Beaver Area Memorial Library's

STEAM TO GO

Geared for students in grades 1-6

Visit www.beaverlibrary.com/steam for our example experiment and corresponding resources

JANUARY: Frosty Fun!

Materials:

- Plastic Cup (DO NOT USE GLASS!)
- Rock Salt
- Spoon
- Ice
- Water
- Paper Towel or Tray

Procedure:

Step 1: Fill the plastic cup with ice then fill with water to approximately 1/2" from the top

Step 2: Add a spoonful of rock salt and gently stir to mix

Step 3: Allow to sit on the paper towel or tray for 10 minutes.

Step 4: Scrape your fingernail across the outside of the cup to test for frost. If there's no frost, give your mixture another stir and allow to sit for another 5 minutes.
*The layer of frost should become thicker as time passes.

What happened:

You're viewing water at 3 stages of matter: **GAS**, **LIQUID**, and **SOLID**. When water vapors (**GAS**) in the air come into contact with something cool (such as the outside of a cup of ice water), the vapor turns back to water droplets (**LIQUID**) This is why you see condensation on the outside of a cup.

Rock salt lowers the melting point of ice. The temperature of the cup drops below freezing which causes the condensation to turn into ice (**SOLID)** and form the frost on the cup.

Take it further:

- Use a thermometer to measure the temperature of the water before and after adding the rock salt and after frost begins to form
- How does humidity (the amount of moisture in the air) affect the formation of frost? Create the frost in different environments: inside a refrigerator, outdoors, a bathroom after a bath or shower.
- How does wind affect the formation of frost? Try the experiment near a household fan or outdoors on a windy day.