

# Science Investigations - Life Science

## Scope and Sequence Chart

LAB TITLE	OBJECTIVES	OVERVIEW	CALIFORNIA SCIENCE CONTENT STANDARDS
<b>LAB #1 Measure It! #1</b>	<ol style="list-style-type: none"> <li>1. Describe the SI System of measurement.</li> <li>2. Identify the units of the SI System</li> <li>3. Distinguish between mass, volume, and density.</li> </ol>	Students learn to identify the units used in the Standard International System. They gain experience using laboratory instruments to measure the mass, volume, and density of various objects.	6 <sup>th</sup> - 7b, 7c, 7d 7 <sup>th</sup> - 7a, 7c, 7e 8 <sup>th</sup> - 9b, 9e, 9f
<b>LAB #2 The Microscope</b>	<ol style="list-style-type: none"> <li>1. Identify the parts of a microscope.</li> <li>2. Explain how to focus a microscope.</li> <li>3. Observe various objects under a microscope and use diagrams to show what is observed.</li> </ol>	Students learn how a microscope works and how to properly use a microscope. Students observe various a variety of specimens and produce labeled drawings of cells they observe.	6 <sup>th</sup> - 7b, 7c, 7d 7 <sup>th</sup> - 7a, 7c, 7e 8 <sup>th</sup> - 9b, 9f
<b>LAB #3 Living Factories</b>	<ol style="list-style-type: none"> <li>1. Identify the main parts of the cell.</li> <li>2. Describe the function of each part of the cell.</li> <li>3. Distinguish prokaryotic and eukaryotic cells and between plant and animal cells.</li> </ol>	Students study living and preserved cells using a microscope and learn how to prepare microscope slides for viewing. Students produce labeled drawings of cells they observe.	6 <sup>th</sup> - 5a, 7b, 7d 7 <sup>th</sup> - 1a, 1b, 1c, 1d, 2e, 5a, 7a, 7c, 7e 8 <sup>th</sup> -
<b>LAB #4 Growing Eggs</b>	<ol style="list-style-type: none"> <li>1. Describe the composition and function of the cell membrane.</li> <li>2. Distinguish between osmosis and diffusion.</li> <li>3. Distinguish between passive and active transport.</li> </ol>	Students learn about the processes of the cell and how they are important to the proper functioning of the cell. Students focus on the cell membrane as they experiment with eggs to see osmosis and diffusion at work.	6 <sup>th</sup> - 5a, 7b, 7d 7 <sup>th</sup> - 1a, 1b, 1c, 1d, 5a, 7a, 7c, 7d, 7e 8 <sup>th</sup> - 6c, 9b, 9c, 9f
<b>LAB #5 Let's Split</b>	<ol style="list-style-type: none"> <li>1. Identify the stages of mitosis.</li> <li>2. Explain why the cells that result from mitosis are exact copies of the original cell.</li> <li>3. Distinguish between mitosis and meiosis.</li> </ol>	Students study cell division in this activity and learn the differences between mitosis and meiosis. Students learn the stages of cell division by identifying the stages they observe on prepared microscope slides.	6 <sup>th</sup> - 7b, 7d, 7h 7 <sup>th</sup> - 1c, 1e, 1f, 2a, 2b, 2e, 7a, 7c, 7e 8 <sup>th</sup> - 6c, 9b, 9c, 9f

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## Scope and Sequence Chart (cont.)

LAB TITLE	OBJECTIVES	OVERVIEW	CALIFORNIA SCIENCE CONTENT STANDARDS
<b>LAB #6 Take Apart Flower</b>	<ol style="list-style-type: none"> <li>1. Distinguish between asexual and sexual reproduction.</li> <li>2. Identify the parts of a flower and the function of each part.</li> <li>3. Explain how pollination occurs.</li> <li>4. Explain how seed germination occurs.</li> </ol>	<p>Student investigate plant reproduction by using dissecting microscopes to observe dissect a variety of flowers. Students are then given the task of identifying the major flower parts on each flower they examine.</p>	<p>6<sup>th</sup> - 5a, 6b, 6d, 6e 7<sup>th</sup> - 1a, 1b, 5a, 5f, 7a, 7d, 7e 8<sup>th</sup> -</p>
<b>LAB #7 Design-A-Kid</b>	<ol style="list-style-type: none"> <li>1. Describe the structure of DNA.</li> <li>2. Distinguish between genes and chromosomes.</li> <li>3. Distinguish between a dominant and recessive trait.</li> <li>4. Describe how inheritance works.</li> </ol>	<p>Students study genetics by learning how hereditary traits are passed from one generation to another. Students flip a coin to determine the genes that an offspring inherits and then design an offspring based on the inherited traits.</p>	<p>6<sup>th</sup> - 7b, 7d, 7e 7<sup>th</sup> - 2a, 2b, 2c, 2d, 2e, 7a, 7b, 7d, 7e 8<sup>th</sup> - 6c</p>
<b>LAB #8 Toothpick Fish</b>	<ol style="list-style-type: none"> <li>1. Identify what natural selection is.</li> <li>2. Explain how changes in the environment can result in a change in the characteristics of a species.</li> <li>3. Explain why some species become extinct and other species flourish.</li> </ol>	<p>Students learn about natural selection by conducting an experiment in which pairs of genes (colored toothpicks) determine the color of fish and how the populations of fish of various colors change due to changing environments.</p>	<p>6<sup>th</sup> - 5e, 7b, 7d, 7e 7<sup>th</sup> - 2d, 3a, 3b, 3e 7a, 7c, 7d, 7e 8<sup>th</sup> - 9b, 9c, 9e</p>
<b>LAB #9 Classify It</b>	<ol style="list-style-type: none"> <li>1. Define classification.</li> <li>2. Identify the levels of biological classification.</li> <li>3. Identify the features used to classify living things</li> <li>4. Develop a system of classification.</li> </ol>	<p>Students review how scientists classify living things and become acquainted with the levels used in biological classification. Concepts are reinforced by experience in classifying a collection of newly discovered creatures.</p>	<p>6<sup>th</sup> - 5c, 7b, 7d, 7e 7<sup>th</sup> - 3d, 7a, 7c, 7d, 7e 8<sup>th</sup> -</p>
<b>LAB #10 Party Animals</b>	<ol style="list-style-type: none"> <li>1. Identify the characteristics of Protista.</li> <li>2. Distinguish between producers and consumers and eukaryotic cells.</li> <li>3. Describe the characteristics of the major groups of protists.</li> </ol>	<p>Students use a microscope to observe living and preserved specimens of various protists and learn the characteristics of the major groups of protists. Students produce labeled drawings of the protists they observe.</p>	<p>6<sup>th</sup> - 5a, 5b, 5c, 5d, 5e, 7b, 7d 7<sup>th</sup> - 1a, 1b, 2e, 3a, 7a, 7d, 7e 8<sup>th</sup> -</p>

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## Scope and Sequence Chart (cont.)

LAB TITLE	OBJECTIVES	OVERVIEW	CALIFORNIA SCIENCE CONTENT STANDARDS
<b>LAB #11</b> <b>Monocot vs Dicot</b>	<ol style="list-style-type: none"> <li>1. Distinguish between non-vascular and vascular plants.</li> <li>2. Compare non-flowering and flowering plants.</li> <li>3. Compare monocot and dicot plants.</li> </ol>	Student examine a monocot and dicot plants focusing on the leaves and flowers. Students compare and contrast the monocots and dicots based on structure of their leaves, flowers and seeds.	6 <sup>th</sup> - 7b, 7d, 7e 7 <sup>th</sup> - 1b, 5a, 5f, 7a, 7c, 7d, 7e 8 <sup>th</sup> -
<b>LAB #12</b> <b>You Have No Backbone</b>	<ol style="list-style-type: none"> <li>1. Define vertebrate and invertebrate.</li> <li>2. Distinguish between radial and bilateral symmetry.</li> <li>3. Identify the characteristics of common invertebrate groups.</li> </ol>	Students study living specimens of invertebrates in order to learn the characteristics of the groups of invertebrates. Students record their observations and produce labeled drawing of the specimens.	6 <sup>th</sup> - 5d,7b, 7d, 7e 7 <sup>th</sup> - 3a, 3d, 5a, 7a, 7c, 7d, 7e 8 <sup>th</sup> -
<b>LAB #13</b> <b>What Are the Limits?</b>	<ol style="list-style-type: none"> <li>1. Distinguish between abiotic and biotic factors.</li> <li>2. Explain what a limiting factor is.</li> <li>3. Identify limiting factors that affect plants.</li> </ol>	Students investigate abiotic and biotic factors and how these factors can limit the populations of species in an ecosystem. Students conduct an experiment to quantify the effects of limiting factors on species.	6 <sup>th</sup> - 5a, 5b, 5c, 5d, 5e, 7b, 7c, 7d, 7e 7 <sup>th</sup> - 1b, 1d, 3e, 5a, 7a, 7c, 7e 8 <sup>th</sup> - 9b, 9c, 9e, 9g
<b>LAB #14</b> <b>Are Ya Git'n Tired Yet?</b>	<ol style="list-style-type: none"> <li>1. Describe the function of the skeletal/muscular system.</li> <li>2. Distinguish between voluntary in involuntary muscle.</li> <li>3. Describe three types of muscle.</li> <li>4. Identify several muscles.</li> </ol>	Students learn about the skeletal muscular system and its function. Students perform an experiment in which they investigate and analyze muscle and bone movement and muscle fatigue.	6 <sup>th</sup> - 7b, 7c, 7d, 7e 7 <sup>th</sup> - 1d, 5a, 5c, 6h, 6i, 7a, 7c, 7d, 7e 8 <sup>th</sup> - 9b, 9c, 9e, 9f, 9g
<b>LAB #15</b> <b>Take Apart Eye</b>	<ol style="list-style-type: none"> <li>1. Identify the parts of the nervous system.</li> <li>2. Describe the parts of the eye and their functions.</li> <li>3. Describe how light energy passes through the eye.</li> </ol>	Students investigate the nervous system and the sense organs in this lab. Students perform a dissection of a cow eye to learn about eye's structure, the parts that make it up and the function of the those parts.	6 <sup>th</sup> - 7b, 7d 7 <sup>th</sup> - 6a, 6b, 6c, 6d, 6e, 6f, 7a, 7c, 7d 8 <sup>th</sup> -