can investigate friction to show it produces heat energy. I can investigate friction to show it reduces or increases the motion of an object.

Embedded K-8 TN Computer Science Standards:

- **AIT.1** Identify and define problems and form significant questions for investigation.
- **AIT.2** Develop a plan to use technology to find a solution and create projects.
- **AIT.6** Collect, organize, analyze, and interpret data to identify solutions and/or make informed decisions.
- **AIT.7** Infer and predict or propose relationships with data.
- **DC.1** Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology.
- **DC.2** Exhibit a positive mindset toward using technology that supports collaboration, learning, and productivity.