



SCIENCE FESTIVAL FAMILY EXPERIMENT GUIDE: ICE CREAM CHEMISTRY

Did you know the ancient Romans and Greeks made ice cream without freezers?

Instructions:

Student: Add ½ cup of milk, 1 Tablespoon sugar, and ¼ teaspoon vanilla to a small zip-top bag (Adults, help students measure ingredients if needed).

Adult: Squeeze out air and seal the bag tightly. Place inside a second small zip-top bag and seal it.

Student: Place the bagged ingredients inside a gallon-size freezer bag. Fill the freezer bag halfway with ice, pour in 6

tablespoons of salt.

Adult: Squeeze out air and seal.

Both: Take turns gently shaking the bag, making sure the ice is evenly spread out. Continue to shake the bag in your hands for 5-10 minutes. You might want to use a towel or gloves since the bag will be cold and slippery.

Both: When it has frozen, eat and enjoy!

Questions for after:

K-2nd:

What did you learn?

Can you describe what happened to the liquid ingredients when you shook them?

-Do you know what it is called when a liquid turns into a solid?

3rd- 5th

What parts of the activity was a solid? a liquid? a gas?

What do we call the phase change from a liquid to a solid?

-Why did we need to add the salt to the ice?

How It Works:

Salt makes ice melt by lowering the freezing point of the ice. By lowering the temperature at which ice is frozen, the milk mixture can freeze faster. As the liquid gets colder, it expands, and the molecules slow down. The state of matter changes from liquid (milk mixture) to solid (ice cream).

Vocabulary:

Freezing point: The temperature at which a liquid turns into a solid.

Phase change: When enough energy is added or taken away from an object that it moves from a solid, liquid, gas phase to another phase.

Real-World Application:

This is the same reason people sprinkle salt on icy roads and driveways in cold climates—it melts the ice and makes the surfaces less dangerous for people and cars.

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