California State Science Standards

Correlations with Seeds of Science/Roots of Reading 3rd/4th grade units: *Light Energy, Weather and Water, Variation and Adaptation, and Digestion and Body Systems*

	Light Energy	Weather & Water	Variation & Adaptation	Digestion & Body Systems
THIRD GRADE				
Physical Science				
1. Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept:				
a. Students know energy comes from the Sun to Earth in the form of light.	• • •			
b. Students know sources of stored energy take many forms, such as food, fuel, and batteries.	• •			
c. Students know machines and living things convert stored energy to motion and heat.	• • •			
d. Students know energy can be carried from one place to another by waves, such as water waves and sound waves, by electric current, and by moving objects.				
e. Students know matter has three forms: solid, liquid, and gas.		• • •		
f. Students know evaporation and melting are changes that occur when the objects are heated.		• • •		
g. Students know that when two or more substances are combined, a new substance may be formed with properties that are different from those of the original materials.				
h. Students know all matter is made of small particles called atoms, too small to see with the naked eye.				
i. Students know people once thought that earth, wind, fire, and water were the basic elements that made up all matter. Science experiments show that there are more than 100 different types of atoms, which are presented on the periodic table of the elements.				
2. Light has a source and travels in a direction. As a basis for understanding this concept:				
a. Students know sunlight can be blocked to create shadows.	• • •			
b. Students know light is reflected from mirrors and other surfaces.	• • •			
c. Students know the color of light striking an object affects the way the object is seen.	• • •			
d. Students know an object is seen when light traveling from the object enters the eye.	• • •			

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• The standard is touched upon in the unit providing good reinforcement to other experiences and/or an opportunity for teachers to expand instruction to address the standard partially or completely.

	Light Energy	Weather & Water	Variation & Adaptation	Digestion & Body Systems
THIRD GRADE				
Life Sciences				
3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:				
a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.			• • •	
b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.			• •	
c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.				
d. Students know when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.			• •	
e. Students know that some kinds of organisms that once lived on Earth have completely disappeared and that some of those resembled others that are alive today.			• • •	
Earth Sciences				
4. Objects in the sky move in regular and predictable patterns. As a basis for understanding this concept:				
a. Students know the patterns of stars stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons.				
b. Students know the way in which the Moon's appearance changes during the four-week lunar cycle.				
c. Students know telescopes magnify the appearance of some distant objects in the sky, including the Moon and the planets. The number of stars that can be seen through telescopes is dramatically greater than the number that can be seen by the unaided eye.	•			
d. Students know that Earth is one of several planets that orbit the Sun and that the Moon orbits Earth.				
e. Students know the position of the Sun in the sky changes during the course of the day and from season to season.				

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	Light Energy	Weather & Water	Variation & Adaptation	Digestion & Body Systems
THIRD GRADE				
Investigation and Experimentation				
5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:				
a. Repeat observations to improve accuracy and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or uncertainty in the observation.	• • •			
b. Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.	• • •	• • •	• • •	• • •
c. Use numerical data in describing and comparing objects, events, and measurements.	• • •	• • •		
d. Predict the outcome of a simple investigation and compare the result with the prediction.	• • •	• • •	• • •	• • •
e. Collect data in an investigation and analyze those data to develop a logical conclusion.	• • •	• • •	• •	• •

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	Light Energy	Weather & Water	Variation & Adaptation	Digestion & Body Systems
FOURTH GRADE				
Physical Science				
1. Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:				
a. Students know how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.				
b. Students know how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.				
c. Students know electric currents produce magnetic fields and know how to build a simple electromagnet.				
d. Students know the role of electromagnets in the construction of electric motors, electric generators, and simple devices, such as doorbells and earphones.				
e. Students know electrically charged objects attract or repel each other.				
f. Students know that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other.				
g. Students know electrical energy can be converted to heat, light, and motion.				
Life Sciences				
2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:				
a. Students know plants are the primary source of matter and energy entering most food chains.				
b. Students know 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.				
c. Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.				

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FOURTH GRADE				
Life Sciences				
3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:				
a. Students know ecosystems can be characterized by their living and nonliving components.				
b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.			••	
c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.			••	
d. Students know that most microorganisms do not cause disease and that many are beneficial.				•
Earth Sciences				
4. The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:				
a. Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).				
b. Students know how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals by using a table of diagnostic properties.				
5. Waves, wind, water, and ice shape and reshape Earth's land surface. As a basis for understanding this concept:				
a. Students know 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.				
b. Students know natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces				
c . Students know 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).				

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FOURTH GRADE				
Investigation and Experimentation				
6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:				
a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.	• •	• •	• • •	• •
b. Measure and estimate the weight, length, or volume of objects.				
c. Formulate and justify predictions based on cause-and-effect relationships.	• • •	• •		
d. Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.	• • •			
e. Construct and interpret graphs from measurements.	•	• • •		
f. Follow a set of written instructions for a scientific investigation.	• •	• •	• •	• •

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