

Beach Bound

California Science Content Standards

Grade 4

Earth Sciences (Waves, Wind, Water, and Ice)

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.

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:
 - c. Formulate and justify predictions based on cause-and-effect relationships.

Grade 5

Earth Sciences (Earth's Water)

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. *Students know* most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.
 - b. *Students know* 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.
 - c. *Students know* 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.
4. Energy from the Sun heats Earth unevenly, causing air movements that result in changing weather patterns. As a basis for understanding this concept:
 - b. *Students know* the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.

Grade 6 – Focus on Earth Science

Shaping Earth's Surface

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:
 - b. *Students know* rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.
 - c. *Students know* beaches are dynamic systems in which the sand is supplied by rivers and moved along the coast by the action of waves.

Energy in the Earth System

4. Many phenomena on Earth's surface are affected by the transfer of energy through radiation and convection currents. As a basis for understanding this concept:
 - a. *Students know* the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.

Investigation and Experimentation

7. 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:
 - h. Identify changes in natural phenomena over time without manipulating the phenomena (e.g., a tree limb, a grove of trees, a stream, a hillslope).

Grade 7 – Focus on Life Sciences

This lesson currently does not cover any 7th grade science standards.

Critter Skull Investigation (CSI)

California Science Content Standards

Grade 4

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.
 - d. *Students know* that most microorganisms do not cause disease and that many are beneficial.

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.
 - f. Follow a set of written instructions for a scientific investigation.

Grade 5

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. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.
 - g. Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data.

Grade 6 – Focus on Earth Science

Ecology (Life Sciences)

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:
 - a. Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
 - b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
 - c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.

- e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

Investigation and Experimentation

- 7. 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:
 - e. Recognize whether evidence is consistent with a proposed explanation.

Grade 7 – Focus on Life Sciences

Evolution

- 3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept:
 - e. Students know that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

Estuaries Have a Big Mouth

California Science Content Standards

Grade 4

Life Sciences

- 3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:
 - 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.

Earth Sciences (Waves, Wind, Water, and Ice)

- 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.
 - 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).

Grade 5

Earth Sciences (Earth's Water)

- 3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation. As a basis for understanding this concept:
 - d. Students know that the amount of fresh water located in rivers, lakes, under-ground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.

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. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.

Grade 6 – Focus on Earth Science

Shaping Earth's Surface

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:
 - b. Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.
 - c. Students know beaches are dynamic systems in which the sand is supplied by rivers and moved along the coast by the action of waves.

Ecology (Life Sciences)

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:
 - c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.

Grade 7 – Focus on Life Science

Evolution

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept:
 - e. Students know that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

Hop into Habitats

California Science Content Standards

Grade 4

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.
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.

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:
 - e. Construct and interpret graphs from measurements.

Grade 5

Earth Sciences (Earth's Water)

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. Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.
 - d. Students know that the amount of fresh water located in rivers, lakes, under-ground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.
 - e. Students know the origin of the water used by their local communities.

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:
 - g. Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data.

Grade 6 – Focus on Earth Science

Shaping Earth's Surface

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:
 - a. Students know water running downhill is the dominant process in shaping the landscape, including California's landscape.
 - b. Students know rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.
 - c. Students know beaches are dynamic systems in which the sand is supplied by rivers and moved along the coast by the action of waves.
 - d. Students know earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitats.

Ecology (Life Sciences)

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:
 - a. Students know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
 - e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

Grade 7 – Focus on Life Science

Evolution

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept:
 - e. Students know that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

Jetty Rocks

California Science Content Standards

Grade 4

This lesson currently does not cover any 4th grade science standards.

Grade 5

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. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.

Grade 6 – Focus on Earth Science

Shaping Earth's Surface

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:
 - c. Students know beaches are dynamic systems in which the sand is supplied by rivers and moved along the coast by the action of waves.

Energy in the Earth System

4. Many phenomena on Earth's surface are affected by the transfer of energy through radiation and convection currents. As a basis for understanding this concept:
 - a. Students know the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.

Ecology (Life Sciences)

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:
 - c. Students know populations of organisms can be categorized by the functions they serve in an ecosystem.
 - e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

Grade 7 – Focus on Life Science

Evolution

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept:
 - d. Students know how to construct a simple branching diagram to classify living groups of organisms by shared derived characteristics and how to expand the diagram to include fossil organisms.
 - e. Students know that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

Earth and Life History (Earth Sciences)

4. Evidence from rocks allows us to understand the evolution of life on Earth. As a basis for understanding this concept:
 - g. Students know how to explain significant developments and extinctions of plant and animal life on the geologic time scale.

Kelp Connections

California Science Content Standards

Grade 4

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.
3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:
 - 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.

Grade 5

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. Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.

Grade 6 – Focus on Earth Science

Energy in the Earth System

4. Many phenomena on Earth's surface are affected by the transfer of energy through radiation and convection currents. As a basis for understanding this concept:
 - a. Students know the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.

Resources

6. Sources of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation. As a basis for understanding this concept:
 - a. Students know the utility of energy sources is determined by factors that are involved in converting these sources to useful forms and the consequences of the conversion process.
 - b. Students know different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and know how to classify them as renewable or nonrenewable.
 - c. Students know the natural origin of the materials used to make common objects.

Grade 7 – Focus on Life Science

This lesson currently does not cover any 7th grade science standards.

Marshes Aren't Mellow

California Science Content Standards

Grade 4

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.
 - c. Students know decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.
3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:
 - 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.
 - d. Students know that most microorganisms do not cause disease and that many are beneficial.

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:
 - d. Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.
 - f. Follow a set of written instructions for a scientific investigation.

Grade 5

Life Sciences

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:
 - e. Students know how sugar, water, and minerals are transported in a vascular plant.
 - f. Students know plants use carbon dioxide (CO₂) and energy from sunlight to build molecules of sugar and release oxygen.

Grade 6 – Focus on Earth Science

Energy in the Earth System

4. Many phenomena on Earth's surface are affected by the transfer of energy through radiation and convection currents. As a basis for understanding this concept:
 - a. Students know the sun is the major source of energy for phenomena on Earth's surface; it powers winds, ocean currents, and the water cycle.

Grade 7 – Focus on Life Science

This lesson currently does not cover any 7th grade science standards.

Sea Survival

California Science Content Standards

Grade 4

This lesson currently does not cover any 4th grade science standards.

Grade 5

Earth Sciences

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. Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.

Grade 6

This lesson currently does not cover any 6th grade science standards.

Grade 7

This lesson currently does not cover any 7th grade science standards.

Orienteering

California Science Content Standards

Grade Four

Physical Sciences

1. Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:
 - b. Students know how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.

Grade Five

Science Content Standards

This lesson currently does not cover any 5th grade science standards.

Grade Six – Focus on Earth Science

Investigation and Experimentation

7. 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:
 - f. Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map.

Grade Seven – Focus on Life Science

This lesson currently does not cover any 7th grade science standards.