ACTIVITY 6: MAKING ICE CREAM IN A BAG USING SCIENCE

The purpose of this activity is for students to apply the science of freezing point depression to generate an ice water system that's cold enough* to freeze dairy and make ice cream.

Materials Needed:
- zipper-lock quart freezer bags
- zipper-lock gallon freezer bags
- 3-5 cups of ice
- 3 teaspoons vanilla extract
- 2 tablespoons of sugar
- 1/4 cup coarse kosher salt
- 1/2 cup whole milk
- 1/2 cup heavy cream
- sundae toppings
- plastic cups & spoons
- measuring cups and spoons

Last, have students determine when their ice cream is frozen** enough to their liking. For a traditional firmer "scoop" ice cream, they might want to shake it a little longer; however, for a more "soft serve" style ice cream they might prefer to stop shaking the bag earlier.

Once they are done shaking their bags, direct them to carefully remove the quart bag and wipe it off before opening it and pouring the ice cream out into containers to eat. This is to reduce the chances of getting salt water into their ice cream.

Students can split their ice cream into two servings, add toppings, and enjoy with their partner.

Once done cleaning up, ask students to draw a particle diagram and provide a written explanation to show what happened in the ice cream experiment.

*Note: the freezing point of water at sea level is 32°F and the freezing point of cream at sea level is 27°F. Typical ice would not be cold enough to freeze the dairy in this experiment and produce ice cream, which is why the salt must be added to depress the freezing point and make the system colder.

**If the ice cream is not freezing, students may have neglected to add salt to their ice or may need more salt for that amount of ice.