Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student…. 1. ▲ identifies questions that can be answered through scientific investigations. 2. ▲ designs and conducts *scientific investigations* safely using appropriate tools, mathematics, *technology*, and techniques to gather, analyze, and interpret data. 3. ▲ identifies the relationship between evidence and logical conclusions. ▲ identifies questions that can be answered through scientific investigations. 4. ▲ communicates scientific procedures, results and explanations. ▲ communicates scientific procedures, results and explanations. 5. ▲ evaluates the work of others to determine evidence which scientifically supports or contradicts the results, identifying faulty reasoning or conclusions that go beyond evidence and/or are not supported by data.	Science Inquiry **The student will develop the abilities to do *scientific inquiry*, be able to demonstrate how *scientific inquiry* is applied, and develop understandings about *scientific inquiry*.** Benchmark 1: The student will demonstrate abilities necessary to do the processes of *scientific inquiry*.	The student… 1. explores properties and phenomena of various materials. 2. a. designs and conducts an investigation on a question. b. given an investigative question, determines what to measure and how to measure. c. displays data collected from investigation. 3. a. checks data b. looks for patterns from multiple trials c. uses observations for inductive and deductive reasoning d. states relationships in data, such as variables, which vary directly or inversely. 4. Presents a report of his/her investigation so that others understand it and can replicate the design. 5. a. examines and analyzes a scientific breakthrough using multiple sources. b. explains how a reasonable conclusion is supported. c. analyzes evidence and data which supports or contradicts various theories (e.g. theory of continental drift,spontaneous generation, etc...).	Aug/Sept

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ compares and classifies the states of matter; solids, liquids, gases, and plasma 2. compares and contrasts the classes of matter; elements, compounds, and mixtures. 3. identifies &communicates properties of matter including but not limited to, boiling point, solubility, and density.	**PHYSICAL SCIENCE** **Chemistry** **The student will apply process skills to develop understanding of physical science including:properties, changes of properties of matter, motion and forces, and transfer of energy.** Benchmark 1: The student will observe, compare, and classify properties of matter.	The student… 1. makes a diagram/model showing the various states of water demonstrating that the molecules of a solid has definite volume and shape, the molecules of a liquid have a definite volume but an indefinite shape, the molecules of a gas have an indefinite volume and indefinite shape. 2 a. separates sand, iron filings, and salt using a magnet and water. b. observes properties of kitchen powders (baking soda, salt,sugar, flour). Mixes in various combinations, then identifies by properties. c. given a chemical formula, uses a periodic table to identify the number and type elements in a compound. 3 a. measures and graphs the boiling point temperatures for several different liquids. b. graphs the cooling curve of a freezing ice cream mixture. c. observes substances that dissolve (sugar) and substances that do not dissolve (sand)	Dec/Jan

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ understands the relationship of atoms to elements and elements to compounds. 2. ▲ measures and graphs the effects of temperature on matter	**PHYSICAL SCIENCE** **Chemistry** Benchmark 2: The student will observe, measure, infer, and classify changes in properties of matter. .	The student… 1. draws a diagram to show how different compounds are composed of elements in various combinations. 2. changes water from solid to liquid to gas using heat. Measures and graphs temperature changes. Observes changes in volume.	Dec

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. identifies the forces that act on an object (e.g., gravity and friction) 2. ▲ describes, measures, and represents data on a graph showing the motion of an object (position, direction of motion, speed). 3. ▲ recognizes and describes examples of Newton's Laws of Motion. 4. ▲investigates and explains how simple machines multiply force at the expense of distance	**PHYSICAL SCIENCE** **Physics** Benchmark 3: The student will investigate motion and forces.	The student… 1. explores the surfaces that would allow a car to overcome the forces of gravity and friction to climb an inclined plane. b. investigate the forces acting on an airplane (thrust, drag, lift, and gravity). 2. traces the force, direction, and speed of a baseball, from leaving the pitcher's hand and returning back to the pitcher 3 a. places a small object on a rolling toy vehicle, stops the vehicle abruptly, and observes the motion of the small object. Relates to personal experience - stopping rapidly in a car. b. with a ping pong ball and 2 straws, investigates the effects of the force of air through two straws on the ping-pong ball with the straws at the same side of the ball, on opposite sides, and at other angles. 4 a. investigates the load (force) that can be moved as the number of pulleys in a system is increased. b. investigates how bicycle gears work.	Oct/Nov.

Science 7th Grade

Indicators	Standards	Instructional Examples Specifiity	Month
The student… 1. understands the difference between potential and kinetic energy. 2. ▲ understands that when work is done energy transforms from one form to another, including mechanical, heat, light, sound, electrical, chemical, and nuclear energy, yet is conserved one form to another, including mechanical, heat, light, sound, electrical, chemical, and nuclear energy, yet is conserved. 3. ▲ observes and communicates how light (electromagnetic) energy interacts with matter: transmitted, reflected, refracted, and absorbed. 4. ▲ understands that heat energy can be transferred from hot to cold by radiation, convection, and conduction cold by radiation, convection, and conduction	**PHYSICAL SCIENCE** **Physics** Benchmark 4: The student will understand and demonstrate the transfer of energy.	The student… 1. uses a pendulum to compare kinetic energy (speed) with potential energy (height). 2. a. sequences the transmission of energy through various real life systems. b. draws a chart of energy flow through a telephone from the caller's voice to the listener's ear. 3. classifies classroom objects as to how they interact with light: a window transmits; black paper absorbs; a pencil appears to bend when placed in water demonstrating refraction; a mirror reflects. 4. adds colored warm water to cool water. Observes convection. Measures and graphs temperature over time.	Oct./Nov.

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ will understand the cell theory; that all organisms are composed of one or more cells, cells are the basic unit of life, and that cells come from other cells. 2. ▲ relates the structure of cells, organs, tissues, organ systems, and whole organisms to their functions 3. compares organisms composed of single cells with organisms that are multi-cellular. 4. concludes that breakdowns in structure or function may be caused by disease, damage, heredity, or aging.	**LIFE SCIENCE** **The student will apply process skills to explore and understand structure and function in living systems, reproduction and heredity,regulation and behavior, populations and ecosystems, and diversity and adaptations of organisms.** Benchmark 1: The student will model structures of organisms and relate functions to the structures.	The student… 1. will observe plant and animal cells using a microscope. 2. creates and compares two models: the major parts and their functions of a single-cell organism and multi-cellular organism, e.g. amoeba and hydra. 3. a. identifies human body organs and characteristics. Then relates their characteristics to function. b. compare and contrast plant and animal cells. 4. compares lung capacity of smokers with that of non-smokers	March

Indicators	Standards	Instructional Examples Specificity	Month
1. ▲ differentiates between asexual and sexual reproduction	**LIFE SCIENCE:** Benchmark 2: The student will understand the role of reproduction and heredity for all living things.	The student… 1. compares the propagation of new plants from cuttings, which skips a portion of the life cycle, with the process of producing a new plant from fertilization of an ovum.	Feb/March

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ understands that internal and/or environmental conditions affect an organism's behavior and/or response in order to maintain and regulate stable internal conditions to survive in a continually changing environment.	**LIFE SCIENCE:** Benchmark 3: The student will describe homeostasis, the regulation and balance of internal conditions in response to a changing external environment.	The student… 1 a. selects a variable to alter the environment (e.g., temperature, light, moisture, gravity) and observes the effects on an organism(e.g., pill bug or earthworm). b. observes the response of the body when competing in a running event. (In order to maintain body temperature). c. investigates the effects of various stimuli on plants and how they adapt their growth: phototropism, geotropism, and thermotropism.	March

Indicators	Standards	Instructional Examples Specificity	Month
1. ▲ recognizes that all populations living together (biotic resources) and the physical factors (abiotic resources) with which they interact compose an ecosystem. 2. ▲ traces the energy flow from the sun (source of radiant energy) to producers (via photosynthesis – chemical energy) to consumers and decomposers in food webs.	**LIFE SCIENCE** Benchmark 4: The student will identify and relate interactions of populations of organisms within an ecosystem. .	The student… 1 identifies the interactions between the populations and physical conditions needed for survival. b. participates in a field study examining the living and nonliving parts of a community. 2.a. Identifies the various food webs and observes that organisms in a system are classified by their function. b. explores interactions and energy flow of organisms in a food web	April

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
1. ▲ understands that adaptations of organisms (changes in structure, function, or behavior that accumulate over successive generations) contribute to biological diversity. 2. ▲ associates extinction of a species with environmental changes and insufficient adaptive characteristics.	**LIFE SCIENCE** Benchmark 5: The student will observe the diversity of living things and relate their adaptations to their survival or extinction.	1.. compares characteristics of birds such as beaks, wings, and feet, with how a bird behaves in its environment. 2. uses various objects to model bird beaks, such as spoons, toothpicks, clothespins.	March

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ identifies properties of the solid earth, the oceans and fresh water, and the atmosphere. 2. ▲ models earth's cycles, constructive and destructive processes, and weather systems. ▲ identifies properties of the solid earth, the oceans and fresh water, and the atmosphere.	EARTH SPACE Benchmark 1: The student will understand that the structure of the earth system is continuously changing due to earth's physical and chemical processes.	The student… 1 a. classifies rocks, minerals, and soil by properties. b. creates a concept map of earth materials using links to show connections, such as water causing erosion of solid rock, wind evaporating water, etc… c. investigates water's major role in changing the solid surface of earth, such as the effect of oceans on climates and water as an erosion force. d. maps major climate zones and relates to ocean currents. e. compares heating and cooling over land and water. f. compares the densities of salt and fresh water. 2 a. creates rock cycle and water cycle dioramas. b. illustrates global ocean and wind currents. c. constructs models of rock types using food. d. observes the effects of mechanical and chemical weathering. b. investigates local examples of weathering, erosion, and deposition.	April Sept.

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ understands that earth processes observed today (including movement of lithospheric plates and changes in atmospheric conditions) are similar to those that occurred in the past; earth history is also influenced by occasional catastrophes, such as the impact of a comet or asteroid.	**EARTH SPACE** Benchmark 2: The student will understand past and present earth processes and their similarity**.**	The student… 1 a. makes models which show how erosion and deposition has changed Earth's surface over time. b. investigate how the Grand Canyon was formed and continues to change.	April

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ compares and contrasts the characteristics of stars, planets, moons, comets, and asteroids.	**EARTH SPACE** Benchmark 3: The student will identify and classify stars, planets, and other solar system components**.**	The student… 1 a. identifies the sun as a star and compares its characteristics to those of other stars. b. classifies bright stars visible from earth by color,temperature, age, apparent brightness, and distance from earth. c. creates a graphic organizer to visualize comparisons of planets. d. identifies and classifies characteristics of asteroids and comets.	April

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ demonstrates and models object/space/time relationships that explain phenomena such as the day, the month, the year, seasons, phases of the moon eclipses and tides.	**EARTH SPACE** Benchmark 4: The student will model motions and identify forces that explain earth phenomena.	The student... 1 a. uses an earth/moon/sun model to demonstrate a day, a month, a year, and the seasons. b. models the relative positions of the sun, earth, and moon to create eclipses, phases of the moon, and tides.	April

Science 7th Grade

Indicators	Standards	Instructional Examples Specificity	Month
The student… 1. ▲ identifies individual nutrition, exercise, and a rest needs based on science and uses a scientific approach to thinking critically about personal health, lifestyle choices, risks and benefits. The student… 2. ▲ investigates the effects of human activities on the environment and analyzes decisions based on the knowledge of benefits and risks.	**SCIENCE IN PERSONAL AND ENVIRONMENTAL PERSPECTIVES** The student will apply process skills to explore and develop an understanding of issues of personal health, population, resources and environment, and natural hazards.	The student… 1 a. designs, implements a personal nutrition and exercise program. b. compares and contrasts immediate benefits of eating junk food to long term benefits of a lifetime of healthy eating. c. evaluates the risks and benefits of foods, medicines, and personal products. d. evaluates and compares the nutritional and toxic properties of various natural and synthetic foods. The student… 2.a.Investigates the effects of traffic volume on environmental quality b. evaluates the benefits of burning fossil fuels to meet energy needs against the risks of increased air pollution, etc…	6th grade health. Reviewed in Lions Quest and test review designed by 7th grade teachers