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### **Understanding Life Systems**

Students will explore the components, structures, and functions of cells in plants and animals. They will learn about the postulates of the cell theory and understand the role of microscopes in the study of cells. Students will also examine the roles of diffusion and osmosis and their processes within a cell. Furthermore, students will identify unicellular and multicellular organisms and investigate how they satisfy their basic life needs. They will study the organization of cells in multicellular organisms.

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# Understanding Structures and Mechanisms

Students will identify different kinds of systems and recognize smaller systems within large systems. They will discover that all systems have purposes, inputs, and outputs. Moreover, they will learn the scientific definitions of the words: energy, force, work, and efficiency, and learn to calculate how much work some simple machines do and their mechanical advantages. Students will also study the causes of heat and ways to minimize heat in mechanical systems. Furthermore, they will investigate how systems evolved in our society and how systems improved the productivity in industries.

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### **Understanding Matter and Energy**

Students will examine the properties of fluids including viscosity, and the relationship between buoyancy and density. They will learn to explain, using the particle theory of matter, how different states of matter vary in density. They will also calculate the density of a fluid with its mass and volume. In addition, students will study the difference between the compressibility of liquids and gases, as well as how their compressibility works in hydraulic and pneumatic systems. They will also explore the use and control of fluids in society.

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### **Understanding Earth and Space Systems**

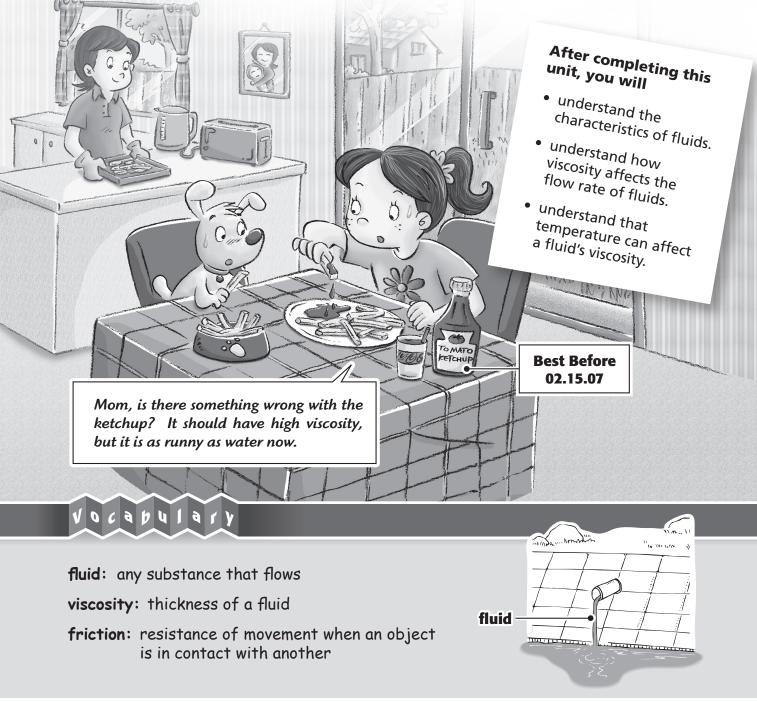
Students will examine the conditions under which each state of water exists and the relative amount of each state. They will learn about watersheds and water tables, their importance in water management and planning, and the impacts of nature and humans on them. In addition, students will study the characteristics of glaciers and polar ice caps, and the factors that affect their sizes. They will also learn how large bodies of water affect climate and weather patterns. The uses of our water supply and the treatments that it goes through will also be discussed.

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#### **Understanding Matter and Energy**

# **Fluids and Viscosity**

You should have known fluids by certain characteristics – their ability to flow and their lack of a fixed shape. In this unit, you will identify different fluids by these characteristics, and examine another property of fluids – viscosity.

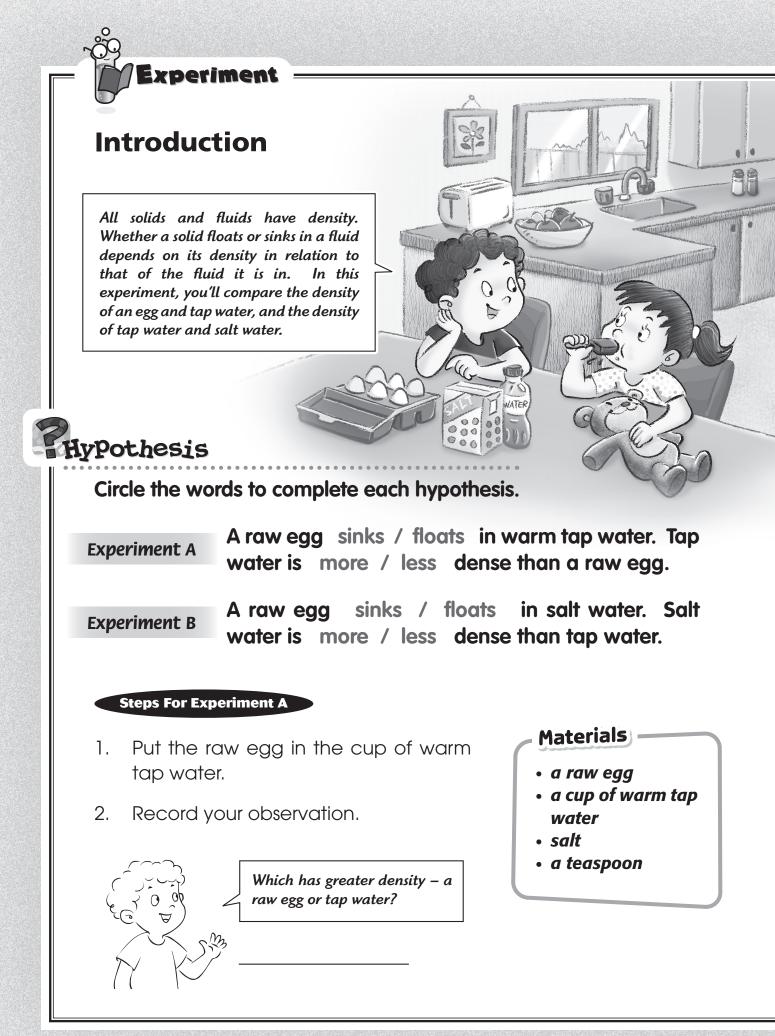


<text><text><text><text></text></text></text></text>					
		melted butter	oil	juice	🔵 liquid soap
			helium	egg	Condensed soup

## A. Fill in the blanks to complete the paragraph about fluids. Then circle the correct word.

### The Viscosity of Fluids

Fluids 1	and do not have a fixed <u>2.</u>	Each fluid
has its	own viscosity that affects its <u>3.</u> way/rate	of flow. Viscosity is not
only a	measure of a fluid's <u>4.</u> thickness/taste	nness, but also a measure
of its in	ner <u>5.</u> , that is, its <u>6.</u> resistance/reluc	otance
to flow	and how other substances 7. float/move	maple ((( vinegar
throug	ר it.	syrup
	The inner friction of maple syrup greater / smaller than that of vinega	

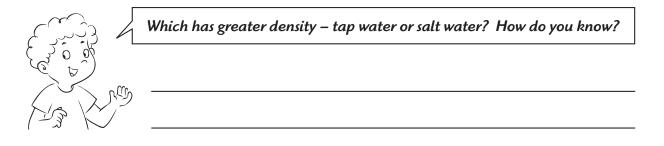


#### Steps For Experiment B

- 1. Put the raw egg in the cup of warm water.
- 2. Add ¼ teaspoon of salt into the cup and observe the egg's movement.
- 3. Repeat step 2 until the egg moves significantly.
- 4. Record how much salt you added and what you observed.

Amount of salt added: \_\_\_\_\_

Observation: \_\_\_\_\_



#### Result

Compare the density of a raw egg, tap water, and salt water. Which one has the highest density? Which one has the lowest?

C	Conclusion					
ment A	The hypothesis was: _ _					
Experiment	My experiment	supported/did not support	the hypothesis.			
nent B	The hypothesis was: _					
Experiment	My experiment	supported/did not support	the hypothesis.			

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