**Lesson Topic**

 States of Matter: Making Ice Cream

**State Standards**

5-PS1-2

6-MS-LS2-3

HS-ESS2-3

**Relation to USS Kidd**

 The crew of the USS Kidd has bought themselves an ice cream machine (such machines not being supplied for smaller ships). According to an official history the crew” began to "ransom" rescued pilots for ice cream mix and other delicacies from their comrades aboard aircraft carriers so that her reputation grew as the "Pirate of the Pacific."

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**Lesson Goal**

Students know solids, liquids, and gases have different properties

**Objectives**

To experiment with solids and liquids to create a mixture.

**Materials needed for lesson**

Spoons

 Paper towels

Half & half cream

Sugar

Vanilla Extract

Quart Ziploc bags

Coffee Cans

Ice

Salt

Measuring cups

Measuring spoons

Changing Matter Worksheet

Lesson

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

Divide the class into groups. Give each group the ingredients needed to make ice cream: Have students say what state each ingredient is, solid, liquid, or gas.

Guide the students through mixing ½ cup cream, 1 tbsp sugar and 1 tsp vanilla into a small Ziploc bag. Then have them squeeze out extra air and zip the bag closed. Then tell the students to add ¼ cup salt to coffee can filled with ice. Next have the students place small bag inside the coffee can and seal the can tightly. Students should then shake the can for 10 minutes. After 10 min. 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!

**Assessments**

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)