
ANIMAL RESPONSES (KIT #74)

Scheduling: 7 weeks

Grade: 5



Students investigate animal responses to a changing environment. Three different animals living in 3 very different environments are studied and compared. Students observe the structure and behavior of crayfish, and identify their physical characteristics, reaction to stimuli, feeding habits and territorial behavior. With mealworms, they study sensory perception and its role in animal response. Brine shrimp are used to determine the effect of modifying the environment on animal response. The process of scientific inquiry is emphasized throughout.

Materials include such things as:

Microscopes, gray rectangular pool, crayfish flower pot houses, clear boxes with lids, gravel, air pump with tubing and air stone, brine shrimp eggs and culture media, crayfish, mealworms

ASTRONOMY-GR K-6 (KITS #60-#66)

Scheduling: 4-6 weeks

Grades: K-6

These kits contain things necessary to demonstrate the cause of seasons, phases of the moon and the formation of craters on the moon.

Grades K-1 (Kits #60-#61): This kit starts with observations of the day and night sky. Students compare these two parts of the day. Next, students look at natural patterns. The patterns of the sun's motion in the day sky and patterns of shapes of the stars in the night sky are observed.



Grade 2 (Kit #62): This kit focuses on natural cycles and patterns occurring in the world around us. Natural cycles and patterns include: the Earth spinning around once a day (rotation) resulting in daytime and nighttime. Students will calculate the number of hours in a day. They will then relate the number of hours in a day to a full rotation of the Earth.

Grade 3 (Kit #63): This kit begins with a discussion of the relationship between the Earth rotating and the pattern of day and night. Students will investigate the patterns associated with the sun rising and setting from month to month, along with the number of hours of daylight and nighttime. Next, students look at the pattern of hours of daylight throughout the seasons. They will create a model to show the Earth moving in a path around the sun through the seasons. Students also will investigate other patterns associated with the stars that are seen in the sky throughout each season.



Grade 4 (Kit #64): This kit starts with a review of the apparent motion of the sun across the sky. The concept of time is studied with observations of patterns of sunrise and sunset times and seasons. Length of daytime and nighttime is calculated, graphed, and related to the change of seasons. The natural pattern of the moon is also explored.

Grade 5 (Kit #65): Students are challenged to deepen their understanding of the predictable cycle of the moon, as well as other predictable occurrences caused by the pattern of the motion of the moon. Students also look for other predictable patterns in the night sky while studying circumpolar constellations and seasonal constellations.

Grade 6 (Kit #66): This unit reviews the basic relationships of the Earth-Moon-Sun system and introduces concepts related to our solar system and deep space objects. Students will examine the characteristics of the planets, asteroids, meteorites, comets, stars and galaxies, their relationships to each other and note that the perceived location and apparent motions of these objects are often related to the rotation and revolution of the Earth.



Materials include such things as:

Dylite balls, a bright light, flashlights, inflatable globes, construction paper, pre-drilled paper plates

If your school uses the **PLANETARIUM** service offered by OCM BOCES, try to plan to have this kit in your room **prior** to the visit.

BATS INCREDIBLE (KIT #6)

Scheduling: 5 weeks

Grade: 2



Students study the characteristics of mammals by focusing on bats. The concept of bats living in diverse habitats where their unique variations of physical structures allow them to meet their basic needs is emphasized. Bat physical structures are compared to other mammals (humans).

Materials include such things as:

Various containers, packaging items, extracts of oils, paper products, hot plate, beaker, sand, gravel, corn meal, Epsom salts, cassette tape, rubber bands, and cotton balls

BUOYANCY (KIT #7)

Scheduling: 5 weeks

Grade: 3

Students are introduced to the concept of buoyancy by using a variety of materials to investigate properties that allow objects to sink or float. They also design and construct their own boats and test them for buoyancy in an assortment of ways.



Materials include such things as:

One-half gallon plastic containers, other containers of various sizes, balloons, modeling clay, food coloring, foil, salt, pan balance and ceramic weights

BUTTERFLIES (KIT #8)

Scheduling: 5 weeks

Grade: 2



This unit provides students with the opportunity to observe the life cycle of butterflies and moths (although no moth larvae are sent with the unit). Methods of collecting moths and moth larvae are suggested. Students will compare and contrast the body structures of butterflies and moths. Humane treatment of animals should be stressed throughout this unit. Painted Lady butterfly larvae will be studied at close range and students will observe the organism's life cycle in a controlled environment as each child raises their own butterfly.



Materials include such things as:

Larvae and media for Painted Lady butterfly, magnifiers, paintbrushes, spoons, honey, plastic bottles and materials needed for building cages

CHARACTERISTICS OF ANIMALS (KIT #68)

Scheduling: 6 weeks

Grades: K or 1

Students are introduced to the needs of animals in this kit as they set up of an aquarium and observe fish in the water habitat. Fish, pill bugs and a gerbil in the classroom focuses on the needs of a living organism. Physical structures, common characteristics and different environments are explored.



Materials include such things as:

Aquarium, filter, gravel, fish, fish food, gerbil with cage set up, pill bugs, plastic bags, pie pans, magnifiers

COMING TO YOUR SENSES (KIT #67)

Scheduling: 8-10 weeks

Grade: 1

Students focus on properties of matter utilizing their 5 senses: seeing, hearing, feeling, touching, tasting. The concepts of inheritance, animal structures having certain functions, the senses providing information about the local environment can also be incorporated.

Materials include such things as:

Cups, bags, taste and smell items, touch and feel items, cotton balls, magnifiers, sand, trays, trade books

CRIME LAB CHEMISTRY (KIT #14)

Scheduling: 2 weeks

Grade: 4

This GEMS kit challenges students to determine which of several black pens was used to write a ransom note, using paper chromatography, as they explore the concepts of solubility, pigments and separation of mixtures. Students also explore the similarities and variations of fingerprints in these "fingers-on" activities. The fingerprinting technique does not involve ink, but a simple method using pencil and transparent tape.



Materials include such things as:

Markers, paper towels, one-half gallon containers, alcohol, vinegar, magnifiers, tape, pencils

DENSITY (KIT #3)

Scheduling: 2 weeks

Grade: 5

Students focus their attention on measurable properties of matter of mass (weight) and volume. Using these measurable properties the students then apply math concepts to develop an understanding of “density.” Density calculations are applied to regular and irregular geometric shaped objects.

Materials include such things as:

Balances and gram mass sets, graduated cylinders, rulers, wood blocks, foam blocks, and objects to measure

ELECTRICAL CIRCUITS (KIT #11)

Scheduling: 6-8 weeks

Grade: 4

Students are introduced to the basic properties of electricity as they learn about electric circuits, parts of a light bulb, conductors, and insulators. Students explore different kinds of circuits and conduct a switch. Technology skills are enhanced through the use of screwdrivers, wire strippers, bulb holders and the construction of bulbs and fuses. Through the use of batteries, wires, and light bulbs students experience three forms of energy: electrical, heat and light.



Materials include such things as:

Bulb holders, bulbs, batteries, battery holders, wire, wire strippers, salt, sugar, oil, vinegar, soap, baking soda, foil and wood squares

ELECTROMAGNETISM (KIT #13)

Scheduling: 6-8 weeks

Grade: 6



Activities are provided in this kit that will enable students to develop an understanding of the properties of magnets and the relationship between magnets and circuits. By constructing electromagnets, buzzers and simple motors, students are introduced to the concept of transfer of energy.



Materials include such things as:

Assorted magnets, wires, nails, tools (hammers, screwdrivers, wire strippers), batteries, Fahnestock clips, buzzer arms, metal brushes, and compasses

ENERGY STUDIES (KIT #87)

Scheduling: 8 weeks

Grade: 6

This unit represents a cooperative effort between the Science Center and the SUNY College of Environmental Science and Forestry (SUNY ESF). This unit focuses on forms of energy, sources of energy, and current energy issues. Students learn about the renewable energy source of “biomass” through the SUNY ESF Willow Project. The activities in this unit foster science inquiry, mathematical analysis, and systems thinking while incorporating the sciences of physics, living environment, and chemistry.

Materials include such things as:

Test tubes, rod and stand, ring clamp, safety goggles, gram mass set, balance, thermometers, graduated cylinders, mirrors, clear plastic boxes, willow, videos

FOOD CHAINS & WEBS (KIT #72)

Scheduling: 7-8 weeks

Grade: 3

Students will explore the interaction of living things as well as discuss food chains and webs. They will experiment with soil and light to find the best growing conditions, and plant ryegrass into their own terrariums. They introduce crickets, earthworms, and anoles into these terrariums and observe what happens. Students will be able to classify animals as primary, secondary, or tertiary consumers, or decomposers.

Materials include such things as:

Soil, gravel, seeds, assorted containers, thermometers, crickets, anoles, and earthworms

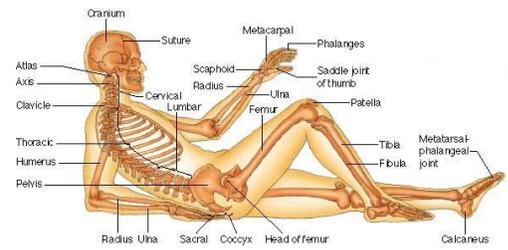


HUMAN BODY (KIT #94)

Scheduling: 8 weeks

Grade: 6

In this unit of study, students learn about the organization of the human body into systems, and how these systems interact to help meet our needs as living organisms. In groups, students research and become “experts” on one system, and lead instruction and activities to subsequent groups of students. The systems that students learn are: digestive, respiratory, excretory, circulatory, skeletal & muscular, nervous, endocrine, and reproductive. The culminating activity is the creation of a human body owners’ manual for students to apply and synthesize their knowledge of the body systems and behaviors necessary to maintain a healthy body.



Materials include such things as:

Stopwatches, marbles, oral thermometers & sheaths, dish tubs, cups, balloons, stethoscopes, beakers, hand lens, eye chart, home blood pressure kit, string, pipe cleaners, straws, rulers, and many books

INCUBATION & EMBRYOLOGY (KIT #76)

Scheduling: 10 weeks

Grades: K-6



Through the incubation of chicken eggs, students will have the unique experience of observing the complex changes in embryonic development. Students learn about an organism’s needs for survival and reproduction while extending their understanding of life cycles. Teachers need to make arrangements for the future home of the chicks, or may call the Science Center to assist in arrangements. This kit should be scheduled late March to early April, as fertilized egg delivery is during the week after Spring break.



Materials include such things as:

One dozen fertile chicken eggs, incubator, thermometers, candler, brooder light, magnifiers, chick food for one week, and all other materials necessary to care for the eggs and chicks. A video on salmon embryology is also included.

K’NEX (KIT #50)

Scheduling: 5 weeks

Grade: 1

The students are challenged to use math and science in this kit as they build models and are introduced to engineering technology. Model manipulation allows students to experience properties of matter, observe properties, sort and classify, and experience relative position.



Materials include:

K’nex, shape cards, animal cards

LADYBUGS (KIT #18)

Scheduling: 4-6 weeks

Grade: K

In this GEMS unit that builds on children’s delight with ladybugs, students learn basic information relating to animal life and ecology. The children engage in a series of activities that help them learn more about ladybug body structure, symmetry, life cycle, defensive behavior and role in the environment.



Materials include such things as:

Ladybugs, bug boxes, large container, spray bottle, yarn, paint, glue, precut construction paper, chalk, trade books

MAGNETS (KIT #70)

Scheduling: 5 weeks

Grade: 2

Through guided inquiry, students learn about the unique properties of magnets. Students observe the variation among magnets and learn how they behave when brought together with other magnets. They identify that magnetism is a force that may attract or repel certain materials. Students are asked to design and evaluate an investigation, and draw conclusions from data collected.



Materials include such things as:

Seven types of magnets, magnetite, assorted wood pieces, sand, cloth, thread, string, nails, assorted containers, wax paper, foil, Styrofoam pieces, tongue depressors, toothpicks, paper clips, rubber bands

MEASURING MATTER (KIT #5)

Scheduling: 4-6 weeks

Grade: 2



Using standard and nonstandard units of measure, students manipulate materials to compare properties of weight, length, capacity and area.

Materials include such things as:

Paper tape, paper clips, tongue depressors, paper squares, assorted cups, pan balance, gram mass set, metal washers, fulcrums, geo-boards, measuring wheel and thermometers

MOTION (KIT #16)

Scheduling: 8-10 weeks

Grade: 3

Using a constructivist approach, students explore the concepts of motion by: comparing and testing the properties of various balls, playing the game of marbles, creating a marble ramp, and constructing a balloon-powered car.



Materials include such things as:

Softballs, bouncy balls, rubber balls, happy/sad balls, marbles, marble game mats, Styrofoam trays, straws, clay, balloons

ORGANISMS (KIT #51)

Scheduling: 12-14 weeks

Grade: 1

This unit helps students develop an understanding of and sensitivity to living things. Students create and maintain a woodland habitat containing a tree seedling, moss, pill bugs, and Bess beetles. They also set up and observe a freshwater habitat containing aquatic plants, pond snails, and guppies. With both plants and animals in each habitat, students have the opportunity to observe how these organisms coexist. Through studying the needs and characteristics of a variety of organisms, students are able to draw conclusions about how plants and animals are similar and different. The unit concludes with students applying what they have learned about organisms to humans, and exploring how humans are similar and different from other living things.



Materials include such things as:

Seeds, potting soil, plastic terrarium, plastic aquarium, terrestrial and aquatic plants and animals

PENGUINS & THEIR YOUNG (KIT #10)

Scheduling: 6 weeks

Grade: K

This GEMS unit features the emperor penguin. Students learn about its body structure, its cold home of ice and water, what it eats and how emperor penguin parents care for their young. Important math concepts and skills are introduced. Children learn how penguins stay warm in their unique environment.



Materials include such things as:

Dishpans, corks, plastic fish, construction paper, paper bags, plastic eggs, food coloring, cotton balls, feathers, and various containers

PLANT LIFE CYCLES (KIT #73)

Scheduling: 8-10 weeks

Grade: 4



In this unit, students explore the concept of life coming from life. Plants are grown and observed as they go through the various stages of their life cycle. A comparison is made between different kinds of plants with a concentration on plant reproduction and dispersal. Students will design and implement controlled experiments to determine the effect of specific variables on seed germination. The structure and function of a flower in the reproduction process will be examined as well as reproduction through the process of propagation.

Materials include such things as:

Wandering Jew plant, spider plant, garlic, asst. seeds & materials to plant them, magnifiers and thermometers

PLANTS (KIT #1)

Scheduling: 10-12 weeks

Grades: K and/or 2

Students begin to develop an awareness of plants, plant structure, and needs for survival by:



- a. Planting seeds and making observations.
- b. Growing and caring for common plants under a variety of conditions.
- c. Observing plant growth and structures.



Materials include such things as:

A variety of seeds, potting mix, pots and other materials needed for planting

“POLLY MERS” (KIT #19)

Scheduling: 1 week

Grade: 4

The Strange Case of Dr. Polly Mers is a quick unit that helps students develop a greater understanding of the properties of matter. It is also an introduction to chemical changes. Students are presented with a mystery involving a missing research scientist and some strange material found in her lab. By investigating the materials, students discover the formulas for creating polymers from common substances.

Materials include such things as:

Cornstarch, sodium borate solution, liquid starch, glue, plastic cups, Ziploc bags, food coloring, cooking oil, spoons, vinyl gloves, safety goggles

PONDS & WETLANDS (KIT #17)

Scheduling: 6-8 weeks

Grade: 5



Students are provided with a well-balanced set of learning experiences pertaining to an aquatic ecosystem. The central concepts of the unit can be applied, however, to any ecosystem. It would be preferable to culminate this unit at a field site. (If this is not possible, the classroom could be used in substitution.)

Materials include such things as:

Cultures (one each of amoeba, paramecium, daphnia, euglena), aquariums, microscopes and depression slides, pocket scopes, magnifiers, dissolved oxygen test kit, pH test kit, test liquids, graduated cylinders, safety goggles

POWDER PUZZLES (KIT #12)

Scheduling: 8-10 weeks

Grade: 5

This unit introduces students to chemical and physical properties of familiar substances. It is done in a Crime Lab internship context. Students perform experiments with chemical and physical reactions and chemical indicators. The focus is on basic chemistry concepts. Safety rules are emphasized for the proper use of chemicals and matches.



Materials include such things as:

Powder jars and materials for examining properties of the powders (i.e. BTB, iodine solution, vinegar), magnifiers, pocket scopes and slides, safety posters, safety goggles, work mats

PROPERTIES (KIT #4)

Scheduling: 8 weeks

Grade: 1

Students will use their hands and eyes to classify and sort by color, size, shape, and texture. They will use balances and other equipment to compare and contrast objects by weight, buoyancy, magnetic attraction, and material composition. Students observe that objects exist in different forms and that solids, liquids, and gases are objects.

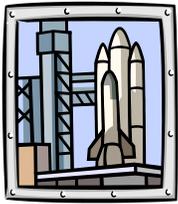
Materials include such things as:

Assorted pieces of solids (metal, plastic, and wood, etc.), various sizes of bags and containers, equal-arm balances, assorted blocks, and a variety of liquids

ROCKETRY (KIT #54)

Scheduling: 6 weeks

Grades: 5-6



Students build model rockets and have the opportunity to study basic concepts in trigonometry, electricity, aerodynamics, physics and weather. In addition, students learn the importance of safety while dealing with rockets and launch systems.

Materials include such things as:

Alpha model rockets, launch pad and control system, twine, fishing line, twine, balloons, safety goggles, and all materials needed to build and launch rockets

ROCKS & MINERALS (KIT #15)

Scheduling: 6-7 weeks

Grade: 6



In this unit, students become familiar with the rock cycle and related geological makeup of the earth. Through observation and testing the properties of rocks and minerals (color, texture, layers, cleavage, streak, reaction with hydrochloric acid, attraction to magnets, conductivity of electricity) students flow chart to identify the rock/mineral samples. Additional activities lead students through the topics of the rock cycle, weathering and erosion, and everyday uses.



Materials include such things as:

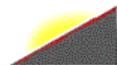
Assorted samples of rocks and minerals, safety goggles, batteries, bulbs, wire, magnets, hydrochloric acid, streak plates

SIMPLE MACHINES (KIT #77)

Scheduling: 6 weeks

Grade: 4

This unit provides an opportunity for students to study machines and the transfer of force. They investigate the conditions under which a force moves an object. While experimenting with three simple machines, students determine specifically how each can make work easier. They discover how some machines affect force, speed, and/or direction. Students explore the force of friction on an object's motion.



Materials include such things as:

Multi-poles with bases, ramps, meter stick levers, pulleys, belts, washers, screws, nuts and bolts, paper clips, spring scales

SOUND (KIT #9)

Scheduling: 6-8 weeks

Grade: 3

In this unit, students study sound as a form of energy. Using simple materials, students build and investigate many basic sound-making devices. They begin to find out about relationships between objects, the sounds objects produce and the actions necessary to produce and change sound. Students also explore ways in which pitch and volume can be affected by physical characteristics of materials and the way objects are manipulated.



Materials include such things as:

Assorted tubes, plugs and corks, strings, rubber bands, nails, dowels, sandpaper, clips and clamps, pans and tuning forks

STATES OF MATTER (KIT #43)

Scheduling: 5 weeks

Grade: 2



Students will explore states of matter through a variety of hands-on activities. Students will use blocks, balloons, and beakers to identify the properties of the three common states of matter. Various melting, freezing, evaporation, and condensation experiments are conducted with many different lab tools. Students will explore, observe, and measure solids, liquids, and gases.



Materials include such things as:

Balloons, blocks, thermometers, salt, sand, and containers of various sizes

TERRESTRIAL ECOSYSTEMS (KIT #75)

Scheduling: 6-8 weeks

Grade: 5

In this unit students will investigate different ecosystems: bog-like; woodland-like; and arid-like. They will study what characteristics ecosystems have in common and what make them unique. They will study the relationships among plants, animals, decomposers and their physical environment. In the classroom, students will create and observe models of three basic ecosystems: bog-like; woodland-like; and arid-like. The unit ends with an investigation of the effects of pollution on terrestrial ecosystems.



Materials include such things as:

Frog, anoles, crickets, earthworms, isopods, tadpoles, sphagnum moss, aloe vera plant, ivy, vivarium, aquarium, seeds, trowels, magnifiers, and all materials needed to care for the living organisms

TOYS IN SPACE (KIT #79)

Scheduling: 3 weeks

Grade: 6

A child's toy chest offers a marvelous way to introduce children to some basic physics concepts. Using ten toys, students investigate concepts of mechanics, motion, and energy transfer by first observing how these toys behave in their own environment and then in a weightless environment (via a video tape). While comparing the behavior of these objects in the two environments, students discuss and process how the force of gravity affects behavior of the toys.

Materials include such things as:

Sets of toys like those examined in space by astronauts (assorted pop-overs, magnetic marbles, yo-yo, slinky, paddle ball, gyroscope, jacks and ball, wheel-o), plastic bags, jars, "Toys in Space" videotape (1992 version)

WATER CYCLE (KIT #71)

Scheduling: 8-10 weeks

Grade: 3



In this unit, students will build a comprehensive, pictorial chart that shows the continuous movement of water between Earth and the atmosphere known as the water cycle. Students will explore evaporation, condensation, and precipitation. They will measure humidity as well as model clouds. In classroom terrariums, students observe that soil, plants and a mini-pond are the sources of water vapor.



Materials include such things as:

Modeling clay, potting soil, various seeds, clamp lamps, thermometers, sponges, food coloring, assorted containers

WATERPLAY (KIT #2)

Scheduling: 8 weeks

Grade: K

Through directed free play, students experience the properties and forms of water. Using a variety of tools students mix, pour, stir, change and enjoy water.

Materials include such things as:

Various sizes of tubing, Styrofoam balls, balloons, soap, food coloring, wire, fishing line, sponges, containers, pan balance, gray rectangular pool

WEATHER (KIT #78)

Scheduling: 8 weeks

Grade: 6



In this unit, students will study weather as air in motion. They will explore the properties of air (gases) and the factors that affect the force of air (temperature and pressure differences). Students will learn that the uneven heating of the Earth causes air masses to move both vertically and horizontally. They will measure local weather conditions such as: temperature, air pressure, wind speed, and wind direction and correlate these measurements to the movement of weather systems. In addition, students will connect the water cycle to the precipitation associated with weather systems. Students will draw on their conclusions to determine how these correlations can be used to predict the weather. They will investigate severe weather systems.



Materials include such things as:

Barometer, thermometers, hot plate, 250 ml flasks, air syringes and tubing, materials for building weather instruments (such as, barometer, wind vane, anemometer)
