

Math Science Nucleus



Integrating Science, Math, and Technology (I.Science MaTe) Reference Curriculum

CATALOG FOR GRADES K-6

*designed to help teachers or parents learn science as they create an elementary
science program at school or home*

2005-2006

MATH SCIENCE NUCLEUS
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Math/Science Nucleus is a tax-exempt organization devoted to serving children.

MATH SCIENCE NUCLEUS

Serving the Education Community since 1982

The Math/Science Nucleus (MSN) was founded to assist educators and administrators to get "cutting edge" science into the schools. MSN is a non-profit, tax-exempt organization composed of scientists, educators and community members that work together with schools. Over a 10 years period the MSN has developed the Integrating Science, Math, and Technology Reference Curriculum. Then in the early 1990's an electronic version was created to provide access throughout the world. New material is added every week to provide the most up-to-date science curriculum. This program provides an elementary school a template to create a successful science program. Secondary material is also available, but still under development. The entire program is FREE on the web.

Materials are an essential part of this program. We realize that both teachers and parents can use the material. We have redesigned our products to include one set of materials. It keeps the cost down and allows the teachers or parents to decide if they have more materials.

All profits sales of items go into developing new curriculum and providing free services to teachers and students. The Math/Science Nucleus has also received many grants from various foundations and industry that have helped make this program available to schools around the country.

This unique reference curriculum is based on a research project with children, scientists, and educators that started in the 1980's. I. Science MaTe Reference Curriculum shows the development of scientific thought. Young children learn to **discover** and **describe** their scientific encounters. As a child matures they learn to **compare** past with new experiences. Once a child develops these skills they can then **interpret** results and logically create their own experiments. This sequence helps not only children but adults learn scientific logic.

The I. Science MaTe Program uses **problem-solving** and **critical thinking** techniques in most lesson plans. Teachers learn the weekly components of the program by reading the Pre Lab, Lab, and Post Lab for the theme of the week. The teachers learn science along with their children if they go through the activities that are suggested. As they go through their specific grade they can customize activities to their needs and the equipment provided by the school. There are many strategies that can make this program an integral part of the curriculum, but the teachers and administrators have to find the recipe that works well for that particular school.

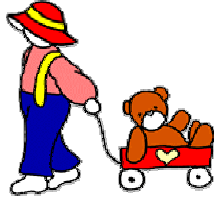
Each kindergarten activity is timed for about 30-35 minutes, for a total of 100 minutes per week. First through sixth grades are timed for about 50 minutes each, for a total of 150 minutes per week. Each of the activities can be either shortened or lengthened depending on the needs of individual teachers. Applied Science is 8 weeks, Universe Cycle is 4 weeks, Plate Tectonic Cycle is 4 weeks, Rock Cycle is 6 weeks, Water Cycle is 4 weeks, and Life Cycle is 8 weeks for a total of 34 weeks. A total of 768 lesson plans.

Science is all about understanding and learning how to solve problems. A benchmark for the Life Cycle is to understand the uniqueness of life on this planet. The diversity of life is dependant on the Water Cycle. But where did all the water come from? One of the rocks produced in the Rock Cycle (igneous) produces the energy needed to combine hydrogen and oxygen to produce the primordial water that slowly

accumulated into oceans and lakes. The Plate Tectonic Cycle creates the different environments for rocks to be created. Volcanoes and earthquakes are actually signs of a living Earth. The Universe Cycle, in all its wonders, produced the Earth that created the water that sustains every living creature. This study of all these sciences produces knowledge that allows scientists, engineers and mathematicians to discover new technology, which gives us Applied Sciences. Science is interrelated.

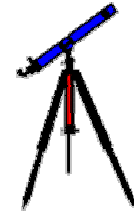
This catalog highlights the kit material available from the Math Science Nucleus to easily incorporate the lessons into your teaching style. The Applied Science, Universe Cycle, Plate Tectonic Cycle, Rock Cycle, Water Cycle, and Life Cycle grids on the next few pages show where the materials are from. For instance, Rock Cycle - Minerals 3A is a module that is for the first week (A) of the third grade Rock Cycle curriculum. The lesson plans can be found FREE on our website (<http://msnucleus.org>). Many of the other lessons require household material or materials that can be found on our online catalog. If you look at the lesson plans online it will direct you to our online catalog. The kits in this catalog represent non-consumable materials that can be used for decades!

This catalog is arranged by grade level. On the web you can order directly by the different cycle and then the grade level. The next few pages show the grids that are the fundamental overview of the program.



APPLIED SCIENCE OUR TECHNOLOGICAL WORLD

	K	1	2	3	4	5	6
Science & Math (3 week)	Tools of Discovery, Senses	Describing Discoveries, Senses	Estimating, Predicting, Symmetry	Linear, Volumetric, Experiments	Plotting Data, Perception	Interpreting Data, Graphing	Scientific Method, Experiments
Physics (2 weeks)	Observation, Magnets	Light, Mechanics	Energy & Work	Electricity & Magnetism	Electric, Magnetic Forces	Waves, Sound, & Light	Gravity, Motion
Technology (2 weeks)	Simple Machines, Inventions	Using Simple Machines	Energy, Machines, Computers	Circuits, Electricity at home	Electro-magnets, Circuits	Laser, Microscopes	Aviation, Rockets
Built Environment (1 week)	Human Made, Natural	Garbage	Power Company	Transportation	Communi-cations	Light Bulbs	Conquering Space



UNIVERSE CYCLE THE SEARCH FOR OUR BEGINNING

	K	1	2	3	4	5	6
Universe (1 week)	Comparing Distance in Space	Light in the Universe	Stars and Constellations	Components of Galaxies	Comparing Galaxies	Components of the Universe	Astronomy and Astrology
Solar System (1 week)	Comparing Planets	Surface of the Moon	Identifying Planets	Earth Movements	Craters	Comparing Planets	Movement of the Earth
Earth (1 week)	Modeling the Earth	Rotation of the Earth	Examining the Earth's Surface	Comparing Landforms	Earth/Moon System	Forces of Erosion	Landform Evolution
Geography (1 week)	Land and Water	Learning Geographic Relief	Making Maps	Use of Maps	Interpretations of Maps	Mapping Relief	Uses of Maps

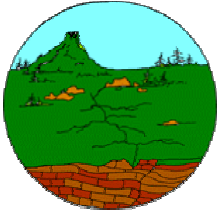


PLATE TECTONIC CYCLE EARTH'S MOVING FORCE

	K	1	2	3	4	5	6
Volcanoes (1 week)	Volcanoes Produce Rocks	Volcanoes Definite Shapes	Products of Volcanoes	Creating Rocks from Lava	3 Basic Types of Volcanoes	Volcanoes produce Different Rocks	Location of Volcanoes
Earthquakes (1 week)	Shaking during an Earthquake	Earthquakes Release Energy	Earthquake Faults	Seismic Waves Damage	Measuring Earthquake Intensities	Wave Movements Seismograms	Dividing the Earth by Waves
Plate Tectonics (1 week)	Continents and Oceans	Moving Continents	Evidence from Continents	Pressure in the Earth	Plate Boundaries	Crustal Movement	Definition of Plate Boundaries
Hazards (1 week)	Earthquakes Volcanoes Damage	Volcanic Eruptions	Where of you go for Help?	Historical Damage (Volcanoes)	Damage during Earthquakes	Mudslides and Volcanoes	"Earthquake Proof" Structures

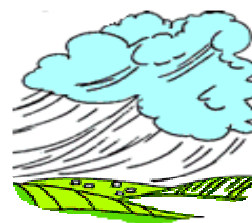
ROCK CYCLE UNDERSTANDING THE EARTH'S CRUST



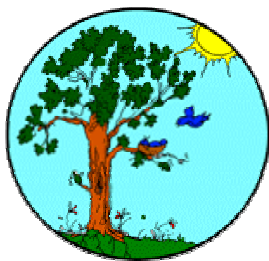
	K	1	2	3	4	5	6
Chemistry (1 week)	States of Matter	Characteristics of Solids	Elements	Mineral Composition	Compounds	New Compounds from Old	Movement of Molecules
Minerals (2 weeks)	Describing Minerals *(1 week)*	Minerals are Pure *(1 week)*	Mineral Growth	Molecules, Minerals, & Cleavage	Key Characteristics & Shapes	Properties & Uses of Minerals	Predicting Mineral Properties
Rocks (2 weeks)	Grouping Rocks	Characteristics of Rocks	Classifying Rocks *(1 week)*	Identifying Rocks & Sand	Three Types of Rocks	Environments that create Rocks	Analyzing the Rock Cycle
Past Life (1 week)	Discovering Dinosaurs *(2 weeks)*	Dinosaur Fossils *(2 weeks)*	Making & Observing Fossils *(2 weeks)*	Preservation of Fossils	Deriving Information from Fossils	Meaning of Fossils	Importance of Fossils

WATER CYCLE

THE EARTH'S GIFT



	K	1	2	3	4	5	6
Water (1 week)	States of Matter	Properties of Water	Properties of Water	Chemistry	Capillary Action	Densities of Liquids	Ground Water
Oceans (1 week)	Properties of Salt Water	Making Salt Water	Solvents	Dissolution of Salt	Electrolytes	Ocean Bottoms	Coriolis Motion
Atmosphere (1 week)	Different Types of Clouds	Movement of Air	Air is all around us	Atmospheric Pressure	Air Movements	Components of Air	Wind Currents
Weather (1 week)	Types of Weather	Reading a Thermometer	Comparing Weather	Water from Air	Weather Patterns	Air Pollutants	Weather Maps



LIFE CYCLE

DIVERSITY IN A BALANCE

	K	1	2	3	4	5	6
Organisms (2 weeks)	Grouping & Comparing Organisms	Vertebrate Requirements	Vertebrate Habitats	Organisms without Backbones	Cells, Tissues, Organs	Asexual, Sexual Cells	Classification
Human Biology (2 weeks)	Body Parts/ Skeletal System	The Five Senses/ Circulation	Human Growth and Organs	Body Parts, Digestion	Human Systems, Circulatory	Body System, Muscles & Tissues	Changing Body, Diseases
Plants (2 weeks)	Requirements and Growth	Comparing Plant Parts	Function of Plants Classification	Growth Strategies, Classification	Classification of Plant Communities	Plant Reproduction, Photo-synthesis	Growth and Heredity
Natural Environment (2 weeks)	Environments and Communities	Requirements and Communities	Who Eats Whom	Simple Food Chains, Biomes	Ecosystems in Soil Salt Marshes	Marine Biomes, Food Web	Natural Selection, Adaptation

KINDERGARTEN

APPLIED SCIENCE - PHYSICS (KB) -

Students learn about the force of magnetism.

Includes 1 magnetic wand, 3 ring magnets, 10 magnetic marbles, and 20 metallic chips. (code AS-PKB) \$6.00



LIFE CYCLE - ORGANISMS (KA) -

Includes one container of plastic animals for lab designed to investigate different organisms and

classify objects (50 pieces of 10 different animals + 12 other animals used for creating tracks. (code LC-OKA)..... \$8.50



PLATE TECTONIC CYCLE - VOLCANOES (K) -

Learn that volcanoes produce rocks and that volcanic rocks produce different types of rocks.

Module contains basalt, sea urchin spine, pumice, diatomite, obsidian, styrofoam, and sea cookie. (code PT-VK) \$5.00



LIFE CYCLE - ORGANISMS (KB) one container of assorted shells (snails, clams, scallops, etc.) are used in lab to investigate, sort, and compare different shells.

Information sheet is included (code LC-OKB)..... \$6.50



ROCK CYCLE - MINERAL (K) -

Learn that minerals come in different colors.

Module includes a piece of rose quartz, pyrite, aventurine, dolomite, quartz, hematite, and copper in labeled bags. (code RC-MK) \$6.50



LIFE CYCLE - PLANTS (KB) Sort

different types of seeds.

Includes a package of different types of seeds and beans. (code LC-PKB)..... \$4.00



ROCK CYCLE - PAST LIFE (KA) -

Students will discover the difference between extinct and living animals. Module includes a bag each of dinosaurs, prehistoric, living invertebrates and vertebrates (total of 20 models). (code RC-PLKA) \$6.50



FIRST GRADE

APPLIED SCIENCE - SCIENCE AND MATH (1A) -

Student learns how to use different types of magnifiers. Module includes 4 magnifiers including a small 5x magnifier, large magnifier, 3x magnifier, and 15x magnifier. Also includes labeled specimens of a sea cookie, marine snail, sea star, and coral. (code AS-SM1A)..... \$7.50



ROCK CYCLE – PAST LIFE (1A)-

Introduce the life and times of dinosaurs. Model includes a variety of different types of dinosaurs and non dinosaurs.



(code RC-PL1A)\$5.00

ROCK CYCLE - MINERALS (1) - Discover

that minerals are made up of elements. Module includes one piece each of calcite, quartz, hematite, ulexite, apatite, gypsum, mica, fluorite, and pyrite. (code RC-M1) \$7.00



LIFE CYCLE - PLANTS (1A)

Samples of six different strategies on how seeds are dispersed includes packet of beans and seeds. (code LC-P1A) \$5.50



LIFE CYCLE - PLANTS

(1B) Cross-section of a tree is used to explore plant stems and flowers. (code LC-P1B) \$4.50



ROCK CYCLE - ROCKS (1A) - Discover

the difference between rocks and minerals. Module of quartz, dolomite, hematite plus 7 labeled rocks representing sedimentary, igneous, and metamorphic. (code RC-R1A) \$7.50



LIFE CYCLE - NATURAL ENVIRONMENT

(1A) Samples of branch, clams, moss, plastic model of a mammal, coral, and seaweed which are used to explore land and water environments. (code LC-1A).....\$5.50



ROCK CYCLE - ROCKS (1B) - Introduce

the characteristics of the 3 types of rocks. Module includes granite, scoria, obsidian, sandstone, conglomerate, shale, marble, schist, and serpentinite. (code RC-R1B)..... \$6.00



SECOND GRADE

APPLIED SCIENCE - SCIENCE AND MATH (2A)

- Introduce the concepts of prediction and estimation. Module includes 2 timers (liquid and sand), 1 piece diatomite, 3 seashells, flower coral, and sea cookie, and 2 wood animal cut outs. Primary balance is also needed. (code AS-SM2A) \$7.50



APPLIED SCIENCE - SCIENCE AND MATH (2B)

- Students describe and recognize 2 and 3 dimensional patterns using various cookie cutters. Includes 6 different cookie cutters. (code AS-SM2B)..... \$5.00



APPLIED SCIENCE - SCIENCE AND MATH (2C)

- Discover the symmetry of nature by looking at specimens of sea cookie, sea star, 4 types of snails, pyrite, mushroom coral, quartz, and scallop. (code AS-SM2C) \$6.50



APPLIED SCIENCE - TECHNOLOGY (2B)

- Discover the mysteries of computer chips. Includes a computer chip inside magnifying box, 1 piece of silicon, 1 silicon wafer and 1 caterpillar. (code AS-T2B) \$7.50



ROCK CYCLE - CHEMISTRY (2)

- Observe different elements and find them on the periodic table. Module includes specimens of copper, nickel, lead, tin, silicon, carbon, sulfur, aluminum, iron, and zinc each in labeled bag. (code RC-C2)\$10.00



ROCK CYCLE - MINERALS (2A)

- Investigating minerals by learning their characteristics. Module includes one piece of pyrite, quartz, ulexite, calcite, mica, and gypsum. (code RC-M2A) \$7.00



ROCK CYCLE - ROCKS (2)

- Identify the 3 different types of rocks while increasing observational skills. Module includes a piece of chert, marble, schist, sandstone, shale, serpentinite, mudstone with fossils, obsidian, pumice, granite, scoria, and conglomerate. (code RC-R2)..... \$7.50



ROCK CYCLE - PAST LIFE (2A)

- Includes Velociraptor, Stegosaurus, Triceratops, Apatosaurus, Dimetrodon, Ankylosaurus, Parasaurolophus, Styraeosaurus, Tyrannosaurus, Pachycephalosaurus, Brachiosaurus, and Edmontosaurus. (code RC-PL2A)..... \$12.00



ROCK CYCLE - PAST LIFE (2B) - Learn

how fossils are made and discover the components of a fossiliferous rock.

Module includes one abalone, 3 types of marine snails, clam, scallop and fossil mollusk piece from Maryland. (code RC-PL2B).....\$5.50



LIFE CYCLE - PLANTS (2B) Parts of angiosperm and gymnosperms are used to

explore the diversity of plants and to classify different plants. 8 different plant parts (seeds, cones, bark) are included. (code LC-P2B) \$5.50



LIFE CYCLE - HUMAN BIOLOGY (2A) 1

sample each of African, European, and Asian hair allow students to observe different hair types (code LC-HB2A)..... \$4.50



THIRD GRADE

APPLIED SCIENCE - SCIENCE AND MATH (3A) -

Investigate and predict the linear measurements of different objects. Module includes labeled bag of a magnifier cube, abalone shell, calcite, scallop, high spiral snail, sea urchin spine, flower coral, leaf, and an animal shape. (code AS-SM3A)..... \$5.50



APPLIED SCIENCE - PHYSICS (3B) -

Discover the phenomenon of static electricity using common objects. Includes 1 plastic rod, 20 balloons, one plastic comb, bag of confetti, piece of cloth, and one fluorescent tube. (code AS-P3B)..... \$7.50



PLATE TECTONIC CYCLE - VOLCANOES

(3) - Students study four different volcanoes and determine if all volcanic rocks are the same. Module contains samples of Mt. Lassen and Mt. Shasta volcanic rocks, Clearlake Obsidian, and Mono Lake Pumice. (code PT-V3)



..... \$5.00

ROCK CYCLE - CHEMISTRY (3) -

Illustrate that elements make up minerals and discover properties of elements. Module includes specimens of bornite, pyrite, sulfur, hematite, quartz, rose quartz, chrysocolla, and copper. (code RC-C3)..... \$7.50



ROCK CYCLE - MINERALS (3A) - Explore the characteristic shapes of certain minerals. Module includes quartz, amethyst, pyrite, calcite, halite, fluorite, feldspar, mica, gypsum, and citrine (code RC-M3A)..... \$10.00



ROCK CYCLE - MINERALS (3B) -

Discover crystal shapes. Module includes one geode, epsom salt, table salt, sugar, quartz crystal, massive quartz, gypsum crystal, and massive gypsum. (code RC-M3B)..... \$6.50



ROCK CYCLE - ROCKS (3A) - Discover sedimentary, metamorphic and igneous rocks. Module includes pumice, serpentinite, granite, schist, limestone, obsidian, basalt, marble and shale. (code RC-R3A)..... \$7.50



ROCK CYCLE - ROCKS (3B) - Compare different sands and discover which are similar. One bag each of Rodeo Beach, Half Moon Bay, Cleone, Bodega, Montara, Long Beach, and Monterey (all in California). (code RC-R3B)..... \$6.00



ROCK CYCLE - PAST LIFE (3) –

Specimens of a brachiopod, orthoceras, stingray teeth, fossilized agate, irregular echinoderm, crinoid stem, ammonite, shark teeth, dinosaur bone, trilobite, and petrified tree. (code RC-PL3)..... \$15.00



LIFE CYCLE - PLANTS (3B) 8 different

samples of cellulose are used to detect cellulose of plants in products. (code LC-P3B) \$5.50



LIFE CYCLE - ORGANISMS (3A) Discover different marine invertebrates and compare and contrast their similarities with a sponge, sea urchin, barnacle, snail, sea cookie, clam, and coral.

(code LC-O3A) \$6.50



LIFE CYCLE - NATURAL ENVIRONMENT

(3B) 7 different marine gastropods (labeled) carnivores and herbivores, so students can demonstrate a food web in an ocean biome. (code LC-NE3B) \$5.50



LIFE CYCLE - ORGANISMS (3B)

Discover different arthropods. Module contains one horseshoe crab and one crab. Bag of different insects for identification into Order. (code LC-O3B) \$7.50



FOURTH GRADE

APPLIED SCIENCE – SCIENCE AND MATH (4A) -

Experience the importance of perception and the role that vision plays in our lives. Module includes 1 bag containing 4 different shapes used in experiment. Shapes may change. (code AS-SM4C)\$4.00



ROCK CYCLE - MINERALS (4A) –

Look at the key characteristics that help identify minerals. Contains specimens of quartz, fluorite, pyrite, gypsum, calcite, mica, galena, feldspar, ulexite, and hematite. (code RC-M4A).....\$9.50



UNIVERSE CYCLE- EARTH (4)-

Illustrate the relationship of the earth to the moon by showing orbits. Module includes sticky hand with handle; Styrofoam ball and 1 push pin; 1 large Styrofoam ball and 1 small Styrofoam ball with handles (code UC-E4).\$4.50.



ROCK CYCLE - MINERALS (4B) -

Identify minerals in rocks and discover how atomic structure influences the appearance of minerals. Module includes quartz, quartzite, mica, schist, granite, feldspar (orthoclase), calcite, marble, diorite, hornblende, plagioclase, and granodiorite. (code RC-M4B) 7.00



UNIVERSE CYCLE - GEOGRAPHY (4) -

Investigate the classification of soil and plot the soil data from the San Francisco Bay Area. Module contains 10 sites in the San Francisco Bay Area. Recommend this module be customized to local areas. (code UC-G4) \$10.00



ROCK CYCLE - ROCKS (4A) -

Investigate the three different types of rocks and learn how they are formed. Module shale, sandstone, conglomerate, mudstone with fossils, marble, schist, serpentinite, obsidian, granite, scoria, and basalt. (code RC-R4A) \$7.50



ROCK CYCLE - CHEMISTRY (4) -

Learn about salt and its chemical structure. Module includes one bag each of mill feed, granulated, medium, bakers, pellets, blending and one sample of a halite crystal. (code RC-C4) \$6.00



ROCK CYCLE - ROCKS (4B) -

Determining where sand comes from. Module includes sand from Rodeo beach, Cleone, Palm Springs, New York, San Francisco, Monterey and specimens of granite, serpentinite, chert, gneiss, and basalt. (code RC-R4B) \$7.50



ROCK CYCLE - PAST LIFE (4)

- Discover the present is the key to the past. Module includes specimens of white clams, Turritella gastropods, and corals; fossil shells, coquina limestone, fossiliferous gastropods, and fossil corals. (code RC-PL4)..... \$7.00



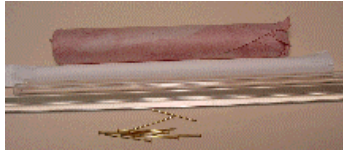
LIFE CYCLE - NATURAL ENVIRONMENT (4A)

Students identify different soil horizons. Includes an examples of O, A,B, and C horizon. (code LC-NE4A)\$5.00



WATER CYCLE - WATER (4)

- Learn the properties of water and experiment with surface tension. Module includes 1 of each of glass capillary tube, pins, plexiglass tubing, closed tube and a package of straws. (code WC-W4)..... \$6.00



LIFE CYCLE - NATURAL ENVIRONMENT (4B)

Learn about the organisms that live in the San Francisco Bay and create a mud fauna food web with one bag of San Francisco Bay fauna. (code LC-NE4B) \$6.50



LIFE CYCLE – ORGANISMS (4B)

Specimen of sponge, coral, clam, mussel, scallop, snail, sea cookie, seastar, sear urchin, and barnacle are used to compare and contrast invertebrates. (code LC-O4B)\$7.00



FIFTH GRADE

APPLIED SCIENCE - TECHNOLOGY (5A)

- Explore visible light and learn about other types of electromagnetic waves. Module includes a plastic bag containing quartz, mirror, cube magnifier, convex lens, ulexite, and calcite. (code AS-T5A)\$7.00



ROCK CYCLE - MINERALS (5A) - Learn

how to identify the characteristics of minerals. Module includes specimens of fluorite, gypsum, feldspar, olivine, hematite, apatite, mica, quartz, talc, and calcite. (code RC-M5A)\$8.00



APPLIED SCIENCE - BUILT ENVIRONMENT (5) - Learn about different

types of light bulbs and how they work. Kit includes a bag with 4 different types of light bulbs. (code AS-BE5)\$4.50



ROCK CYCLE -MINERALS (5B)- Everyday

objects that are derived from minerals. Module includes 1 piece of the following concrete, gypsum board, wall paper, iron ties, porcelain, silica gel, lead weights, pennies, and decorative rocks. (code RC-M5B)\$6.00



UNIVERSE CYCLE - SOLAR SYSTEM (5)

- Discuss meteorites and compare them to Earth rocks. Module contains one piece of granite, basalt, obsidian, sandstone, schist and one tektite (probable meteorite).(code UC-SS5) \$9.00



ROCK CYCLE - ROCKS (5A) - Match different sands

with their mother rocks. Module contains samples from Rodeo Beach, Montara, Long Beach, Bodega Bay in California plus samples of quartz, feldspar, granite, basalt, chert and serpentinite. (code RC-R5A)\$7.50



PLATE TECTONIC CYCLE - VOLCANOES (5) -Does the type of

rock produced by a volcano tell you about the volcanic eruption? Module includes volcanic samples from Gilroy (basalt), Mt. Lassen (andesite), Black Buttes (basalt), Clearlake (scoria and obsidian), and Mono Lake craters (pumice). (code PT-V5) \$7.00



ROCK CYCLE - ROCKS (5B) -

Samples of sand, sandstone, diatomite, conglomerate, mudstone, chert, and limestone are used to examine sedimentary rocks and the environments of sedimentary deposition. (code RC-R5B) \$7.00



ROCK CYCLE - PAST LIFE (5) - Make your own fossil and illustrate that the present is the key to past. Module includes one gastropod, recent scallop, and two types of coral. (code RC-PL5) \$6.00



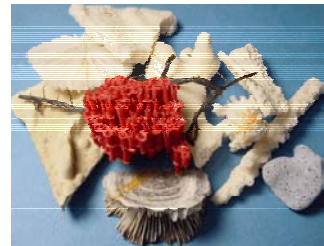
WATER CYCLE - OCEANS (5) - Illustrate what is under the oceans. Module includes samples from each of the Bahamas, Monterey Canyon, manganese crust from Pacific, and pillow basalts from Equatorial Pacific. Samples may be representative of an area. (WC-O5)\$6.00



LIFE CYCLE - PLANTS (5B) Specimens of 7 different male and female plant parts are used to determine male and female parts; teacher needs to collect fresh flowers and fruits to complete lab. (code LC-P5B)..... \$6.00



LIFE CYCLE - NATURAL ENVIRONMENT (5A) A bag of assorted corals are used to observe, explore, and distinguish the different types of corals. Individual specimens of blue, mushroom, cup, pocahontas, leaf, pipe organ, elkhorn, black sea fan, staghorn, brown stem, and flower coral are included. (code LC-NE5A) \$6.50



SIXTH GRADE

APPLIED SCIENCE – SCIENCE AND MATH (6C) - Look at different fabrics that represent different polymers. Includes wool, linen, rayon, and polyester. Magnetic rods and balls are used to demonstrate polymers (code AS-SM6C). \$6.50



ROCK CYCLE - ROCKS (6A) - Discover how rocks are created through the rock cycle. Module includes specimens of mudstone, conglomerate, sandstone, marble, serpentinite, schist, gneiss, pumice, granite, obsidian, and basalt. (code RC-R6A)..... \$7.00



ROCK CYCLE – CHEMISTRY (6)- Principles of electroplating help to illustrate elements. Model includes 1 container of Copper Sulfate, 1 copper electrode, and 1 Zinc electrode. (code RC-C6) ...\$8.50



WATER CYCLE - WATER (6) - Learn about porosity and permeability using 4 different sands. Includes sand from Ocean Beach, Half Moon Bay, Montara, Rodeo Beach – (code WC-W6) \$5.50



ROCK CYCLE - MINERALS (6A) - Includes chert, rose quartz, obsidian, amethyst, milky quartz, citrine, glass, quartz sand, crystal quartz, quartz sandstone, quartzite and aventurine. (code RC-M6A) \$8.00



LIFE CYCLE - NATURAL ENVIRONMENT (6A) Module includes specimens of serpentinitic and granitic soil; teacher needs to collect and add school soil to kit. Also includes pH paper and magnet. (code LC-NE6A) \$7.00



ROCK CYCLE - MINERALS (6B) - Discover the key characteristics of minerals. Module includes specimens of tourmaline in lepidolite, fluorite, pyrite, kyanite, quartz, galena, bornite, hematite, copper and ulexite. (code RC-M6B) \$8.50



LIFE CYCLE - NATURAL ENVIRONMENT (6B) Set of plant communities from granitic and serpentinite (labeled) environments. (code LC-NE6B) \$5.50



OTHER PRODUCTS USED IN DIFFERENT GRADE LEVELS

Other products used in the curriculum are listed below by 'Cycle.' You can view and order products online by going to <http://msnucleus.org> under Catalog. Use the search engine in the Catalog and type in the code to find the product.

APPLIED SCIENCE

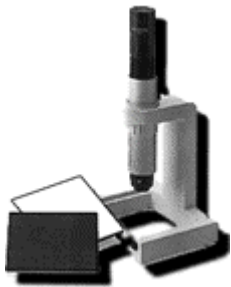


CIRCUIT KIT

(includes 2 alligator clips, lamp holder, mini lamp) in plastic bag for easy classroom use.(code MSN-08)\$2.75

ELECTRICITY KIT

(includes 4 alligator clips, lamp holder, mini lamp) battery holder, and switch in plastic bag for easy classroom use (code msn-EK). \$8.25



Swift-GH Monoscope is an elementary-middle school level monocular microscope which is designed to be lightweight, versatile and uncomplicated to use, but is built to the same optical and quality standards as are Swift's more sophisticated microscopes. 2.5X objective and a 10X eyepiece for a minimum magnification of 25X Standardized threads so that any Swift objective can be used (for example 10X objective provides magnification of 100X!) Black and white reversed stage plate Metric scale on microscope arm for ease of focus Focus lock to freeze focus position for younger students

Optional clear stage plate with finger clips for viewing transparent specimens or slides (code swift-gh)\$89.00

UNIVERSE CYCLE



LANDSCAPE MODEL

3-D models (4 3/4" x 4 3/4") of four includes a raised relief model of the following landforms: volcanoes, glaciers, faulting, and folding. (code G-LM) \$5.50

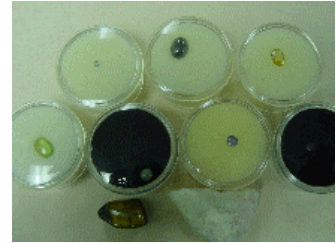
Other products:

Celestial Globe (AM-31033)	\$ 3.75
Celestial Star Globe (H300)	\$139.00
Comet Ball (AC-9753)	\$ 1.95
Constellation Placemat (R-06)	\$ 2.50
Moon Photo (MSN-04)	\$ 2.00
Solar System Illuminated Orbiter	\$165.00
Solar System Placemat (R-03)	\$ 2.50

PLATE TECTONICS, ROCK CYCLE, and WATER CYCLE

GEM KIT

contains gem cut specimens of peridot, amethyst, opal, sapphire, garnet, citrine, hematite, and uncut tiger eye and opal stone.(used in Rock Cycle – Minerals K Post, 3A Pre, 4A post, 4B Post, 6A Pre) \$15.00



ROCK AND MINERAL KIT



This collection of 20 specimens comes in a durable divided plastic case. Specimens range between 1"-2" in at least one direction. Rocks include obsidian, granite, pumice, basalt, slate, schist, serpentinite, marble, diatomite, conglomerate, fossil mudstone, chert, and sandstone. Minerals are quartz, calcite, copper, and gypsum. Plus a container of sand to help demonstrate the rock cycle. Great for classroom display and manipulatives. Guidebook is available online at <http://msnucleus.org> under Updates or for \$3.00 when ordering for a printed copy.\$15.95

SAND KIT

Display kit includes 16 sands from California and 1 from New York. The principles emphasized are: mother rocks have baby rocks by erosion, sand can be characterized by size, roundness, and sorting, sands from different areas far away can look very similar. Includes booklet (code MSN-139-8)\$25.00



Other products:

Carnegie Models

Apatosaurus (S-4003)	\$24.95
Brachiosaurus (S-4002)	\$23.95
Maisaura (S-4027)	\$12.50
Parasarolophus (S-2005)	\$ 5.80
Stegosaurus (S-4000)	\$ 6.50
Triceratops (S-4006)	\$ 6.50
Tyrannosaurus (S-4035)	\$ 6.70
Velociraptor (S-2500)	\$ 8.50
Dinosaur Globe (MSN-022)	\$3.75
Hydrographic Globe (H-600)	\$119.25 (ck price)
Liquid Bluing (LF-01)	\$3.25
Periodic Table Placemat (R-04)	\$2.50
Physiographic Relief Globe (H-610)	\$48.50

LIFE CYCLE

MARINE INVERTEBRATES KIT

A collection of various marine invertebrates from around the world. From families such as Cnidaria, Porifera, Arthropoda, Mollusca and Echinoderm. Having a total of 16 different specimens and a bag of assorted shells for various activities. A guidebook is available both online and on paper. You can purchase a color hard copy for \$3.00 each. (code msnmarine)\$14.95



MARINE INVERTEBRATES KIT GUIDEBOOK

A printed and bound partial color guidebook for the Marine Invertebrates Kit. You receive one free with 5 or more marine invertebrates kits. (code mivgde)\$3.00

OWL PELLET KIT

This kit is a great way to investigate the eating habits of the Great Horned Owl. Includes 4 Great Horned Owl pellets at least 2+\" long, fumigated and individually sealed in reclosable bags, 4 chrome forceps and a bone chart all in a sturdy labeled box. Great for both school labs and homeschool use. Additional Owl pellets may be purchased separately.

In cases where 2+\" pellets are no longer available, 2 pellets of 1\" size will be substituted (code msn-op).\$9.95



Other products:

Brain – Budget with Arteries (ACC-C20C)	\$54.95
Ear – Model Budget (ACC-CH8)	\$49.95
Eye – Budget Model (ACC-CH2)	\$39.95
Forceps (forceps)	\$1.40
Heart Budget (ACC-CH7)	\$19.95
Human Body Placemats (R-05)	\$2.50
Organ – Body Model (ACC-CMT3)	\$66.95
Prepared slides (LER-2041)	\$16.50
Skeleton – Box of Bones (AC-9894)	\$2.50
Skeleton Mr. Thrifty (ACC-WCPINX)	\$69.97
Skull with Brain (ACC-M012C)	\$65.00
Stethoscope (MSN-020)	\$5.50
Tadpole Metamorphosis (AC-10054)	\$3.25