

Science

Freezing Points

Purpose:

- Learn how to think like a scientist
- Learn about concepts and processes that scientists use everyday
- Do a simple fun experiment and change the variables

Scientific Process

- Review how to think like a scientist from page 2 (over)

Ice Cream in a Bag

Supplies:

- 1 gallon-size Ziploc bag
- 1 quart-size Ziploc bag
- 4 cups ice
- ¼ c. rock salt
- 1 c. whole milk
- 1 t. vanilla extract
- 2 T. sugar
- Measuring cups and spoons
- Spoon and cup for each participant.
- Pour the milk, vanilla extract, and sugar into the smaller zip top bag. Squeeze out the air and seal the bag carefully.
- Place the smaller zip top bag into the larger bag. Cover with the ice and salt. Seal the large bag tightly.

NOTE: The salt lowers the freezing point of the water which allows it to get colder than ice (about 28 degrees). This super-cold water and ice mixture causes the liquid milk mixture to freeze and become solid. Having a thermometer available to confirm this phenomenon is useful.

- Shake, toss, and flip the ice cream “machine” for 5 to 10 minutes. If the bag gets too cold to handle, wrap it with a towel or pass it from person to person. *Don't open the large bag to check the ice cream because it may not seal properly afterwards.*
- When ice cream is ready, cut the tip of the smaller bag and squeeze ice cream into small cups.

This food activity becomes a science activity when milk is the variable. Other options are:

Half and half
Chocolate milk
Whole milk
Skim milk

Observe differences in the final product.

Extra Credit: Ask participants why salt is poured on highways and driveways during icy conditions in the winter.

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Adapted from 4-H SERIES, University of California



Activity for grades ages K - 7. Allow 45 - 60 minutes. Standard - Scientific Process
Colorado State University Cooperative Extension 4-H Youth Development

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Preparing Youth to Think Like a Scientist

For K-3 use #1 - #4

1. Observing: Using all senses.
2. Communicating: Learning a greater range of information
3. Comparing: Examining objects and events in terms of similarities and differences.
4. Organizing: Compiling, classifying and ordering observed and compared data.

For grades 3 – 6 add #5

5. Relating: Weaving concrete and abstract ideas together to test or explain.

For grades 6- 7 add #6.

6. Inferring: Realizing ideas that are not directly observable.

Use all for grades 8 – 12.

7. Applying: Inventing, creating, problem solving and determining probabilities as ways of using information that leads to gaining more information.

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