| **ID** | **Description** |
| --- | --- |
| ESS 1.1 Atmosphere, Climate, & Weather | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.1 Atmosphere, Climate, & Weather**    **7th Grade**  **What does water have to do with our weather and climate?**  Review the water (hydrologic) cycle and explain its effects on climatic patterns.  **8th Grade**  **What affects climate in our world?**  Identify and describe the impact certain factors have on Earth’s climate including ocean temperature changes, atmospheric changes and geologic shifts. | https://planbook.com/images/cogblack.png |
| ESS 1.1 Vocab | hurricane, tsunami, tornado, hydrometer, anemometer, barometer, psychrometer, precipitation, Coriolis Effect, temperature, convection, meteorology, climate, weather, front (warm/cold), dew point, humidity, high/low pressure, barometric pressure, El NiÅ?a/ El NiÅ?o, water (hydrologic cycle), cloud types: cumulus, stratus, cirrus | https://planbook.com/images/cogblack.png |
| ESS 1.2 Composition & Features | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.2 Composition & Features**    **7th Grade**  None at this level  **8th Grade**  **How do we know that the Earth's crust moves?**  Use geological evidence provided to support the idea that Earth’s crust/lithosphere is composed of plates that move. | https://planbook.com/images/cogblack.png |
| ESS 1.2 Vocab | mantle, core, crust, asthenosphere, lithosphere, hydrosphere, plate tectonics, convection, subduction, convergent, divergent, transform, boundary, mid-ocean ridge, trench ridge, rift valley fault | https://planbook.com/images/cogblack.png |
| ESS 1.3 Fossils | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.3 Fossils**    **7th Grade**  **Why are fossils important?  What info can we get from fossils?**  Recognize and identify connections between fossil evidence and geologic events over time.  **8th Grade**  None at this level | https://planbook.com/images/cogblack.png |
| ESS 1.3 Vocab | Cenozoic, Mesozoic, Paleozoic, Pre-Cambrian, Pangaea, carbon dating, fossil, geologic time | https://planbook.com/images/cogblack.png |
| ESS 1.4 Observing Earth | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.4 Observing Earth**    **7th Grade**  **What can images of the Earth tell us?**  Recognize and describe that images taken of the Earth can show its features and catastrophic changes that have taken place over time.  **8th Grade**  None at this level | https://planbook.com/images/cogblack.png |
| ESS 1.4 Vocab | satellites, comp. images vs. radar images, hurricane, tsunami, earthquake, wild fire, light pollution, water pollution | https://planbook.com/images/cogblack.png |
| ESS 1.5 Change & Earth | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.5 Change & the Earth**    **7th Grade**  **How is the Earth's surface changing everyday?**  1. Explain how Earth events, abruptly and over time, can bring about changes in Earth’s surface: landforms, ocean floor, rock features, or climate. 2. Recognize that vibrations in materials set up wavelike disturbances that spread away from the source, as with earthquakes.  **8th Grade**  **What affect does heat have on the Earth's surface?**  1. Explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere, or climate. 2. Explain the Earth’s crust is divided into moving plates. | https://planbook.com/images/cogblack.png |
| ESS 1.5 Vocab | earthquake, volcano, deposition, erosion, weathering, transportation, seismic waves, sea floor spreading, climate, weather, wind, precipitation, convection, density, current, plate tectonics, differentiation | https://planbook.com/images/cogblack.png |
| ESS 1.6 Rock Cycle | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.6  Rock Cycle**    **7th Grade**  **What is a rock?  Are there different kinds?**  1. Identify and describe the characteristics of metamorphic, igneous, and sedimentary rocks. 2. Using data about a rock’s physical characteristics make and support an inference about the rock’s history and connection to the rock cycle.  **8th Grade**  **How do rocks form and change?**  Review the Rock Cycle. | https://planbook.com/images/cogblack.png |
| ESS 1.6 Vocab | permeability, lithification, rock cycle, crystallization, igneous, sediment, metamorphosis, sedimentary, cooling, metamorphic, soil, grain size, layering, stratification, magma/lava | https://planbook.com/images/cogblack.png |
| ESS 1.7 Water | **ESS – 1**: **The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes**.    **1.7  Water**    **7th Grade**  **What are the effects of water on life?**  Explain that water quality has a direct effect on Earth's life forms.  **8th Grade**  **How does the water cycle influence the Earth?**  Explain the processes that cause cycling of water into and out of the atmosphere and their connections to our planet’s weather patterns. | https://planbook.com/images/cogblack.png |
| ESS 1.7 Vocab | water (hydrologic) cycle, runoff, precipitation, transpiration, evaporation, cloud, condensation, pressure, lightning/thunder, weather, properties, watershed, saturated, dehydration, separation of charge, sublimation | https://planbook.com/images/cogblack.png |
| ESS 2.3 Solar System | **ESS – 2: The Earth is part of a solar system, made up of distinct parts, which have temporal and spatial relationships.**    **2.3  Solar System**    **7th Grade**  **What do you know about the Solar System?**  1. Compare and contrast planets based on data provided about size, composition, location, orbital movement, atmosphere, or surface features (includes moons). 2. Explain why Earth and our Solar System are unique yet similar to other systems in the universe.  **8th Grade**  **What is the influence of gravity in the Solar System?**  Explain how gravitational force affects objects in the Solar System (e.g. moons, tides, orbits, satellites.) | https://planbook.com/images/cogblack.png |
| ESS 2.3 Vocab | inner planets, outer planets, period, gravitational force, tides, rotation, gas giant, orbits/revolution, plutoid, moons, ellipse, retrograde, atmosphere, rings, radius, Oort Cloud, satellite, Kuiper Belt, terrestrial, astronomical unit | https://planbook.com/images/cogblack.png |
| ESS 2.4 View from Earth | **ESS – 2: The Earth is part of a solar system, made up of distinct parts, which have temporal and spatial relationships.**    **2.4  View from Earth**    **7th Grade**  **How have humans viewed space?**  1. Explain and explore the historical perspective of planetary exploration. 2. Explain how technological advances have allowed scientists to re-evaluate or extend existing ideas about the Solar System.  **8th Grade**  None at this level | https://planbook.com/images/cogblack.png |
| ESS 2.4 Vocab | space station, telescope, Galileo, Copernicus, satellite, probe, Skylab, constellations, Space Race, navigation, sextant, compass The North Star/Polaris | https://planbook.com/images/cogblack.png |
| ESS 3.1 Size and Scale | **ESS – 3: The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.**    **3.1  Size and Scale**    **7th Grade**  **Are we there yet and how do we know?**  Explain how special units of measure, such as light years and astronomical units, are used to calculate distances in space.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| ESS 3.1 Vocab | light year, astronomical unit, measurement | https://planbook.com/images/cogblack.png |
| ESS 3.2 Stars & Galaxies | **ESS – 3: The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.**    **3.2  Stars & Galaxies**    **7th Grade**  **What else, besides planets are out there?**  1. Introduce the characteristics and movement patterns of asteroids, comets and meteors. 2. Describe and explain objects such as asteroids, meteors, and comets in terms of their characteristics and movement patterns.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| ESS 3.2 Vocab | ellipse, asteroids, comets, galaxy, meteors, star, meteorite, constellation, asteroid belt, Kuiper Belt, orbits, meteoroid | https://planbook.com/images/cogblack.png |
| ESS 3.3 Universe | **ESS – 3: The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.**    **3.3  Universe**    **7th Grade**  **How big is the universe?**  Explore the concept that the universe is vast.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| ESS 3.3 Vocab | universe, astronomical unit, light year, galaxies, solar system | https://planbook.com/images/cogblack.png |
| ESS 4.1 Design & Technology | **ESS – 4: The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.1  Design Technology**    **7th Grade & 8th Grade**  **How has the advancement of technology helped humans better understand the universe?**  Recognize the importance of technology as it relates to science, for purposes such as: access to space and other remote locations, sample collection and treatment, measurement, data collection, and storage, computation, and communication of information. | https://planbook.com/images/cogblack.png |
| ESS 4.1 Vocab | NASA, satellite, probe, Hubble Telescope, space shuttle, rocket, astronauts, cosmonauts, computers, telescopes | https://planbook.com/images/cogblack.png |
| ESS 4.2 Tools | **ESS – 4: The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.2  Tools**    **7th Grade**  **How do you measure?**  1. Perform calculations using metric measurements. 2. Describe how man uses land based light telescopes, radio telescope, satellites, manned exploration, probes, and robots to collect data.  3. Read and interpret data related to weather using basic weather symbols, satellites, Doppler radar, barometers, sling psychrometers, and anemometers. 4. Perform calculations using metric measurements.  **8th Grade**  **How would you properly measure this?**  Perform calculation using metric measurements. | https://planbook.com/images/cogblack.png |
| ESS 4.2 Vocab | anemometer, barometer, psychrometer, satellite, telescopes, probes, robots, radar, metric base units (meter, liter, gram), metric prefixes (kilo, hecto, deca, deci, centi, milli) | https://planbook.com/images/cogblack.png |
| ESS 4.3 Environmental Change | **ESS – 4: The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.3  Environmental Change**    **7th Grade & 8th Grade**  **How are we impacting our environment?**  1. Provide examples of how to reduce waste through conservation, recycling, and reuse. 2. Identify the potential impact of converting forested land to uses such as farms, homes, factories, or tourist attractions.  3. Explain how technologies can reduce the environmental impact of natural disasters.  4. Identify the most appropriate materials for a given design task with requirements for specific properties. 5. Explain how technologies can reduce the environmental impact of natural disasters. | https://planbook.com/images/cogblack.png |
| ESS 4.3 Vocab | weight, strength, hardness, flexibility, conservation, recycling, reduce/reuse, compost, natural disasters, solar power, satellites, renewable/nonrenewable resources, warning systems:  (tornado, tsunami, hurricane) | https://planbook.com/images/cogblack.png |
| ESS 4.4 Science & Careers | **ESS – 4: The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.4  Science  & Careers**    **7th Grade & 8th Grade**  **Is science everywhere?  Explain your answer.**  1. Understand science is used daily.  2. Understand that some form of science is used in most jobs/careers and specifically require knowledge of science. | https://planbook.com/images/cogblack.png |
| LS 1.1 Classification | **LS – 1: All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).**    **1.1  Classification**    **7th Grade**  **How and why do we group living things?**  1. Categorize and recognize that organisms are classified into kingdoms according to shared characteristics. 2. Describe and compare how different organisms have mechanisms that work in a coordinated way to obtain energy, grow, move, respond, provide defense, enable reproduction, or maintain internal balance.  **8th Grade**  None at this level.  **BUT review 6th GRADE**  1. Identify characteristics of living things. 2. Introduce concept that grouping based on common characteristics is classification. 3. Introduce the six kingdoms of life. | https://planbook.com/images/cogblack.png |
| LS 1.1 Vocab | autotrophy, heterotrophy, reproduction, growth, homeostasis, internal balance, Linnaeus, classification, group, genetic materials, animal, plant, fungi, protist, prokaryotic, eukaryotic, eubacteria, archaeabacteria, structures, dichotomous key, domains, taxonomy, scientific name, \*KPCOFGS, King Philip Came Over For Good Spaghetti, Kingdom, Phylum, Class, Order, Family, Genus, Species | https://planbook.com/images/cogblack.png |
| LS 1.2 Living Things & Organization | **LS – 1: All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).**    **1.2  Living Things & Organization**    **7th Grade**  **How do cells work alone and with each other?**  1. Recognize and describe the hierarchical organization of living systems. 2. Identify and explain characteristics of cells and tissues including the concept that they perform certain necessary functions. 3. Explain relationships between or among the structure and function of cells, tissues, organs, and organ systems in an organism.  **8th Grade**  **How do cells stay alive?**  1. Explore and explain cellular processes to include respiration, photosynthesis, osmosis, and diffusion. 2. Explain the benefits of internal homeostasis in relation to a changing environment. | https://planbook.com/images/cogblack.png |
| LS 1.2 Vocab | organs, tissues, cells, respiration, homeostasis, osmosis, diffusion, photosynthesis, hierarchy, meiosis, mitosis, systems:circulatory, skeletal, respiratory, muscular, nervous, excretory | https://planbook.com/images/cogblack.png |
| LS 1.3 Reproduction | **LS – 1: All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).**    **1.3  Reproduction**    **7th Grade**  **How do living things make more of themselves?**  1. Compare and contrast sexual and asexual reproduction including characteristics and strategies. 2. Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| LS 1.3 Vocab | daughter cells, cell division, meiosis, mitosis, egg, sperm, generation, germination, gametes, zygote, fertilization, parent, mature, heredity, ovum, conception, life cycle, offspring, adult, juvenile, traits, characteristic, sexual/asexual reproduction, internal/external fertilization | https://planbook.com/images/cogblack.png |
| LS 2.2 Flow of Energy | **LS – 2: Energy flows and matter recycles through an ecosystem.**    **2.2  Flow of Energy**    **7th Grade**  **How does energy move from one thing to another in the body?**  Explain how food provides energy and materials for growth and repair of body parts.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| LS 2.2 Vocab | respiration, photosynthesis, food webs, decomposer, producer, consumer, energy, pyramid, herbivore, carnivore, omnivore, tropic level, autotroph, heterotroph, primary, secondary, tertiary consumer | https://planbook.com/images/cogblack.png |
| LS 2.3 Recycling of Materials | **LS – 2: Energy flows and matter recycles through an ecosystem.**    **2.3  Recycling of Materials**    **7th Grade**  None at this level  **8th Grade**  **What is the difference between respiration and photosynthesis?**  Explain the process of respiration and differentiate between it and photosynthesis. | https://planbook.com/images/cogblack.png |
| LS 2.3 Vocab | water (hydrologic) cycle, food webs, recycling, decomposition, autotroph, heterotrophy, respiration, photosynthesis | https://planbook.com/images/cogblack.png |
| LS 3.2 Evidence of Evolution | **LS – 3: Groups of organisms show evidence of change over time (e.g. evolution, natural selection, structures, behaviors, and biochemistry).**    **3.2  Evidence of Evolution**    **7th Grade**  **What is evidence that supports evolution?  What is evolution?**  1. Use a model, classification system, or dichotomous key to illustrate, compare, or interpret possible relationships among groups of organisms. 2. Describe the fundamental concepts related to biological evolution, such as biological adaptations, diversity of species and extinction. 3. Use geologic evidence to support the theory of evolution.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| LS 3.2 Vocab | adaptation, evolution, extinction, evolution, Charles Darwin | https://planbook.com/images/cogblack.png |
| LS 3.3 Natural Selection | **LS – 3: Groups of organisms show evidence of change over time (e.g. evolution, natural selection, structures, behaviors, and biochemistry).**    **3.3  Natural Selection**    **7th Grade**  **How does genetic variation affect your life?**  Recognize that there are genetic variations among individuals in groups of organisms and provide examples of how these variations affect the survival of an organism.  **8th Grade**  **How does heredity affect survival?  Why is heredity important for survival?**  1. Cite examples supporting the concept that certain traits of organisms may provide a survival advantage in a specific environment and therefore, an increased likelihood to produce offspring. 2. Recognize that hereditary information is contained in genes, in chromosomes and determine inherited traits. 3. Recognize selective breeding can control the characteristics of plants and animals. | https://planbook.com/images/cogblack.png |
| LS 3.3 Vocab | traits, gene, dominant, recessive, allele, characteristic, homosygous, heterozygous, hybrid, adaptation, chromosomes, natural selection, selective, pure, hybrid breeding | https://planbook.com/images/cogblack.png |
| LS 4.1 Behavior | **LS – 4: Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.**    **4.1  Behavior**    **7th Grade**  **How do inherited traits and the environment affect your life?**  1. Explain how all behavior is affected by both inheritance and experience. 2. Explain that organism’s behavioral response is a reaction to internal or environmental stimuli.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| LS 4.1 Vocab | nature, nurture, stimuli, reaction, inborn behavior (innate behavior), learned behavior | https://planbook.com/images/cogblack.png |
| LS 4.2 Disease | **LS – 4: Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.**    **4.2  Disease**    **7th Grade**  **What is disease?  How can disease affect you?**  1. Use data and observations to support the concept that environmental or biological factors affect human body systems. 2. Explain the ways the human body has to defend itself against disease.  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| LS 4.2 Vocab | vaccine, immunization, blood cells, parasites, virus, bacteria, acquired, immunity | https://planbook.com/images/cogblack.png |
| LS 4.3 Human Indentity | **LS – 4: Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.**    **4.3  Human Indentity**    **7th Grade**  **How do humans develop over the nine months in utero?**  **1. Describe human development from the single cell to a newborn. 2. Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring.**  **8th Grade**  None at this level. | https://planbook.com/images/cogblack.png |
| LS 4.3 Vocab | embryo, embryology, zygote, fetus, trimester, cell division, development, longevity, blastula, gastrula | https://planbook.com/images/cogblack.png |
| LS 5.1 Design Technology | **LS – 5: The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.**    **5.1 Design Technology**    **7th Grade & 8th Grade**  **How has the advancement of technology advanced the quality of life?**  1. Recognize that an agricultural system is designed to maximize the use of elements in the system. 2. Explain how technology has influenced the course of history including recent advancements in areas such as agriculture, sanitation, and medicine. | https://planbook.com/images/cogblack.png |
| LS 5.1 Vocab | agriculture, sanitation, medicine | https://planbook.com/images/cogblack.png |
| LS 5.2 Tools | **LS – 5: The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.**    **5.2  Tools**    **7th Grade & 8th Grade**  **What tools are needed to collect precise measurements vs. accurate measurements?**  1. Demonstrate the proper use of tools, such as thermometers, probes, microscopes, and computers to gather, analyze, and interpret data in the life sciences. 2. Provide and recognize examples of how technology has enhanced the study of life sciences. | https://planbook.com/images/cogblack.png |
| LS 5.2 Vocab | thermometer, probe, microscope, computer | https://planbook.com/images/cogblack.png |
| LS 5.3 Social/Ethical Issues | **LS – 5: The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.**    **5.3  Social/Ethical Issues**    **7th Grade & 8th Grade**  **Why do humans have longer life spans than ever before?**  1. Provide examples of early health care technology that helped to extend the life expectancy of humans. 2. Differentiate between vaccine and medicines.  3. Describe ways that biotechnology affects living things including pest control, genetically modified organisms, etc. | https://planbook.com/images/cogblack.png |
| LS 5.3 Vocab | hygiene, vaccine, medicine, vector, antibodies, immunity, sterilization, radiation, preservatives,, preventative medicine, genetically-modified organisms, penicillin | https://planbook.com/images/cogblack.png |
| LS 5.4 Career Connections | **LS – 5: The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.**    **5.4  Career Connections**    **7th Grade & 8th Grade**  **Where is science utilized in everyday life?**  1. Understand science is everywhere.  2. Understand that some form of science is used in most jobs/careers specifically require knowledge of science. | https://planbook.com/images/cogblack.png |
| PS 1.1 Composition | **PS – 1: All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).**    **1.1  Composition**    **7th Grade & 8th Grade**  **How does matter relate to your life?  What are all (non) living things made of?**  1. Introduce matter consists of atoms, molecules, and elements. 2. Identify characteristics of each. 3. Introduce and explore the Periodic Table and its features as an organizational tool for elements.  4. Recognize that atoms combine to form molecules. 5. Differentiate between a mixture and pure substance.  6. Differentiate between: an atom and a molecule; an element and a compound. 7. Identify methods used to separate mixtures such as boiling, filtering, etc. 8. Introduce the Atomic Theory and atomic structure. | https://planbook.com/images/cogblack.png |
| PS 1.1 Vocab | matter, atoms, molecules, elements, periodic table, distillation, mixture, substance, compound, composition, atomic theory, filtration, boiling | https://planbook.com/images/cogblack.png |
| PS 1.2 Properties | **PS – 1: All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).**    **7th Grade & 8th Grade**  **What are some characteristics of matter?**  1. Identify and explore the different physical and chemical properties of elements and substances. 2. Introduce density in that fluids layer such as salt/plain water, hot/cold water.  3. Differentiate between weight and mass. 4. Expand on the density concept in that different kinds of matter of equal volume have different mass (i.e. solid, liquid, gas). 5. Explain how different substances of equal volume usually have different weights.  6. Investigate the relationships among mass, volume, and density specifically in that different kinds of matter of equal mass have different volumes. 7. Given data about characteristic properties of matter identify, compare, or classify different substances. 8. Represent or explain the relationship between or among energy, molecular motion, temperature, and states of matter. (kinetic theory) | https://planbook.com/images/cogblack.png |
| PS 1.2 Vocab | solubility, magnetism, conductivity, pH, acid/base, neutral, volume, weight, mass, density, kinetic theory, mass, relationship, substance, melting point, boiling point, density, temperature | https://planbook.com/images/cogblack.png |
| PS 2.1 Change | **PS – 2: Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.**    **2.1  Change**    **7th Grade & 8th Grade**  **How is energy involoved in the changing of matter?**  1. Introduce the concept of physical change vs. chemical change  2. Introduce that chemical reactions form new substances that have new properties.  3. Explain that chemical reactions form new substances that have new properties that are very different from the old substances. 4. Given a real world example, show that within a system, energy transforms from one form to another. 5. Identify factors that affect reaction rates. 6. Explain that oxidation involves combining oxygen with another substance, as in burning or rusting. 7. Explain that states of matter depend on the arrangement of the molecules and their motion. | https://planbook.com/images/cogblack.png |
| PS 2.1 Vocab | weathering, oxidation, temperature, concentration, surface area, properties, dilution, energy, chemical change, work, physical change, elastic, potential, kinetic, gravitational energy, reaction: product - reactant, transformation:  chemical, mechanical, electrical, heat, nuclear, radiant (light), sound | https://planbook.com/images/cogblack.png |
| PS 2.2 Conservation | **PS – 2: Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.**    **2.2  Conservation**    **7th Grade & 8th Grade**  **Why is there a finite amount of mass and energy in our world?**  1. Describe how mass remains constand in a closed system.  2. Explain and apply the Law of Conservation of Energy. 3. Explain and apply the Law of Conservation of Matter. | https://planbook.com/images/cogblack.png |
| PS 2.2 Vocab | closed system, finite, reaction: product - reactant | https://planbook.com/images/cogblack.png |
| PS 2.3 Energy | **PS – 2: Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.**    **7th Grade**  **How does heat energy move?**  Explain that heat energy moves through the environment via convection & radiation.  **8th Grade**  **Where does heat energy go?**  1. Draw conclusions about how heat can be transferred via conduction, convection and radiation. 2. Recognize that most chemical and nuclear reactions involve transfer of energy. | https://planbook.com/images/cogblack.png |
| PS 2.3 Vocab | convection (cell), absorption, density, weather, wind currents, climate, refraction, reflection, scattering, nuclear, wavelength, frequency, pitch, heat:  convection, conduction, radiation | https://planbook.com/images/cogblack.png |
| PS 3.1 Forces | **PS – 3: The motion of an object is affected by force.**    **3.1  Forces**    **7th Grade & 8th Grade**  **What are different types of forces?**  1. Observe and explain how force can change an object’s speed and/or direction. 2. Introduce how magnets and electricity are connected. 3. Describe the relationship between the strength of a force on an object and the resulting effect.  4. Explain and recognize the general concepts relating to gravitational forces.  5. Use data to determine or predict the overall effect of multiple forces on the position, speed, and direction of motion of objects. | https://planbook.com/images/cogblack.png |
| PS 3.2 Motion | **PS – 3: The motion of an object is affected by force.**    **3.2  Motion**    **7th Grade & 8th Grade**  **Why is there a finite amount of mass and energy in our world?  Describe Laws of Motion.**  1. Describe how mass remains constant in a closed system.  2. Explain and understand Newton's Laws of Motion.  3. Graphically represent object position, direction, and speed. | https://planbook.com/images/cogblack.png |
| PS 4.1 Design Technology | **PS – 4: The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.1  Design Technology**    **7th Grade & 8th Grade**  **How do scientific principles relate to technology?**  Understand that design features must be considered when designing new technology. | https://planbook.com/images/cogblack.png |
| PS 4.1 thru 4.4 Vocab | scientific method, rulers, calculators, balances, graduated cylinders, scale | https://planbook.com/images/cogblack.png |
| PS 4.2 Tools | **PS – 4: The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.2  Tools**    **7th Grade & 8th Grade**  **How are tools used to investigate science?**  1. Demonstrate appropriate use of tools to measure and calculate volume and mass.  2. Recognize that manufacturing processes combine natural and synthetic materials via a variety of tools and machines. | https://planbook.com/images/cogblack.png |
| PS 4.3 Motion | **PS – 4: The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.3  Motion**    **7th Grade & 8th Grade**  **How do we use energy in our daily lives?**  1. Explain how batteries and magnets can transform energy into electricity.  2. Explain how humans use alternative sources for energy. 3. Provide an example that manufacturing processes involve changing natural materials into finished products through physical/chemical changes. | https://planbook.com/images/cogblack.png |
| PS 4.4 Career Connections | **PS – 4: The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.**    **4.4  Career Connections**    **7th Grade & 8th Grade**  **Where is science utilized in everyday life?**  1. Understand science is everywhere.  2. Understand that some form of science is used in most jobs/careers specifically require knowledge of science. | https://planbook.com/images/cogblack.png |
| https://planbook.com/spacer.gif | https://planbook.com/spacer.gif |  |