Science Investigations - Earth Science

Scope and Sequence Chart

LAB TITLE	OBJECTIVES	OVERVIEW	CALIFORNIA SCIENCE CONTENT STANDARDS
LAB #1 Measure It #2	1. Distinguish between mass and weight. 2. Distinguish between density and volume. 3. Demonstrate an ability to accurately measure objects.	Students review the SI system of measurement by getting practice in measuring mass and volume. Students investigate factors that affect density by calculating density of various water samples.	7th - 7a, 7c, 7e 8th - 9b, 9c, 9f, 9th - 10a, 10b, 10c, 10d, 10j
LAB #2 What M I? #1	1. Explain the relationship between elements, compound and minerals. 2. Identify features common to all minerals. 3. Use common tests to identify minerals.	Students examine the characteristics of common minerals so they can identify them. Students use a simple key to determine the identity of various unknown mineral samples by conducting a variety of tests.	7th - 7a, 7c, 7e 8th - 3a, 3b, 3c, 9th - 9a, 10a, 10b, 10c, 10d
LAB #3 Rock Cycle	1. Describe the difference between rocks and minerals. 2. Identify the major groups of rocks. 3. Identify common rocks using an identification key. 4. Describe the rock cycle.	Students and learn to distinguish between rocks and minerals. They examine the characteristics of common rocks and use a simple key to determine the identity of unknown rocks.	7th - 4c, 7a, 7c, 7d, 7e 8th - 9th - 3c, 10a, 10b, 10c, 10d, 10g
LAB #4 Contour Connection	1. Describe several types of maps. 2. Explain latitude and longitude.. 3. Explain what a topographic map is. 4. Identify topographic map features. 5. Construct a topographic map.	Students use latitude and longitude to locate various places on a world map. Students then learn about topographic maps and how they are used and finally construct topographic map.	7th - 7a, 7c, 7d, 7e 8th - 9th - 10a, 10b, 10c, 10d, 10g, 10h
LAB #5 It's A Dirty Job	1. Explain how soil forms. 2. Describe the layers of soil. 3. Describe common types of soil. 4. Identify the factors that influence an area's soil.	Students learn about soil, its formation, components and layers. Students experiment to discover how well different soil types retain water.	7th - 7a, 7c, 7d, 7e 8th - 9b, 9c 9th - 10a, 10b, 10c, 10d, 10j

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LAB #6 River Cutters	1. Define what erosion is. 2. Identify the forces of erosion 3. Identify features formed by erosion. 4. Describe factors that affect land erosion due to streams and rivers.	Students study the forces of erosion that move weathered material from place to place. Students investigate factors that affect the rate of water erosion using models they construct.	7th - 4a, 7a, 7c, 7d, 7e 8th - 9th - 9a, 9c, 10a, 10b, 10c, 10d, 10g
LAB #7 Where Does It Go?	1. Describe Pangaea. 2. Distinguish between the theories of continental drift and plate tectonics. 3. Identify the underlying force that causes plate movement. 4. Identify the types of plate boundaries.	Students investigate the theories of continental drift and plate tectonics. Students have an opportunity to develop a model that identifies Earth's plates and explains their movements.	7th - 4a, 4f, 7a, 7c, 7d, 7e 8th - 9th - 3d, 3f, 9b, 10a, 10b, 10c, 10d, 10g,
LAB #8 Sea Floor Spread	1. Identify the forces that cause plate movement. 2. Describe the evidences for sea floor spread.	Students continue their study of plate tectonics by investigating the processes of sea floor spread. Students magnetic reversal clues to reconstruct the shape of Pangaea.	7th - 4a, 4f, 7a, 7c, 7d, 7e 8th - 9e, 9f, 9th - 9b, 9d, 3a, 3b, 3d, 3f, 10a, 10b, 10c, 10d, 10i
LAB #9 Locating Earthquakes	1. Describe the Ring of Fire. 2. Identify the types of volcanoes. 3. Explain the cause of earthquakes. 4. Describe the type of faults. 5. Explain how earthquakes are located.	Students study volcanoes and earthquakes to learn how they are identified and classified. Students learn how scientists seismograph stations to locate earthquake epicenters.	7th - 7a, 7c, 7d, 7e 8th - 9th - 3a, 3b, 3d, 9b, 9d, 9e, 9f, 10a, 10b, 10c, 10d, 10g
LAB #10 Trilobites	1. Describe how fossils form. 2. Identify the main classes of fossils. 3. Describe the geologic column. 4. Explain what an "index fossil is.	Students investigate how fossils form and classify specimens as to the type of fossil each represents. Students examine several trilobite species and compare/contrast their characteristics.	7th - 4a, 4b, 4c, 4d, 4e, 4g, 7a, 7c, 7d, 7e 8th - 9th - 10a, 10b, 10c, 10d, 10i

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LAB #11 Season It	1. Distinguish between weather and climate. 2. Explain why we experience seasons on Earth. 3. Identify the factors that affect climate.	Students review the cause of the seasons and learn the differences between weather and climate. Students analyze and graph data to investigate factors that influence the climate of an area.	7th - 7a, 7c, 7e 8th - 9d, 9e 9th - 4b, 4c, 5e, 5f, 6a, 6b, 10a, 10b, 10c, 10d, 10g
LAB #12 It Feels Like a Sauna!	1. Describe the atmosphere. 2. Explain the heating affect of the Sun's radiation. 3. Explain the "greenhouse" effect. 4. Identify how human activity is affecting climate.	Students investigate the factors that affect the Earth's climates. Students develop a model that demonstrates the "greenhouse" effect and then analyze how human activity may contribute to this condition.	7th - 7a, 7c, 7d, 7e 8th - 9b, 9c, 9d, 9e, 9g 9th - 4b, 4c, 4d, 6a, 6c, 6d, 7b, 8a, 8c, 10a, 10b, 10c, 10d, 10g, 10j
LAB #13 It's Just a Phase	1. Distinguish between rotation and revolution. 2. Explain solstice, equinox, lunar eclipse and solar eclipse. 3. Describe the phases of the Moon and how they affect Earth.	Students learn about the Earth in space and the relative positions of the Sun, Earth, and Moon. Students use models to illustrate the solstices, equinox, lunar and solar eclipses and Moon phases.	7th - 7a, 7c, 7d, 7e 8th - 2g, 4d, 4e 9th - 1f, 10a, 10b, 10c, 10d, 10g
LAB #14 Planetary Orbits and Dents	1. Identify the planets in order. 2. Distinguish between the inner and outer planets. 3. Describe the features of each planet. 4. Explain what scientists can learn from impact craters.	Students use models to learn about the planets that make up our solar system. Students investigate impact craters and analyze data they collect regarding crater diameter, depth, and spray.	7th - 7a, 7c, 7d, 7e 8th - 2g, 4d, 4e, 9b, 9c, 9d, 9e 9th - 1a, 1b, 1d, 1f, 2a, 10a, 10b, 10c, 10d, 10g, 10j
LAB #15 Star Search	1. Explain how stars form. 2. Explain how distances between stars are measured. 3. Classify stars. 4. Describe the life cycle of stars.	Students learn how scientists determine distances between objects in space using parallax. Then students classify stars to discover the life cycle of a star.	7th - 7a, 7c, 7e 8th - 4a, 4b, 4c, 4d, 9th - 1e, 2b, 2c, 2d, 2f, 2g,10a, 10b, 10c, 10d