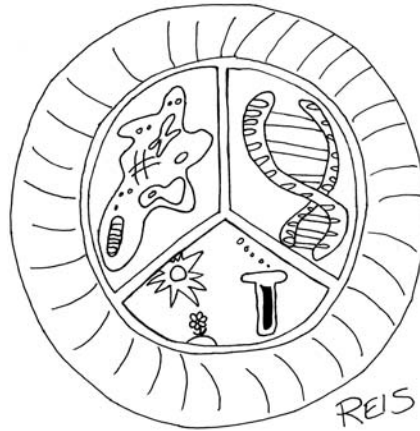


A SCHMAHL SCIENCE WORKSHOP



4TH SCIENCE 5TH ★ FOCUS ★

STAR CST

Blueprint FIFTH GRADE SCIENCE TEST

A SCHMAHL SCIENCE WORKSHOP

Belinda Lowe-Schmahl
Executive Director and Workshop Coordinator
171 Branham Lane, Suite 10, PMB 223
San Jose, Calif. 95136

Telephone (408) 281-7595
FAX (408) 578-5594
Bel@schmahlsience.org

A SCHMAHL SCIENCE WORKSHOP

4TH SCIENCE 5TH ★ FOCUS ★

Elementary Schools in California are now assessed in Science. In a Language Arts and Mathematics focused curriculum, many schools find it difficult to find the time needed to teach the science concepts and skills included on the STAR CST Science Test. A Schmahl Science Workshop offers a solution!

A Schmahl Science Workshop now offers a series of workshops that are specifically focused on the fourth and fifth grade standards that are the basis for the science test given in fifth grade.

- Six fourth grade workshops
- Six fifth grade workshops

Workshops are provided in October, November, December, January, February, and March. Test preparation review materials and formats are also provided for teacher use just prior to STAR testing.

This unique Schmahl Science program is currently limited to twelve schools for the 2006-2007 school year.

CALIFORNIA STANDARDS SCIENCE TEST

5TH GRADE SCIENCE TEST

CONTENT STANDARDS

4

<i>CALIFORNIA CONTENT STANDARDS: Grade 5</i>	# of Items	%
Physical Sciences	18	30%
Physical Sciences – Grade 4	7	
1. Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:		
a. <i>Students know</i> how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.	1	
b. <i>Students know</i> how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.	1	
c. <i>Students know</i> electric currents produce magnetic fields and know how to build a simple electromagnet.	1	
d. <i>Students know</i> the role of electromagnets in the construction of electric motors, electric generators, and simple devices, such as doorbells and earphones.	1	
e. <i>Students know</i> electrically charged objects attract or repel each other.	1	
f. <i>Students know</i> that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other.	1	
g. <i>Students know</i> electrical energy can be converted to heat, light, and motion.	1	

COORELATED SSW WORKSHOPS – Physical Sciences

- **Enlightening Electrical Circuits (74 PHY)** - You'll get a positive charge out of Enlightening Electricity... the electricity workshop! Demystify the shocking possibilities of electricity. Participants learn electrical basics while building and redesigning circuits with "D" cells, wire, paper clips, and Christmas tree mini-lights. We guarantee this workshop will be enlightening!

Science Standards: 1a, 1d, 1e
- **Magnetism (200 PHY)** - Some materials are *magnetic*; these are attracted to magnets. Students learn there are *naturally occurring* magnets and *manufactured* magnets. Magnets contain two opposite poles (N and S). Like poles *repel*; opposite poles *attract*. A magnetic field surrounds every magnet, creating a distinctive pattern around and between its poles. Some materials can temporarily take on the properties of a magnet.

Science Standards: 1b 1c 1f

CALIFORNIA STANDARDS SCIENCE TEST

5TH GRADE SCIENCE TEST

CONTENT STANDARDS

4

Life Sciences	18	30%
Life Sciences – Grade 4	9	
2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:		
a. <i>Students know</i> plants are the primary source of matter and energy entering most food chains.	1	
b. <i>Students know</i> producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.	2	
c. <i>Students know</i> decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.	1	
3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:		
a. <i>Students know</i> ecosystems can be characterized by their living and nonliving components.	1	
b. <i>Students know</i> that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.	2	
c. <i>Students know</i> many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.	1	
d. <i>Students know</i> that most microorganisms do not cause disease and that many are beneficial.	1	

COORELATED SSW WORKSHOPS – Life Sciences

- **Lesson in Decomposition - Life in the Rotting Log (233 BIO)** - When dead matter decomposes it does not disappear, but is recycled through living things and the physical environment. (The atoms are recycled.) Students learn that when dead matter decomposes it breaks down into its basic elements, some of which are nutrients. The nutrients from dead matter are put back into the surrounding physical environment (soil, water, air) by decomposers.

Science Standards: 2a, 2b, 2c, 3a, 3b, 3c,
- **Owl Pellets (156, 194 BIO)** - This hands-on experiment allows students to investigate the food web, identify animal skeletons, and practice dissecting skills. Each student dissects an owl pellet and classifies the remains using a bone-sorting chart.

Science Standards: 2a, 2b, 3a, 3b

CALIFORNIA STANDARDS SCIENCE TEST

5TH GRADE SCIENCE TEST

CONTENT STANDARDS

4

Earth Sciences	18	30%
Earth Science – Grade 4	7	
4. The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:		
a. <i>Students know</i> how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).	1	
b. <i>Students know</i> how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals by using a table of diagnostic properties.	1	
5. Waves, wind, water, and ice shape and reshape Earth's land surface. As a basis for understanding this concept:		
a. <i>Students know</i> some changes in the earth are due to slow processes, such as erosion, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.	2	
b. <i>Students know</i> natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces.	1	
c. <i>Students know</i> moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places (weathering, transport, and deposition).	2	

COORELATED SSW WORKSHOPS – Earth Sciences

- **Rock Cycle (185 GEO)** - The Earth is active. As you are reading this information, volcanoes are erupting; earthquakes are shaking; mountains are being pushed up and are being ground down; rivers are carrying sand and mud and laying them down; and all the time huge slabs of the Earth's surface are moving - about as fast as your fingernails grow. All this Earth action is linked by the rock cycle. Find out for yourself how different parts of the rock cycle work by coming to this workshop.

Science Standards: 4a, 5a, 5b, 5c,
- **Plate Tectonics and Volcanoes (66 EAR)** - Exploding Hair Gel, Alka Seltzer and Baking Soda Volcanoes, Fig Newton Convergent Zones and Milky Way Divergent Zones! Using these exciting and fun hands-on activities, students will learn about the types of volcanoes and how they relate to plate boundaries, what makes some volcanoes more dangerous than others, Volcanic rocks and landforms, and how volcanic eruptions affect Earth's climate and living things

Science Standards: 5a

CALIFORNIA STANDARDS SCIENCE TEST

5TH GRADE SCIENCE TEST

CONTENT STANDARDS

5

Physical Sciences	18	30%
Physical Sciences – Grade 5 Test	11	
1. Elements and their combinations account for all the varied types of matter in the world. As a basis for understanding this concept:		
a. <i>Students know</i> that during chemical reactions the atoms in the reactants rearrange to form products with different properties.	1	
b. <i>Students know</i> all matter is made of atoms, which may combine to form molecules.	1	
c. <i>Students know</i> metals have properties in common, such as high electrical and thermal conductivity. Some metals, such as aluminum (Al), iron (Fe), nickel (Ni), copper (Cu), silver (Ag), and gold (Au), are pure elements; others, such as steel and brass, are composed of a combination of elemental metals.	1 or 2**	
d. <i>Students know</i> that each element is made of one kind of atom and that the elements are organized in the periodic table by their chemical properties.	1	
e. <i>Students know</i> scientists have developed instruments that can create discrete images of atoms and molecules that show that the atoms and molecules often occur in well-ordered arrays.	1	
f. <i>Students know</i> differences in chemical and physical properties of substances are used to separate mixtures and identify compounds.	2	
g. <i>Students know</i> properties of solid, liquid, and gaseous substances, such as sugar (C ₆ H ₁₂ O ₆), water (H ₂ O), helium (He), oxygen (O ₂), nitrogen (N ₂), and carbon dioxide (CO ₂).	2	
h. <i>Students know</i> living organisms and most materials are composed of just a few elements.	1	
i. <i>Students know</i> the common properties of salts, such as sodium chloride (NaCl).	0 or 1**	

COORELATED SSW WORKSHOPS – Physical Sciences

- **Fun with Chemistry (199 CHE)** - Before we can discuss food chemistry, the students must understand basic chemistry concepts. The periodic table of the elements is the grand, unified theory of chemistry. With hands-on activities we introduce our students to The Periodic Table. We also present the Table as a landscape, with fields of metals, pools of mercury and bromine, clouds of gases, and the offshore island of rare earths.

Science Standards: 1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h, 1i

- **Liquid Nitrogen and States of Matter (11 CHE)** - Liquid Nitrogen is an extremely cold, liquefied gas. It can be used to demonstrate lots of interesting effects from superconductivity to the properties of gases & liquids, and a whole lot more! We use liquid nitrogen to investigate how cold temperatures affect materials. We also discuss the phases of matter and how the Kinetic Theory of Gases models these phases.

Science Standards: 1a, 1b, 1c, 1f, 1g

CALIFORNIA STANDARDS SCIENCE TEST

5TH GRADE SCIENCE TEST

CONTENT STANDARDS

Life Sciences	18	30%
Life Sciences – Grade 5	9	
2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:		
a. <i>Students know</i> many multicellular organisms have specialized structures to support the transport of materials.	1	
b. <i>Students know</i> how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO ₂) and oxygen (O ₂) are exchanged in the lungs and tissues.	2	
c. <i>Students know</i> the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.	2	
d. <i>Students know</i> the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder.	1	
e. <i>Students know</i> how sugar, water, and minerals are transported in a vascular plant.	1	
f. <i>Students know</i> plants use carbon dioxide (CO ₂) and energy from sunlight to build molecules of sugar and release oxygen.	1	
g. <i>Students know</i> plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO ₂) and water (respiration).	1	

COORELATED SSW WORKSHOPS – Life Sciences

- Human Body: Organs (37 BIO)** Students learn how a human body uses the lungs to breathe air and how to measure lung vital capacity. They learn diaphragmatic breathing and the variables that affect lung vital capacity and the role of blood circulation in bringing oxygen to cells throughout the body. Students learn how the movements of the mouth, tongue, and larynx are involved in swallowing, how swallowed material travels from the mouth to the pharynx (throat) to the esophagus, and then through the gastro esophageal sphincter into the stomach. They learn how involuntary muscular contractions, called peristalsis, propel food and fluid to the stomach and digestive tract independent of gravity.

Science Standards: 2a, 2b, 2c, 2d

- Plants Up Close:** How do leaves and stems look on the inside? In this workshop, students review the structure and role of major plant parts as they are introduced to basic microscopy techniques. By assembling and viewing microscope slides, students compare and contrast their magnified images of stems, leaves, and seeds.

Science Standards: 2e, 2f, 2g

CALIFORNIA STANDARDS SCIENCE TEST

5TH GRADE SCIENCE TEST

CONTENT STANDARDS

5

Earth Sciences	18	30%
Earth Science – Grade 5	11	
3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:		
a. <i>Students know</i> most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.	0 or 1**	
b. <i>Students know</i> when liquid water evaporates it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.	1	
c. <i>Students know</i> water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.	1	
d. <i>Students know</i> that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.	1	
e. <i>Students know</i> the origin of the water used by their local communities.	N/A*	
4. Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. As a basis for understanding this concept:		
a. <i>Students know</i> uneven heating of Earth causes air movements (convection currents).	1	
b. <i>Students know</i> the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.	1	
c. <i>Students know</i> the causes and effects of different types of severe weather.	1	
d. <i>Students know</i> how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables.	1	
e. <i>Students know</i> that the Earth's atmosphere exerts a pressure that decreases with distance above Earth's surface and that at any point it exerts this pressure equally in all directions.	1	
5. The solar system consists of planets and other bodies that orbit the Sun in predictable paths. As a basis for understanding this concept:		
a. <i>Students know</i> the Sun, an average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.	0 or 1**	
b. <i>Students know</i> the solar system includes the planet Earth, the Moon, the Sun, eight other planets and their satellites, and smaller objects, such as asteroids and comets.	1	
c. <i>Students know</i> the path of a planet around the Sun is due to the gravitational attraction between the Sun and the planet.	1	

COORELATED SSW WORKSHOPS – Earth Sciences

- **Conduction: Air Moves (103 EAR)** - Using our flow density demonstrator, solar wind bag and singing pipe, students will learn that hot air rises and cold air sinks and how this principle is put to use in a conduction oven. Students won't believe their eyes as they explore the powerful properties of air as you put marshmallows to the pressure test. Students are challenged to use Bernoulli's Principle to blow up an 8-foot long bag. With a little practice they are be able to inflate the bag using only one breath!

Science Standards: 4a, 4b, 4c, 4d, 4e

...continued on next page

COORELATED SSW WORKSHOPS – Earth Sciences

- **Air Pressure (181 CHE)** - Students learn that air takes up space and has weight. They learn about some basic principles about pressure and discover how pressure and temperature differences cause air to move. Students learn that the wind that transports pollutants in the air and dilutes the pollution on the way. Knowledge of wind speed and direction can help you calculate in which direction pollution will travel and how much they will mix with the unpolluted air.

Science Standards: 3a, 3b, 3c, 4a, 4b, 4c, 4d, 4e,