

Science Stars: 1st Grade Lesson Plan

States of Matter: Making Ice Cream

Standards:

1.a. *Students know* solids, liquids, and gases have different properties.

b. *Students know* the properties of substances can change when the substances are mixed, cooled, or heated.

Suggested time allotment: 45 minutes

Anticipatory Set (Engage):

Can matter change from one state to another? What would happen if I put this water on the stove? What would happen to the water? What if I put it in the freezer? What state of matter would it be in? Can we change the state of matter by mixing them together? Let's experiment and find out.

Objective:

Review states of matter.

To experiment with solids and liquids to create a new (and yummy!) mixture.

Background:

Different objects (types of matter) can be mixed together. A mixture is two or more things put together – like salads, soups, cakes, etc. Some mixtures can be easily separated – like picking the tomatoes out of your salad. Some mixtures are hard to separate – like separating the chocolate from your chocolate milk. When a solid (like chocolate powder) completely mixes with a liquid (like milk), we say that the solid has completely dissolved into the liquid. Some objects can be mixed together to create something completely new. We can use a solid and a liquid to create a gas (like the air we breathe – CO₂) or we can use different liquids to create a solid. If we change the temperature of some objects, we can create something completely new like ice cream. Heating an object can evaporate it (if it's a liquid) or melt it (if it's a solid). By cooling or taking heat away from a liquid, we can freeze it or turn the liquid into a solid, like ice cream!

Materials:

Spoons

Paper towels

Half & half cream

Sugar

Vanilla Extract

Quart Ziploc bags

Coffee Cans

Ice

Salt

Measuring cups

Measuring spoons

Changing Matter Worksheet

Prep:

- *Make sure no one is allergic to the ingredients.*
- Each student (or group) will make their own bag of ice cream; therefore, ingredients need to be measured and prepared ahead of time.
- Each student)group will receive:
 - ½ cup cream
 - 1 tbsp sugar
 - 1 tsp vanilla extract
 - 1 quart Ziploc bag
 - Coffee can filled with 2 cups ice
 - ¼ cup salt
 - 1 spoon

Vocabulary:

- Solid
- Liquid
- Gas
- Matter
- Observation
- Mixture

Modeling:

Review the terms matter. Have students give examples of each type of matter using the terms solid, liquid, and gas. Explain that, in this lesson, we will take the different states of matter we learned about and combine them to make something new –ice cream!

Guided Practice:

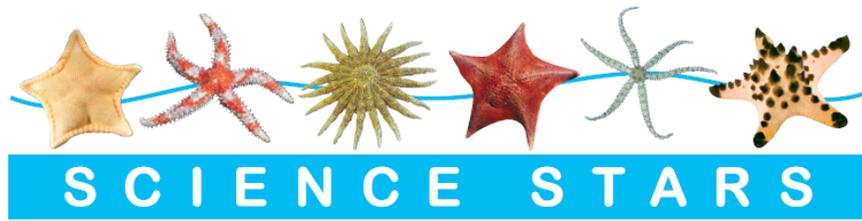
- Set out ingredients to make ice cream: cream, sugar, vanilla, ice and salt.
- Have students describe each ingredient as a solid, liquid, or gas.
- For each ingredient, have students complete a box on the *Creating Matter* worksheets.

Modeling:

Demonstrate how to combine the ingredients and set of the experiment. Once all students have materials, *help them tightly close the bag to avoid spills.*

Guided Practice:

- Mix ½ cup cream, 1 tbsp sugar and 1 tsp vanilla into a small Ziploc bag.
- Squeeze out extra air and zip the bag closed. Set this bag aside.
- Add ¼ cup salt to coffee can filled with ice.
- Place small bag inside the coffee can and seal the can tightly.
- Shake the can for 10 minutes.
- Remove the small bag and observe whether the ice cream is a solid or a liquid.
- Open the small bag and use the spoon to enjoy the ice cream!



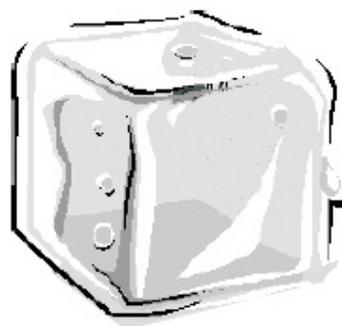
Check for understanding:

What state of matter is ice cream? (solid) What did we use to make it? (milk and vanilla – liquids and sugar and ice – a solid) What did we take away to change from liquid to solid? (took away heat with ice)

Directions: Look at each of the ice cream ingredients. Circle if it is a SOLID, LIQUID, or GAS, and then describe it.

SOLID or LIQUID or GAS

Describe: _____



ICE

SOLID or LIQUID or GAS

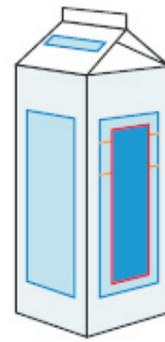
Describe: _____



SALT

SOLID or LIQUID or GAS

Describe: _____



CREAM

SOLID or LIQUID or GAS

Describe: _____



VANILLA

SOLID or LIQUID or GAS

Describe: _____



SUGAR

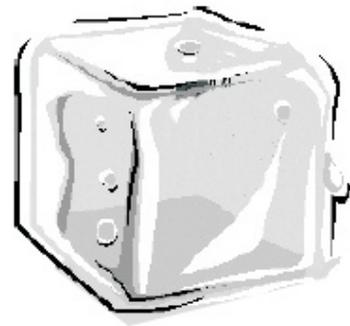
Directions: Look at each of the ice cream ingredients. Circle if it is a SOLID, LIQUID, or GAS, and then describe it.

SOLID or LIQUID or GAS

Describe: _____

Cold, slippery, wet

Clear, square



ICE

SOLID or LIQUID or GAS

Describe: _____

Small, like sand, hard

Tastes good, white



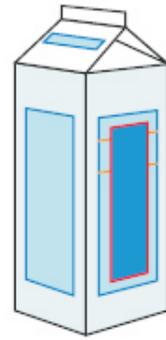
SALT

SOLID or LIQUID or GAS

Describe: _____

Wet, cold, white

Tasty



CREAM

SOLID or LIQUID or GAS

Describe: _____

Smells good, brown



VANILLA

SOLID or LIQUID or GAS

Describe: _____

Yummy! White, small

Looks like salt



SUGAR