

MIDDLE SCHOOL SCIENCE	BOARDWORKS MIDDLE SCHOOL SCIENCE PRESENTATION
Grade 5	
BIG IDEA 5: Earth in Space and Time	
SC.5.E.5.1 Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.	The Solar System
SC.5.E.5.2 Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.	The Solar System
SC.5.E.5.3 Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.	The Solar System
BIG IDEA 7: Earth Systems and Patterns	
SC.5.E.7.1 Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.	The Water Cycle Changes of Matter
SC.5.E.7.2 Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.	The Water Cycle Precipitation
SC.5.E.7.3 Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.	What is Weather?
SC.5.E.7.4 <i>Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.</i>	–
SC.5.E.7.5 Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.	Climate Zones
SC.5.E.7.6 Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.	Climate Zones What is Weather? Wind and Ocean Currents
SC.5.E.7.7 <i>Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.</i>	–
BIG IDEA 8: Properties of Matter	
SC.5.P.8.1 Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.	Particles in Action
SC.5.P.8.2 Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.	Solutions

SC.5.P.8.3 Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.	Separating Mixtures
SC.5.P.8.4 Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.	Atomic Structure What Are Atoms?
BIG IDEA 9: Changes in Matter	
SC.5.P.9.1 Investigate and describe that many physical and chemical changes are affected by temperature.	Changes of Matter Everyday Chemical Reactions Types of Chemical Reactions
BIG IDEA 10: Forms of Energy	
SC.5.P.10.1 Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.	What is Energy? Energy Changes What is Light? What is Sound? How is Electrical Energy Useful?
SC.5.P.10.2 Investigate and explain that energy has the ability to cause motion or create change.	What is Energy?
<i>SC.5.P.10.3 Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects.</i>	–
SC.5.P.10.4 Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.	Energy Changes
BIG IDEA 11: Energy Transfer and Transformations	
SC.5.P.11.1 Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).	What Are Circuits?
SC.5.P.11.2 Identify and classify materials that conduct electricity and materials that do not.	Metals and Nonmetals Metalloids
BIG IDEA 13: Forces and Changes in Motion	
SC.5.P.13.1 Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.	What Are Forces?
SC.5.P.13.2 Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.	What Are Forces?
SC.5.P.13.3 Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.	What Are Forces?

SC.5.P.13.4 Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.	What Are Forces? Calculating Resultant Forces
BIG IDEA 14: Organization and Development of Living Organisms	
SC.5.L.14.1 Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.	Cells to Organisms Chemical Digestion The Nervous System The Endocrine System The Respiratory System The Ear and Hearing Digestion Respiration and the Circulatory System The Musculoskeletal System
SC.5.L.14.2 Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support - some with internal skeletons others with exoskeletons -- while some plants have stems for support.	The Musculoskeletal System
BIG IDEA 15: Diversity and Evolution of Living Organisms	
SC.5.L.15.1 Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.	Evolution Environmental Change
BIG IDEA 17: Interdependence	
SC.5.L.17.1 Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.	Adaptations Types of Animal Behavior
Grade 6	
Big idea 6 Earth Structures	
SC.6.E.6.1 - Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.	Using Rocks Biological Weathering Chemical Weathering Physical Weathering Erosion, Transportation and Deposition

SC.6.E.6.2 - Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.	-
Big idea 7: Earth Systems and Patterns	
SC.6.E.7.1 - Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	Heat and Temperature Conduction and Convection Radiation
SC.6.E.7.2 - Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	The Water Cycle Wind and Ocean Currents
SC.6.E.7.3 - Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	Wind and Ocean Currents
SC.6.E.7.4 - Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	-
SC.6.E.7.5 - Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.	Wind and Ocean Currents
SC.6.E.7.6 - Differentiate between weather and climate.	Climate Zones What is Weather?
SC.6.E.7.7 - Investigate how natural disasters have affected human life in Florida.	Weather Hazards Hurricanes Tornados Flooding
SC.6.E.7.8 - Describe ways human beings protect themselves from hazardous weather and sun exposure.	-
SC.6.E.7.9 - Describe how the composition and structure of the atmosphere protects life and insulates the planet.	The Atmosphere
Big idea 11: Energy Transfer and Transformations	
SC.6.P.11.1 - Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	What is Energy?
Big idea 12: Motion of objects	
SC.6.P.12.1 - Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	Distance, Time and Speed Graphing Speed
Big idea 13: Forces and changes in motion	

SC.6.P.13.1 - Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	Magnetic Materials Magnetic Fields Gravity Energy Transfer in Circuits
SC.6.P.13.2 - Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	Gravity
SC.6.P.13.3 - Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	What Are Forces? Calculating Resultant Forces
Big idea 14: Organization and development of living organisms	
SC.6.L.14.1 - Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.	What Are Atoms? Elements and Compounds Cells to Organisms
SC.6.L.14.2 - Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.	Animal and Plant Cells Where Do Cells Come From?
SC.6.L.14.3 - Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.	Releasing Energy Animal and Plant Cells Where Do Cells Come From?
SC.6.L.14.4 - Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.	Animal and Plant Cells
SC.6.L.14.5 - Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	Cells to Organisms Digestion Human Sex Cells and Systems Releasing Energy Respiration and the Circulatory System The Respiratory System The Nervous System The Endocrine System The Musculoskeletal System
SC.6.L.14.6 - Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	What Are Microbes? How Microbes Cause Disease
Big idea 15: Diversity and Evolution of Living Organisms	

SC.6.L.15.1 - Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.	Classifying Organisms
Grade 7	
Big idea 6: Earth Structures	
SC.7.E.6.1 - Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.	The Structure of the Earth
SC.7.E.6.2 - Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	Different Types of Rocks Sedimentary Rocks Metamorphic Rocks Igneous Rocks The Rock Cycle Using Rocks Physical Weathering Biological Weathering Chemical Weathering Erosion, Transportation and Deposition What is Plate Tectonics? Plate Boundaries
SC.7.E.6.3 - Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.	–
SC.7.E.6.4 - Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	–
SC.7.E.6.5 - Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.	What is Plate Tectonics? Plate Boundaries Earthquakes
SC.7.E.6.6 - Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	Acid Rain Environmental Change Greenhouse Gases Weather Hazards Flooding
SC.7.E.6.7 - Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.	What is Plate Tectonics? Plate Boundaries
Big idea 10: Forms of Energy	

SC.7.P.10.1 - Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	Color Electromagnetic Waves Radiation
SC.7.P.10.2 - Observe and explain that light can be reflected, refracted, and/or absorbed.	Reflection Refraction
SC.7.P.10.3 - Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	What is Sound? Speed of Sound
Big idea 11: Energy Transfer and Transformations	
SC.7.P.11.1 - Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	Heat and Temperature Changing State
SC.7.P.11.2 - Investigate and describe the transformation of energy from one form to another.	What is Energy?
SC.7.P.11.3 - Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	What is Energy?
SC.7.P.11.4 - Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	Heat and Temperature Conduction and Convection
Big idea 15: Diversity and Evolution of Living Organisms	
SC.7.L.15.1 - Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	Evolution
SC.7.L.15.2 - Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms	Evolution
SC.7.L.15.3 - Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.	Evolution
Big idea 16: Heredity and Reproduction	
SC.7.L.16.1- Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.	Causes of Variation
SC.7.L.16.2 - Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.	Inheritance Gregor Mendel Genes and Alleles
SC.7.L.16.3 - Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	Types of Reproduction

SC.7.L.16.4 - Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	Selecting Characteristics
Big idea 17: Interdependence	
SC.7.L.17.1 - Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.	Feeding Types Food Chains Food Webs
SC.7.L.17.2 - Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	Feeding Types Competition
SC.7.L.17.3 - Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.	Competition
Grade 8	
Big idea 5: Earth in time and space	
SC.8.E.5.1 - <i>Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.</i>	-
SC.8.E.5.2 - Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	The Solar System
SC.8.E.5.3 - Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	The Solar System
SC.8.E.5.4 - Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	Gravity Days, Year and Seasons
SC.8.E.5.5 - <i>Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).</i>	-
SC.8.E.5.6 - <i>Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.</i>	-
SC.8.E.5.7 - Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.	The Solar System
SC.8.E.5.8 - Compare various historical models of the Solar System, including geocentric and heliocentric.	The Solar System
SC.8.E.5.9 - Explain the impact of objects in space on each other including: 1. the Sun on the Earth including seasons and gravitational attraction 2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.	Days, Years and Seasons The Earth, Moon and Stars

SC.8.E.5.10 - Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.	Exploring Space
SC.8.E.5.11 - Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.	Electromagnetic Waves
SC.8.E.5.12 - Summarize the effects of space exploration on the economy and culture of Florida.	–
Big idea 8: Properties and Matter	
SC.8.P.8.1 - Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	Particles in Action
SC.8.P.8.2 - Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.	Gravity
SC.8.P.8.3 - Explore and describe the densities of various materials through measurement of their masses and volumes.	–
SC.8.P.8.4 - Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	Metals and Nonmetals Metalloids
SC.8.P.8.5 - Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	Elements and Compounds
SC.8.P.8.6 - Recognize that elements are grouped in the periodic table according to similarities of their properties.	The Periodic Table
SC.8.P.8.7 - Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).	Atomic Structure What Are Atoms?
SC.8.P.8.8 - Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	Elements and Compounds What Are Acids and Alkalis?
SC.8.P.8.9 - Distinguish among mixtures (including solutions) and pure substances.	What is a Mixture? Solutions
Big idea 9: Changes in Matter	
SC.8.P.9.1 - Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.	Conservation of Mass
SC.8.P.9.2 - Differentiate between physical changes and chemical changes.	Types of Chemical Reactions

SC.8.P.9.3 - Investigate and describe how temperature influences chemical changes.	Energy Changes Everyday Chemical Reactions
Big idea 18: Matter and Energy Transformations	
SC.8.L.18.1 - Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.	What is Photosynthesis?
SC.8.L.18.2 - Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	Releasing Energy
<i>SC.8.L.18.3 - Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.</i>	-
<i>SC.8.L.18.4 - Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.</i>	-