

# 5<sup>th</sup> Grade

## Looking at Liquids

### NYS Standard 4 (Science): Physical Setting

- ✓ **Key Idea 3: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.**
- ✓ **Key Idea 4: Energy exists in many forms, and when these forms change energy is conserved.**

Major Understandings	Learning Experience/Objectives	Supporting Terms
<p><b>3.1c</b> <i>The motion of particles helps to explain the phases (states) of matter as well as changes from one phase to another. The phase in which matter exists depends on the attractive forces among its particles.</i></p> <p><b>3.1d</b> <i>Gases have neither a determined shape nor a definite volume. Gases assume the shape and volume of a closed container.</i></p> <p><b>3.1e</b> <i>A liquid has definite volume, but takes the shape of a container.</i></p> <p><b>3.1f</b> <i>A solid has definite shape and volume. Particles resist a change in position.</i></p> <p><b>3.2a</b> <i>During a physical change a substance keeps its chemical composition and properties. Examples of physical changes include freezing, melting, condensation, boiling, evaporation, tearing, and crushing.</i></p> <p><b>3.3b</b> <i>Atoms and molecules are perpetually in motion. The greater the temperature, the greater the motion.</i></p> <p><b>4.2c</b> <i>During a phase change, heat energy is absorbed or released. Energy is absorbed when a solid changes to a liquid and when a liquid changes to a gas. Energy is released when a gas changes to a liquid and when a liquid changes to a solid.</i></p>	<p><b>Getting Started:</b> Students will discuss their background knowledge of liquids and contribute ideas to a “How to Succeed” chart.</p> <p><b>Oobleck:</b> Students will determine the properties of the Oobleck and decide whether Oobleck is a solid or a liquid and support their decision with evidence from their observation.</p> <p><b>States of Matter:</b> Students will explain the differences between the three states of matter and how matter changes from one state to the other.</p> <p><b>Comparing Drops and Heaps:</b> Students will compare the drops and heaps of various liquids and determine how and why they are similar or different.</p> <p><b>More Drops and Heaps:</b> Students will observe and describe how the forces in liquids affect the heaping and drop size of the liquids.</p> <p><b>The Paper Clip Game:</b> Students will investigate the surface tension of water and explain what causes it to occur.</p> <p><b>Breaking the Surface Tension:</b> Students will observe and describe how soap effects the surface tension of water.</p>	<p>succeed, observe, strategy, solid, liquid, gas, evaporation, condensation, molecule, profile, cohesion, adhesion, alcohol, glycerol, viscous, surface tension</p>
<p><b>3.1h</b> <i>Density can be described as the amount of matter that is in a given amount of space. If two objects have equal volume, but one has more mass, the one with more mass is denser.</i></p>	<p><b>Density of Liquids:</b> Students will find the density of water, oil, and glycerol using the equation <math>\text{Density} = \text{Mass}/\text{Volume}</math> and explain the relationship between the density of the liquids and the order in which the liquids layer.</p> <p><b>Density Beyond Liquids:</b> Students will find the density of various objects using the equation <math>\text{Density} = \text{Mass}/\text{Volume}</math>. Students will find the volume of various objects by using a ruler or by using displacement.</p>	<p>density, contaminate, decant, mass volume, balance, fulcrum, horizontal, level, plasticine, displacement, submerge</p>

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