BLUE VALLEY DISTRICT CURRICULUM

Science | Grade 5

ORGANIZING THEME/TOPIC	FOCUS STANDARDS & SKILLS
Unit 1: Matter **Bring Science Alive!** Unit 3: Changes in Matter Lessons 1- 2 Suggested Time Frame: 11 days	**5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.** **Science and Engineering Practice** • **Developing and Using Models –** Use models to represent events and design solutions. **Disciplinary Core Idea** • **PS1.A Structure and Properties of Matter -** Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from moving particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. **Crosscutting Concept** • **Scale, proportion, and Quantity** – Natural objects exist from the very small to the immensely large.
Unit 2: Materials and Their Properties **Bring Science Alive!** Unit 3: Changes in Matter Lessons 3-5 Suggested Time Frame: 18 days	**5-PS1-3 Make observations and measurements to identify materials based on their properties.** **Science and Engineering Practice** • **Planning and Carrying Out Investigations –** Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. **Disciplinary Core Idea** • **PS1.A Structure and Properties of Matter -** Measurements of a variety of properties can be used to identify materials. **Crosscutting Concept** • **Scale, proportion, and Quantity** – Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. **5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.** **Science and Engineering Practice** • **Planning and Carrying Out Investigations –** Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of traits considered. **Disciplinary Core Idea** • **PS1.B Chemical Reactions -** When two or more different substances are mixed, a new substance with different properties may be formed. **Crosscutting Concept** • **Cause and Effect –** Cause and effect relationships are routinely identified and used to explain change.

Unit 3: Conservation of Matter **Bring Science Alive!** Unit 3: Changes in Matter Lessons 6 – 7 Suggested Time Frame: 14 days	**5-PS1-2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.** **Science and Engineering Practice** • **Using Mathematics and Computational Thinking –** Measure and graph quantities such as weight to address scientific and engineering questions and problems. **Disciplinary Core Idea** • **PS1.A Structure and Properties of Matter -** The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. • **PS1.B Chemical Reactions -** No matter what reaction or change in properties occurs, the total weight of the substances does not change. **Crosscutting Concept** • **Scale, Proportion, and Quantity** – Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
Unit 4: Producers in an Ecosystem **Bring Science Alive!** Unit 1: Living Things and Ecosystems Lessons 1-2 Suggested Time Frame: 12 days	**5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.** **Science and Engineering Practice** • **Engaging in Argument from Evidence – Support an argument with evidence, data, or a model.** **Disciplinary Core Idea** • **LS1.C Organization for Matter and Energy Flow in Organisms -** Plants acquire their material for growth chiefly from air and water. **Crosscutting Concept** • **Energy and Matter** – Matter is transported into, out of , and within systems
Unit 5: Consumers in an Ecosystem **Bring Science Alive!** Unit 1: Living Things and Ecosystems Lessons 3 Suggested Time Frame: 7 days	**5-PS3-1 Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.** **Science and Engineering Practice** • **Developing and using Models –** Use models to describe phenomena. **Disciplinary Core Idea** • **PS3.D Energy in Chemical Processes and Everyday Life -** The energy released (from) food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). • **LS1.C Organization for Matter and Energy Flow in Organisms -** Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. **Crosscutting Concept** • **Energy and Matter –** Energy can be transferred in various ways and between objects.

Unit 6: Food Webs **Bring Science Alive!** Unit 1: Living Things and Ecosystems Lessons 4-8 Suggested Time Frame: 39 days	**5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.** **Science and Engineering Practice** • **Developing and Using Models –** Develop a model to describe a phenomena. **Disciplinary Core Idea** • **LS2.A Interdependent Relationships In Ecosystems -** The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. • **LS2.B Cycles of Matter and Energy Transfers -** Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. **Crosscutting Concept** • **Systems and System Models –** A system can be described in terms of its components and their interactions.

Unit 7: Interaction of Earth Systems **Bring Science Alive!** Unit 2: Earth Systems Lessons 1-3 Suggested Time Frame: 17 days	**5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and /or atmosphere interact.** **Science and Engineering Practice** • **Developing and Using Models –** Develop a model using an example to describe a scientific principle. **Disciplinary Core Idea** • **ESS2.A: Earth Materials and Systems -** Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. **Crosscutting Concept** • **Systems and System Models –** A system can be described in terms of its components and their interactions. **5-ESS2-2 Describe and graph the amount and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.** **Science and Engineering Practice** • **Using Mathematics and Computational Thinking** – Describe and graph quantities such as area and volume to address scientific questions. **Disciplinary Core Idea** • **ESS2.C: The Roles of Water in Earth's Surface Processes -** Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. **Crosscutting Concept** • **Scale, Proportion, and Quantity** – Standard units are used to measure and describe physical quantities such as weight and volume.
Unit 8: Human Impacts on Earth Systems **Bring Science Alive!** Unit 2: Earth Systems Lessons 4-6 Suggested Time Frame: 20 days	5-**ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment** **Science and Engineering Practice** • **Obtaining, Evaluating, and Communicating Information –** Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. **Disciplinary Core Idea** • **ESS3.C: Human Impacts on Earth Systems -** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. **Crosscutting Concept** • **Systems and System Models –** A system can be described in terms of its components and their interactions.

Unit 9: Gravity **Bring Science Alive!** Unit 4: Earth, the Moon and the Stars Lesson 1 Suggested Time Frame: 5 days	**5-PS2-1 Support an argument that the gravitational force exerted by Earth on objects is directed down.** **Science and Engineering Practice** • **Engaging in Argument from Evidence –** Support an argument with evidence, data or a model **Disciplinary Core Idea** • **PS2.B: Types of Interactions -** The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. **Crosscutting Concept** • **Cause and Effect –** Cause and effect relationships are routinely identified and used to explain change.
Unit 10: Our Sun and the Stars **Bring Science Alive!** Unit 4: Earth, the Moon and the Stars Lessons 2 and 7 **STAR LAB** Suggested Time Frame: 13 days	**5-ESS1-1 Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.** **Science and Engineering Practice** • **Engaging in Argument from Evidence –** Support an argument with evidence, data or a model **Disciplinary Core Idea** • **ESS1.A: The Universe and its Stars -** The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. **Crosscutting Concept** • **Scale, Proportion, and Quantity –** Natural objects exist from the very small to the immensely large.
Unit 11: Patterns in the Sky **Bring Science Alive!** Unit 4: Earth, the Moon and the Stars Lessons 3-6 **STAR LAB** Suggested Time Frame: 25 days	**5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.** **Science and Engineering Practice** • **Analyzing and Interpreting Data –** Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. **Disciplinary Core Idea** • **ESS1.B: Earth and the Solar System -** The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. **Crosscutting Concepts** • **Cause and Effect –** Cause and effect relationships are routinely identified and used to explain change.