

K-2 Physical Science

Southern Nevada Regional Professional Development Program



What are the properties of solids and liquids?

INTRODUCTION

Objects like rocks, lemons, and coins are solid objects. They have a definite shape that doesn't change. Liquids, like water and milk, flow and pour. They have no definite shape. Everything that we currently know in the universe is either made up of matter (solid, liquid, or gas) or energy.

WHERE'S THE SCIENCE

Matter is everything around you that is made of atoms and molecules. Matter is anything that has a mass. Even though matter can be found all over the universe, you usually find it in just a few forms. As of 1995, scientists have identified five states of matter: solids, liquids, gases, plasmas, and a new one called Bose-Einstein condensates. The first four have been around a long time. All states of matter are **physical properties**. They describe how something looks and feels. They can change states. Water is a liquid until you put it in the freezer where it turns into a solid. By boiling water, it can spread out its molecules and turn into a gas. Solids are usually hard because their molecules are packed closer together. They hold their own shape and you can hold them. Liquids fill up and take the shape of a container. They flow, pour, and spill. They flow downhill and generally have a flat surface due to gravity pulling on it. Liquids do have a "sticky" **cohesiveness**. Water will form a dome shape if dropped one drop at a time on a penny. Different liquids stick together in different ways. Plasma has the characteristics of a liquid and solid like peanut butter and Jell-O. They can easily melt into a liquid and just as easily solidify into something with a definite shape. Since everything in our universe can be classified, or sorted, into a state of matter it is important to understand each.

MATERIALS

Solids

- 1 screw
- 1 penny
- 1 piece of aluminum foil
- 1 piece of cloth
- 1 piece of craft foam

Liquids

- 1 Small Clear Shampoo Bottle filled with Water
- 1 Small Clear Shampoo Bottle filled with Laundry detergent
- 1 Small Clear Shampoo Bottle filled with Oil
- 1 Small Clear Shampoo Bottle filled with Kool-Aid

PROCEDURES *(I suggest doing this in sections, not all on the same day)*

1. Hand each student a screw and penny. Have them examine each using all their senses except taste. How does it feel, look, smell, sound? Write some ideas on the board. Then continue with the foil, cloth, and foam. Discuss what is different between the five items briefly. Focus on what is same among all the items.
2. On a sheet of paper labeled “Solids” make a class definition of what makes something a solid. (*Shape doesn’t change*) Draw a sketch of each of the solids and list some of their properties from the board (*how they look or feel*).
3. Now explore the liquids in the same manner. List some words that describe the liquids on the board. Compare liquids to each other
4. Label the back of the sheet of paper from above “Liquids”. (*Don’t hold their own shape but take on the shape of the container.*) Make a class definition of what makes something a liquid. Next draw a sketch of each of the liquids and list some of their properties.
5. Compare solids to liquids. How are they alike and different? Look for solids and liquids in magazines. Cut out the pictures and paste onto your paper in a Venn diagram format. (*Some things like Jell-O have liquid and solid properties. If your students don’t know if it is a solid or a liquid place it in the in-between section. If they find something that represents a gas, place it outside the Venn diagram. Depending on time, you may want them to sort the pictures before they glue them on so they can spend more time comparing solids to solids and solids to liquids.*)

ADDITIONAL RESOURCES

- * <http://www.factmonster.com/ce6/sci/A0846560.html>
- * <http://classroom.jc-schools.net/sci-units/matter.htm>
- * FOSS Solids and Liquids modules:
 - * <http://www.fossweb.com/modulesK-2/SolidsandLiquids/index.html>
 - * http://www.glenview34.org/wb/States_of_matter/index.htm

Nevada State Standards

P2A1 Students know matter can exist as solids and as liquids. E/S

P2A3 Students know that matter can be categorized by observable properties such as color, shape, size, and weight. E/S

Definition: _____

ITEM	PICTURE	LOOKS LIKE	FEELS LIKE	SOUNDS LIKE

