Grade 5 Science Return to Learn Curriculum & Pacing Guide

Adjusted plans for 2 days in person/3 days at home

- ✓ **Bloom's Taxonomy:** To allow students to achieve at highest levels, such as creating, evaluating, and analyzing) resources such as Gizmos activities & ESS lessons from the Virginia Department of Education website are available.
- ✓ **SOL 4.1 and 5.1:** Include Science Fusion text pages in Units 1 & 2 throughout the course of the year as needed.
- ✓ **Green reflects 2018 standards which will be field tested beginning spring 2020; crosswalk years 2019-2021, and 2018 SOL will be fully implemented & tested in 2021-2022.**

♦ **Split:** This Standard of Learning has been ***split*** **into more than one nine-week block.**	☺ **Integrate:** This skill should NOT be taught in isolation. ***Integrate*** **the skill into daily lessons.**	® **Review:** This skill was taught for mastery in a previous nine-week block. **Continue to *review* this mastered skill, with heavy emphasis, listed in the nine-week block.**

Apply and 5.1 to each content unit/topic as it is studied.

5.1 Scientific ~~Investigation, Reasoning, and Logic~~ and Engineering Practices

5.1 The student will demonstrate an understanding of scientific and engineering practices by

a) asking questions and defining problems
- ask testable questions based on observations and predict reasonable outcomes based on patterns
- develop hypotheses as cause-and-effect relationship
- define design problems that can be solved through the development of an object, tool, process, or system

b) planning and carrying out investigations
- collaboratively plan and conduct investigations to produce data
- identify independent variable, dependent variables, and constants
- determine data that should be collected to answer a testable question
- take metric measurements using appropriate tools
- use tools and/or materials to design and/or build a device that solves a specific problem

c) interpreting, analyzing, and evaluating data
- represent and analyze data using tables and graphs
- organize simple data sets to reveal patterns that suggest relationships
- compare and contrast data collected by different groups and discuss similarities and differences in their findings
- use data to evaluate and refine design solutions

d) constructing and critiquing conclusions and explanations
- construct and/or support arguments with evidence, data, and/or a model
- describe how scientific ideas apply to design solutions
- generate and compare multiple solutions to problems based on how well they meet the criteria and constraints

e) developing and using models
- develop models using an analogy, example, or abstract representation to describe a scientific principle or design solution
- identify limitations of models

f) obtaining, evaluating, and communicating information
- read and comprehend reading-level-appropriate texts and/or other reliable media
- communicate scientific information, design ideas, and/or solutions with others

First Nine Weeks - At home learning should include Gizmos, hands-on activities if the teacher provides the materials, vocabulary work, and data collection/journal reflections. Please see note below about the scientific practices.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	W e e k 9
Incorporate 5.1 Scientific and Engineering Practices – many activities can be assigned for at home learning based upon 5.1. Use Virtual VA to support this learning. Also integrate in school through demonstrations and experiments if possible.								

Weeks 1-3

***NEW SOL 5.2 Force, Motion, & Energy**

The student will investigate and understand that energy can take many forms. Key ideas include

a) energy is the ability to do work or to cause change;
b) there are many different forms of energy;
c) energy can be transformed; and energy is conserved.

4.2 Force, Motion, & Energy

The student will investigate and understand characteristics and interactions of moving objects. Key concepts include

a) motion is described by an object's direction and speed;
b) changes in motion are related to force and mass;
c) friction is a force that opposes motion; and
d) moving objects have kinetic energy.

5.3 Force, Motion, & Energy

The student will investigate and understand that there is a relationship between force and energy of moving objects. Key ideas include

a) moving objects have kinetic energy;
b) motion is described by an object's direction & speed;
c) changes in motion are related to net force & mass;

when objects collide, the contact forces transfer of energy and can change objects' motion; and friction is a force that opposes motion.

Weeks 4-5

5.2 Force, Motion, and Energy

The student will investigate and understand how sound is created and transmitted, and how it is used. Key concepts include

a) compression waves;
b) vibration, compression, wavelength, frequency, amplitude;
c) the ability of different media (solids, liquids, and gases) to transmit sound; and
d) uses and applications of sound waves.

5.5 Force, Motion, and Energy

The student will investigate and understand that sound can be produced and transmitted. Key ideas include

a) sound is produced when an object or substance vibrates;
b) sound is the transfer of energy;
c) different media transmit sound differently; and

sound waves have many uses & applications

Weeks 6-7

5.3 Force, Motion, and Energy

The student will investigate and understand basic characteristics of visible light and how it behaves. Key concepts include

a) transverse waves;
b) the visible spectrum;
c) opaque, transparent, and translucent;
d) reflection of light from reflective surfaces; and
e) refraction of light through water and prisms.

5.6 Force, Motion, and Energy

The student will investigate and understand that visible light has certain characteristic & behaves in predictable ways. Key ideas include

a) visible light is radiant energy that moves in transverse waves;
b) The visible spectrum includes light from different wavelengths;
c) Matter influences the path of light; and
d) Radiant energy can be transformed into thermal, mechanical, & electrical energy.

Weeks 8-9

4.3 Force, Motion, and Energy

The student will investigate and understand the characteristics of electricity. Key concepts include

a) conductors and insulators;
b) basic circuits;
c) static electricity;
d) the ability of electrical energy to be transformed into light and motion, and to produce heat;
e) simple electromagnets and magnetism; and
f) historical contributions in understanding electricity.

5.4 Force, Motion, and Energy

The student will investigate & understand that electricity is transmitted & used in daily life. Key ideas include

a) electricity flows easily through conductors but not insulators;
b) electricity flows through closed circuits;
c) static electricity can be generated by rubbing certain materials together;
d) electrical energy can be transformed into radiant, mechanical, & thermal energy; and
e) a current flowing through a wire creates a magnetic field.

Second Nine Weeks – Please not there is a lot of flexibility in this pacing guide. If teachers are still work on Force, Motion, and Energy during Quarter 2, this is alright.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	W e e k 9
Incorporate 4.1 and 5.1 Scientific and Engineering Practices – continue reinforcing the scientific method throughout the year.								

Weeks 10-14:

4.6 Interrelationships in Earth/Space Systems
The student will investigate and understand how weather conditions and phenomena occur and can be predicted. Key concepts include

a) weather phenomena;
b) weather measurements and meteorological tools; and
c) use of weather measurements and weather phenomena to make weather predictions.

4.4 Earth/Space Systems
The student will investigate & understand that weather conditions and phenomena affect ecosystems and can be predicted. Key ideas include

a) weather measurements create a record that can be used to make weather predictions
b) common and extreme weather events affect ecosystems; and
c) long term seasonal weather trends determine the climate of a region

4.8 Earth Patterns, Cycles, and Change
The student will investigate and understand the relationships among Earth, the moon, and the sun. Key concepts include

a) the motions of Earth, the moon, and the sun;
b) the causes for Earth's seasons;
c) the causes for the phases of the moon;
d) the relative size, position, age, and makeup of Earth, the moon, and the sun; and
e) historical contributions in understanding the Earth-moon-sun system.

4.6 Earth & Space Systems
The student will investigate & understand that there are relationships among Earth, the moon, and the sun. Key relationships include

a) the motions of Earth, the moon, & the sun;
b) the causes for Earth's seasons;
c) the causes for the four major phases of the moon & the relationship to the tide cycles; and
d) the relative size, position, age & makeup of Earth, the moon, & the sun.

4.7 Earth Patterns, Cycles, and Change
The student will investigate and understand the organization of the solar system. Key concepts include

a) the planets in the solar system;
b) the order of the planets in the solar system; and
c) the relative sizes of the planets.

4.5 Earth and Space Systems
The student will investigate and understand that the planets have characteristics and a specific place in the solar system. Key ideas include

a) planets rotate on their axes & revolve around the sun;
b) planets have characteristics & a specific order in the solar system; and
c) the sizes of the sun & planets can be compared to one another.

Weeks 15-18:

4.4 Life Processes
The student will investigate and understand basic plant anatomy and life processes. Key concepts include

a) the structures of typical plants and the function of each structure;
b) processes and structures involved with plant reproduction;
c) photosynthesis; and
d) adaptations allow plants to satisfy life needs and respond to the environment.

4.2 Living Systems and Processes
The student will investigate and understand that plants & animals have structures that distinguish them from one another & play vital roles in their ability to survive. Key ideas include

a) the survival of plants & animals depends on photosynthesis;
b) Plants & animals have different structures & processes for obtaining energy; and
c) Plants & animals have different structures and processes for creating offspring.

Week 19: flexible – either move forward or review depending on what your classroom needs

Third Nine Weeks

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	W e e k 9
Incorporate 4.1 and 5.1 Scientific and Engineering Practices								

Weeks 19-20

4.5 Living Systems

The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components in the ecosystem. Key concepts include

a) plant and animal adaptations;
b) organization of populations, communities, and ecosystems and how they interrelate;
c) flow of energy through food webs;
d) habitats and niches;
e) changes in an organism's niche at various stages in its life cycle; and
f) influences of human activity on ecosystems.

4.3 Living Systems and Processes

The student will investigate and understand that organisms, including humans, interact with one another and with the nonliving components in the ecosystem. Key ideas include

a) interrelationships exist in populations, communities, and ecosystems;
b) food webs show the flow of energy within an ecosystem;
c) changes in an organism's niche and habitat may occur at various stages in its life cycle; and
d) classification can be used to identify organisms.

Weeks 21-22

5.5 Living Systems

The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. Key concepts include

a) basic cell structures and functions;
b) classification of organisms using physical characteristics, body structures, and behavior of the organism; and
c) traits of organisms that allow them to survive in their environment.

(Living Systems is removed in the 2018 SOL for Gr. 5)

Weeks 23-24

4.7 Earth & Space Systems

The student will investigate & understand that the ocean environment has characteristics. Key characteristics include

a) geology of the ocean floor;
b) physical properties & movement of ocean water; and
c) interaction of organisms in the ocean.

Weeks 25-26

5.4 Matter

The student will investigate and understand that matter is anything that has mass and takes up space; and occurs as a solid, liquid, or gas. Key concepts include

a) distinguishing properties of each phase of matter;
b) the effect of temperature on the phases of matter;
c) atoms and elements;
d) molecules and compounds; and
e) mixtures including solutions.

5.7 Matter

The student will investigate and understand that matter has properties and interactions. Key ideas include

a) matter is composed of atoms;
b) substances can be mixed together without changes in their physical properties; and
c) energy has an effect on the phases of matter.

Week 27:

4.9 Earth Resources

The student will investigate and understand important Virginia natural resources. Key concepts include

a) watersheds and water resources;
b) animals and plants;
c) minerals, rocks, ores, and energy sources; and
d) forests, soil, and land.

NEW SOL 5.9 Earth Resources

The student will investigate & understand that the conservation of energy resources is important. Key ideas include

a) some sources of energy are considered renewable and others are not;
b) individuals & communities have means of conserving both energy & matter; and
c) advances in technology improve the ability to transfer and transform energy.

4.8 Earth Resources

The student will investigate and understand that Virginia has important natural resources. Key resources include

a) watersheds and water;
b) plants and animals
c) minerals, rocks, and ores; and
d) forests, soil, and land.

Fourth Nine Weeks

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Incorporate 4.1 and 5.1 Scientific and Engineering Practices								
Week 28 – Complete 4.9 as needed **Week 29-31** **5.7 Earth, Pattern, Cycles, and Change** The student will investigate and understand how Earth's surface is constantly changing. Key concepts include a) identification of rock types; b) the rock cycle and how transformations between rocks occur; c) Earth history and fossil evidence; d) the basic structure of Earth's interior; e) changes in Earth's crust due to plate tectonics; f) weathering, erosion, and deposition; and g) human impact. **5.8 Earth and Space Systems** The student will investigate & understand that Earth constantly changes. Key ideas include a) Earth's internal energy causes movement of material within the Earth; b) Plate tectonics describe movement of the crust; c) The rock cycle models the transformation of rocks; d) Processes such as weathering, erosion, & deposition change the surface of the Earth; and e) Fossils & geologic patterns provide evidence of Earth's change.								**SOL Testing** ✓