All About Matter

Essential Questions: How can materials be alike and different? What changes do heating and cooling cause?

What makes something a solid, liquid or a gas? In this lesson, students will explore the properties of matter to help them understand how items are classified as solids, liquids and gases. In addition, they will design a science experiment that will change a solid to a liquid.

NGSS Standards:

- 2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

You will need to provide the following materials for this lesson:

- Ice cubes (must be uniform in shape/size)
- Small Zip-loc bag (snack or sandwich size works)
- Pencils
- Something that can keep track of time (stopwatch, iPad timer, clock with second hand)

Teacher preparation prior to the lesson:

- Gather above supplies
- Make copies of *The Great Ice Cube Race* – 1 copy/student

Lesson Overview: (materials needed)

- Essential Question Discussion
- Solids, Liquids, Gases – How do you know?
- Video
- Demo Experiment
- Student Experiment (Each student will need: *The Great Ice Cube Race*, Zip-loc bag containing ice cube, pencil)

Program Connection Information

Please use an external microphone (conference style) rather than the integrated one in the computer for the audio for your class and locate it centrally in the room. It can be difficult for the Greenbush teacher to hear the students using the computer microphone and therefore it reduces the interactive nature of the lesson. It is fine to use the computer webcam for your video source.

All classes will take place using Zoom desktop video. If your building is already set up to use a desktop video application with a computer, simply open a browser and enter https://greenbush.zoom.us/j/2326746414 in the URL space. You may need to download Zoom launcher software (free download) if you don't already have it. This needs to be done in advance of the lesson.

If using a Polycom video conferencing unit (or any legacy type video conferencing unit) to connect to a ZOOM conference, make sure the unit is in "encrypted mode" then dial the following IP on the internet: 162.255.37.11 or 162.255.36.11 and once connected, they will ask for a MEETING ID: enter 232 674 6414 (for Lisa at Science Center).

It's always a good idea to touch base with your district technology facilitator prior to your program to make sure all systems/equipment are in place and operational and that there aren't any firewalls in place that might prevent you from connecting to Zoom.

Once you connect, you will enter a Zoom waiting room. Your Greenbush teacher will admit you into the final meeting room.

If you have questions, please call Lisa Little at Greenbush, 620-724-6281, or email at lisa.little@greenbush.org (best method of contact).

The Great Ice Cube Race!

Question: Which melting method will melt the ice cube the fastest?

Materials	Tools

Hypothesis: If you _____,

then the ice cube will melt the fastest, because _____

_____

_____.

Procedure: (How will you melt the ice cube?)

_____

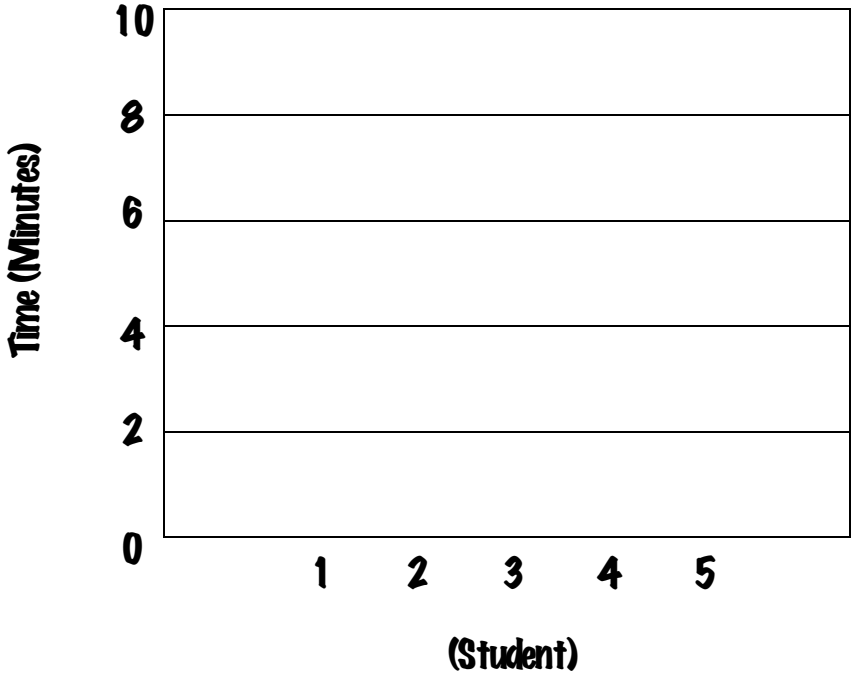
_____

_____

_____.

Write your name and time it took for your ice cube to melt in the #1 spot below. Choose 4 other students from your classroom and compare your melting times. Record the data in the chart below and create a bar graph to visualize your data.

Student Name	Time
1.	
2.	
3.	
4.	
5.	



Reflection Questions:
Discuss these questions with your shoulder partner.

1. Which melting method worked best?
2. Why do you think that method was successful?
3. What would you change about your experiment? Why?