SEA FLOOR EXPLORER DAY 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 hear flow or by waves, including water, light and sound waves, or by moving objects.

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 versos 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.

Grades Nine through Twelve

Physics

5.f. Students know magnetic materials and electric currents (moving electric charges) are sources of magnetic fields and are subject to forces arising from the magnetic fields of other charges.

Earth Sciences

1.c. Students know the evidence from geological studies of Earth and other planets suggest that the early Earth was very different from earth today.
3.a. Students know features of the ocean floor (magnetic patterns, age, and sea-floor topography) provide evidence of plate tectonics.
3.b. Students know the principal structures that form at the three different kinds of plate boundaries.
3.c. Students know how to explain the properties of rocks based on the physical and chemical conditions in which they formed, including plate tectonic processes.
3.d. Students know why and how earthquakes occur and the scales used to measure their intensity and magnitude.
6.c. Students know how Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition, and other factors, such as solar radiation and plate movement.
9.b. Students know the principal natural hazards in different California regions and the geologic basis of those hazards.

Investigation and Experimentation

1.a. Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
1.d. Formulate explanations by using logic and evidence.
1.f. Distinguish between hypothesis and theory as scientific terms.
1.h. Read and interpret topographic and geologic maps.
1.l. Analyze situations and solve problems that require combining and applying concepts from more than one area of science.