

OUSD Science Curriculum Guide

Grade 8, Unit 1, Density & Buoyancy			
Standards	Key Questions	Lesson Resources	Assessment
<p>5. Density and Buoyancy (equivalent to Calif. State standards 8.8a to 8.8d.) All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept, students know:</p> <p>a. density is mass per unit volume.</p> <p>b. how to calculate the density of substances (regular and irregular solids, and liquids) from measurements of mass and volume.</p> <p>c. the buoyant force on an object in a fluid is an upward force equal to the weight of the fluid it has displaced.</p> <p>d. how to predict whether an object will float or sink.</p>	<p>What is the difference between an observation and an inference?</p> <p>How does something float?</p> <p>Could an object float in one liquid and sink in another? How?</p> <p>How can we predict if something will sink or float?</p> <p>What does a graph of the masses of different volumes of liquids tell us about these liquids?</p> <p>How do we measure the volume of a solid object?</p> <p>How can we calculate density?</p>	<p>Text References Floating & Sinking; P. 82 to 88</p> <p>Sink and Spill, liquid displacement activity; p. 84 - 85</p> <p>Measuring Matter & Density; pp. 446 to 452</p> <p>Making Sense of Density; measurement activity; p. 452.</p> <p>Lessons Created by Teachers Density and Buoyancy: An inquiry Cycle (Curriculum in Focus lesson sequence)</p> <p>Web Resources Thinking Fountain (Simple demos and explanations) http://www.smm.org/sln/tf/d/density/density.html</p> <p>Treasure Trawler Web Quest http://scorescience.humboldt.k12.ca.us/fast/teachers/Salvage/salvagegrab.html</p>	<p>Text Assessments: Staying Afloat project, p. 69 & 95. Test questions in assessment book.</p> <p>Density Data questions Floater What-ifs Density Poster Presentations</p>

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<p>1. Investigation and Experimentation 1a, 1b, 1e, 1f(equivalent to Calif. State standards 8.9a, 8.9b, 8.9e and 8.9f.)</p> <p>Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, students should develop their own questions and perform investigations. Students will:</p> <ul style="list-style-type: none"> a. plan and conduct a scientific investigation to test a hypothesis. b. evaluate the accuracy and reproducibility of data. e. construct appropriate graphs from data and develop qualitative statements about the relationships between variables. f. apply simple mathematical relationships to determine one quantity given the other two (including speed = distance/time, density = mass/volume, force = pressure x area, volume = area x height). 	<p>How can we record data accurately?</p> <p>How do we create a clear graph?</p> <p>Why does the angle of the line on the graph change with each liquid?</p> <p>How can we use a formula to find density?</p> <p>What types of questions can we answer by experimenting?</p> <p>How can we be confident of our results in an experiment?</p> <p>How can we best share our discoveries with others?</p>	<p>Lessons Created by Teachers</p> <p>Density and Buoyancy: An inquiry Cycle (Curriculum in Focus lesson sequence); <i>Cartesian Inquiry</i></p> <p>Extensions:</p> <p>Density and Gases, see the Online lesson on Air Travellers: Hot Air Balloons at http://www.oms.edu/explore/physics/air/</p>	<p>Cartesian Diver experiment proposals and reports.</p>