



4th Grade Science
A Simple Viscosity Test
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Background

Rheology is the study of the deformation and flow of matter, which includes solids, liquids, and gases. Rheology is derived from the Greek word *rheos*, which means to flow.

Fluid rheology is a branch of rheology that mainly studies the viscosity and elasticity of substances such as fluids. Elasticity describes the flexibility or stickiness of a substance, while viscosity describes the “thickness” or resistance to flow of a substance.

Different liquids have different properties. For instance, water flows easily compared to concentrated fruit juices. The viscosity of paint and shampoo are very different. A simple way to observe the viscosity of a liquid is to drop a steel ball into a column of the liquid and see how long it takes to sink to the bottom of container.

Materials

To conduct this experiment, students will need:

- A. A stopwatch
- B. A tall graduated cylinder
- C. Steel balls or marbles of the same size
- D. Concentrated fruit juices, water, honey, and shampoo

The steel balls that I will use are from a magnetic building toy called Roger’s Connection.

Procedure

Students should perform the following steps in order.

- A. Fill two graduated cylinder with 2 different liquids
- B. Drop 1 steel ball into the first liquid. Repeat two more times.
- C. Use a stopwatch to record how long it takes the steel ball to reach the bottom
- D. Record Results

Data

Time it takes for a steel ball to sink through a liquid. [seconds]

<u>Trial</u>	<u>Water</u>	<u>Honey</u>
1		
2		
3		



Discussion

Although the above experiment is not an accurate way to measure viscosity, students will be able to observe the effects of the viscosity of different liquids.

Evaluation

Evaluation will be based on the write-up of this experiment in students' notebook.