

**SEA FLOOR EXPLORER OVERNIGHT PROGRAM
LINKS TO CALIFORNIA SCIENCE STANDARDS****Grade Six****Plate Tectonics and Earth's Structure**

- 1.a. Students know evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and midocean ridges; the distribution of fossils, rock types, and ancient climate zones.
- 1.b. Students know Earth is composed of several layers: a cold, brittle lithosphere; a hot, convecting mantle; and a dense, metallic core.
- 1.c. Students know lithospheric plates the size of continents and oceans move at rates of centimeters per year in response to movements in the mantle.
- 1.d. Students know that earthquakes are sudden motions along breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface.
- 1.e. Students know major geologic events, such as earthquakes, volcanic eruptions, and mountain building, result from plate motions.
- 1.g. Students know how to determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region.

Shaping Earth's Surface

- 2.d. Students know earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitats.

Heat (Thermal Energy)

- 3.a. Students know energy can be carried from one place to another by heat flow or by waves, including water, light and sound waves, or by moving objects.

Ecology (life science)

- 5.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.
- 5.b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
- 5.c. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
- 5.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.a. Students will develop a hypothesis.
- 7.b. Students will select and use appropriate tools and technology to perform tests, collect data, and display data.
- 7.c. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
- 7.g. Students will interpret events by sequence and time from natural phenomena (e.g., the relative ages of rocks and intrusions).

Grade Seven**Earth and Life History (Earth Science)**

- 4.a. Students know Earth processes today are similar to those that occurred in the past and slow geologic processes have large cumulative effects over long periods of time.
- 4.b. Students know the history of life on Earth has been disrupted by major catastrophic events, such as major volcanic eruptions or the impact of asteroids.

- 4.c. Students know that the rock cycle includes the formation of new sediment and rocks and that rocks are often formed in layers, with the oldest generally on the bottom.
- 4.e. Students know fossils provide evidence of how life and environmental conditions have changed.
- 4.f. Students know how movements of Earth's continental and oceanic plates through time, with associated changes in climate and geographic connections, have affected the past and present distribution of organisms.

Investigation and Experimentation

- 7.a. Students will select and use appropriate tools and technology to perform testes, collect data, and display data.
- 7.c. Students will communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
- 7.d. Students will construct scale models, maps, and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates).

Grade Eight**Motion**

- 1.c. Students know how to solve problems involving distance, time, and average speed.
- 1.f. Students know how to interpret graphs of position versus time and graphs of speed versus time for motion in a single direction.

Density and Buoyancy

- 8.d. Students know how to predict whether an object will float or sink.

Investigation and Experimentation

- 9.a. Students will plan and conduct a scientific investigation to test a hypothesis.
- 9.c. Students will distinguish between variable and controlled parameters in a test.
- 9.e. Communicate the steps and results from an investigation in written reports and oral presentations.