

This is a Feel the Impact Student Activity called “Ice-cream Comet”.

Wash your hands before starting to mix your comets.

Follow this procedure to make “Ice-Cream Comets”.

Step 1:

One student should hold a sandwich-size bag while the other places the following ingredients in the bag:

One-third cup (40 milliliters) evaporated milk (or cream)

Two-thirds cup (80 milliliters) whole milk

5 level teaspoons of sugar

Less than one-fourth teaspoon (1 milliliter) of vanilla

Step 2:

First, think of ingredients you might add to the ice cream to represent dust like (Black/brown cookies in fine and large chunks), rocks (peanuts), or carbon dioxide (coconut flakes).

You might also want to add some other ingredients to represent different things we might find in a comet. Possibilities are: gummy bears (early organics for life?), peppermint, toffee or

other ingredients you might choose from the items provided by your teacher.

Be sure to keep a list of what you put into your comet.

When you have all the comet elements placed into the bag, gently squeeze all of the extra air out of the sandwich bag and close it.

Be sure it does not leak. [Turn it upside down to check]

Step 3:

Place the sandwich bag into the bottom of the gallon bag. Put in approximately 10 heaping spoonfuls of salt.

Step 4:

Fill the gallon bag (containing sandwich bag with comet ingredients) 1/2 full of ice.

Step 5:

Close the larger bag tightly to remove as much air as possible. Check for leaks.

Observe what takes place as the ice cream comet forms. Record what you discover as you watch this change take place.

Gently shake and roll the bag while keeping it in constant motion for approximately 6 to 10 minutes or until half the ice has turned to water.

Start the experiment with bare hands so you can feel the temperature change. Make sure you have rubber gloves, mitts, cloth towels or some thick fabric to hold the bag because it will get extremely cold.

Gently feel the sandwich bag through the ice-water mixture. When the milk/sugar mixture in the sandwich bag has hardened into soft ice cream, open the gallon bag and remove the sandwich bag containing the ice cream.

Step 6:

Trade your comet with another team so the ingredients are a mystery to them.

Step 7:

When your team receives a mystery comet, be sure to rinse the outside of the sandwich bag with very cold, fresh water before opening so that no salt flavor is transferred to the ice cream.

Divide the ice cream comet by spooning some into the cups provided, one for each team member. Make one extra cup and put it aside. Don't eat this one!

Pretend that your eyes, hands, nose, ears, and taste buds are spectrometers taking data from your “comet”.

Gather and record the following “data” on your data sheet:

- a. Have the team member with the visual spectrometer look at the “comet” and see what features can be observed visually. If no one on the team has eyesight, "check out" a classmate with vision to obtain your data. List what can be seen in your data sheet.**

- b. Take the extra cup you laid aside and have your team feel the contents with your fingers. Describe what you feel on your data sheet.**

- c. Smell the ice cream for additional information. Record your “odor observations” on your data sheet.**

- d. Listen for any sounds that might be coming from the comet material. Record your findings on your data sheet.**

- e. Taste the ice cream and record any final information about what you think its ingredients are on your data sheet..**

Step 8:

Compare your results with the team who made the ice cream you tasted and record the following on your data sheet:

- a. List the elements you identified correctly.**

- b. List the elements you missed and explain why you think your "spectrometers" missed them.**

Compare what you observed in Step #5 with other teams. List anything that was different from what you observed on your data sheet.

Share your findings about the comet you investigated with your class. Include your explanation of why you think "spectrometers" were or were not correct.