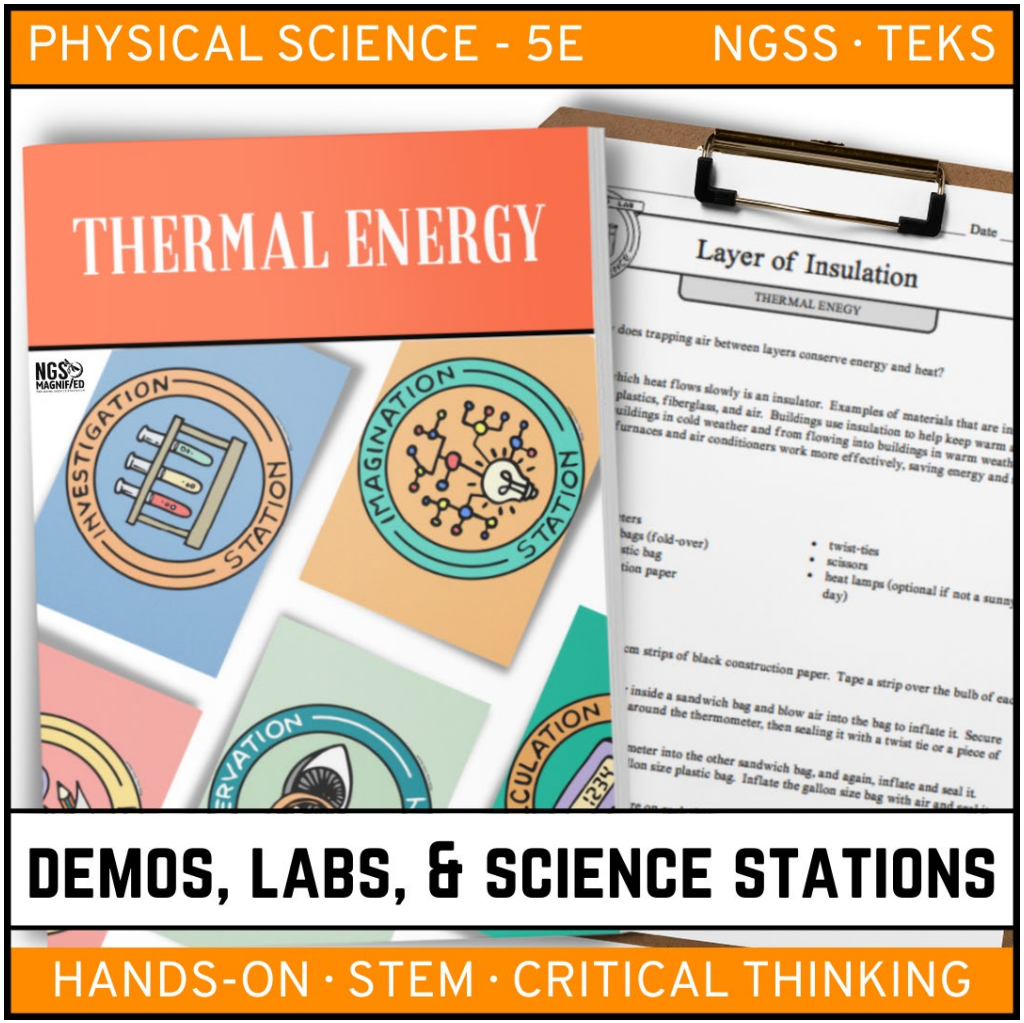
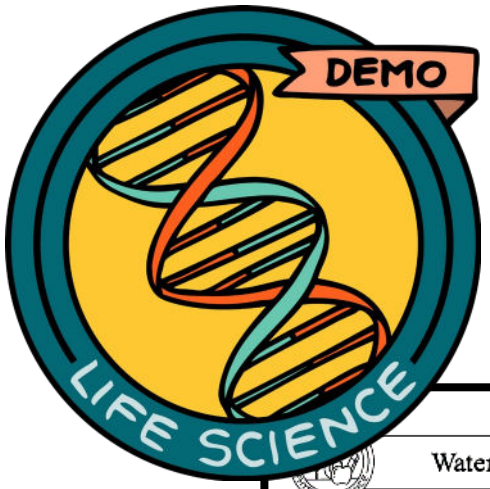
Demos, Labs, & Science Stations Feature:

- Hands-on Investigations
- STEM Challenge
- Scientific Literacy
- Inquiry Process Skills



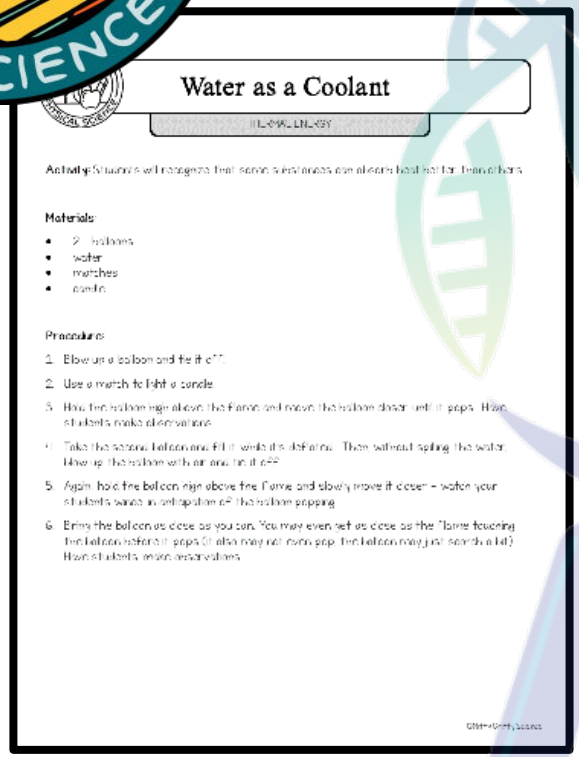
ALL Station Signage Included!!

Color & Black and White



Teacher guide and answer key offered for every lab!

Easy-to-get materials!



Water as a Coolant

THERMAL ENERGY

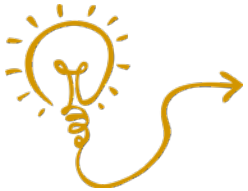
Activity: Students will recognize that some substances are always heated better than others.

Materials:

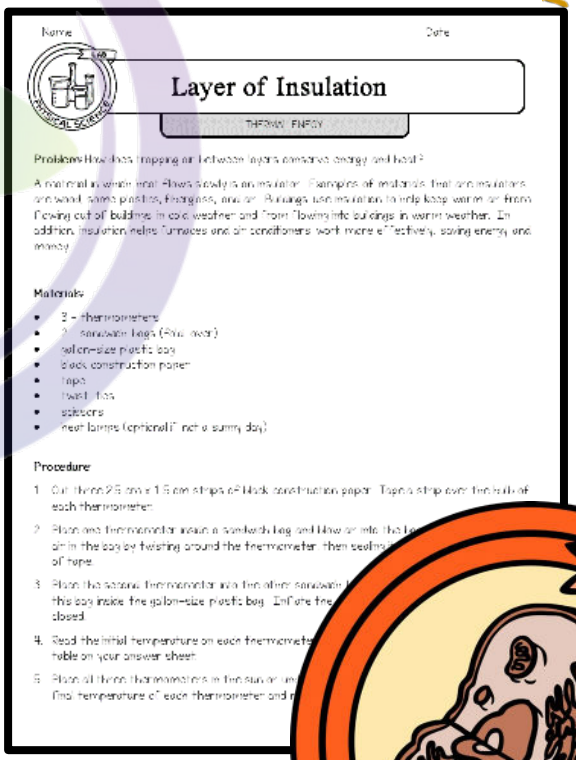
- 2 balloons
- water
- matches
- candle

Procedure:

1. Blow up a balloon and tie it off.
2. Use a match to light a candle.
3. Hold the balloon high above the flame and move the balloon closer until it pops. Have students make observations.
4. Take the second balloon and fill it with a little water. Then without spilling the water, blow up the balloon with air and tie it off.
5. Again, hold the balloon high above the flame and slowly move it closer – watch your students' waves in anticipation of the balloon popping.
6. Bring the balloon as close as you can. You may even set as close as the flame touching the balloon before it pops. (It also may not even pop, the balloon may just scorch a bit.) Have students make observations.



Discussion questions and teacher set-up included!



Name Date

Layer of Insulation

THERMAL ENERGY

Problem: How does trapping air between layers conserve energy and heat?

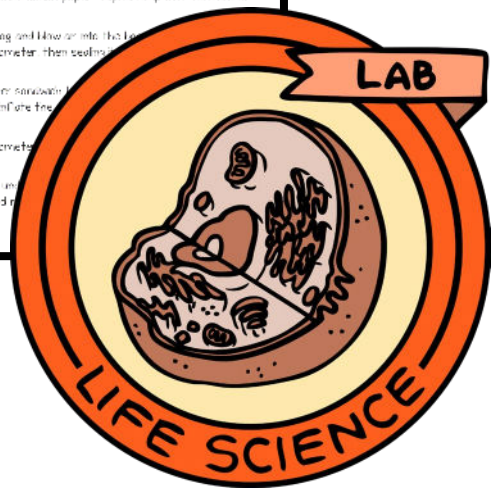
A material is warm and it slows down the movement of heat. Examples of materials that are insulators are wood, some plastics, fiberglass, and air. Buildings use insulation to help keep warm air from flowing out of buildings in cold weather and from flowing into buildings in warm weather. In addition, insulation helps furnaces and air conditioners work more effectively, saving energy and money.

Materials:

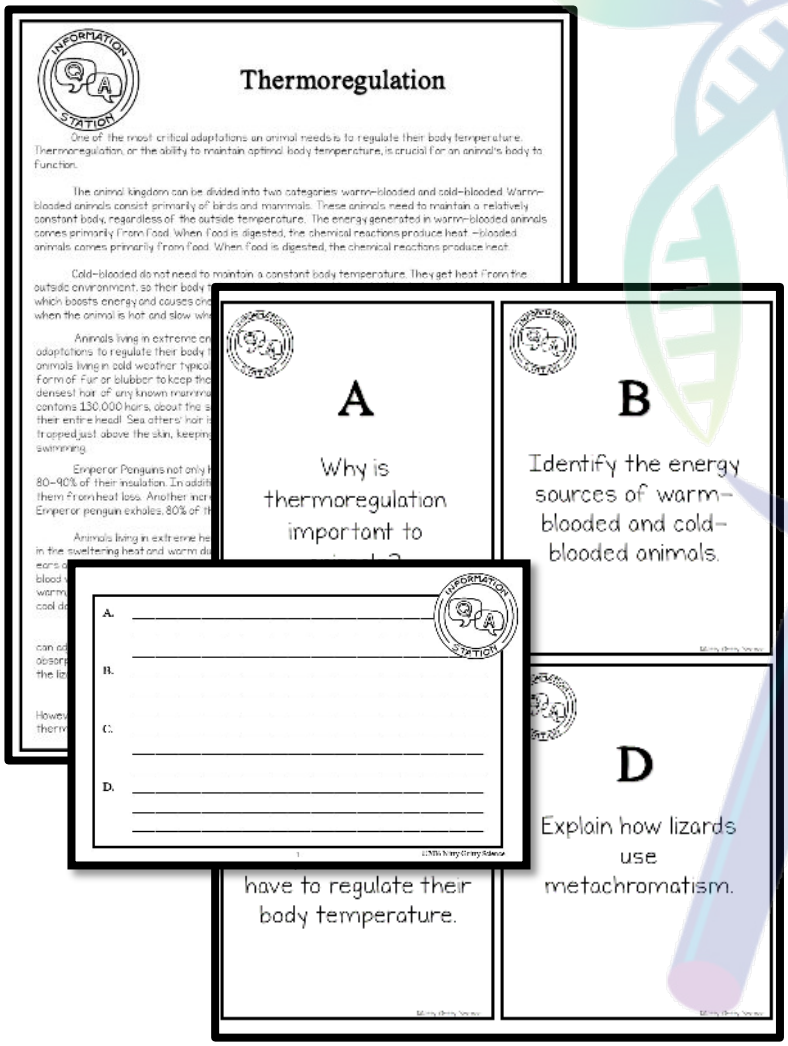
- 3 – thermometers
- 2 – sandwich bags (1 zip-lock)
- gallon-size plastic bag
- black construction paper
- tape
- twist-ties
- scissors
- heat lamps (optional if not a sunny day)

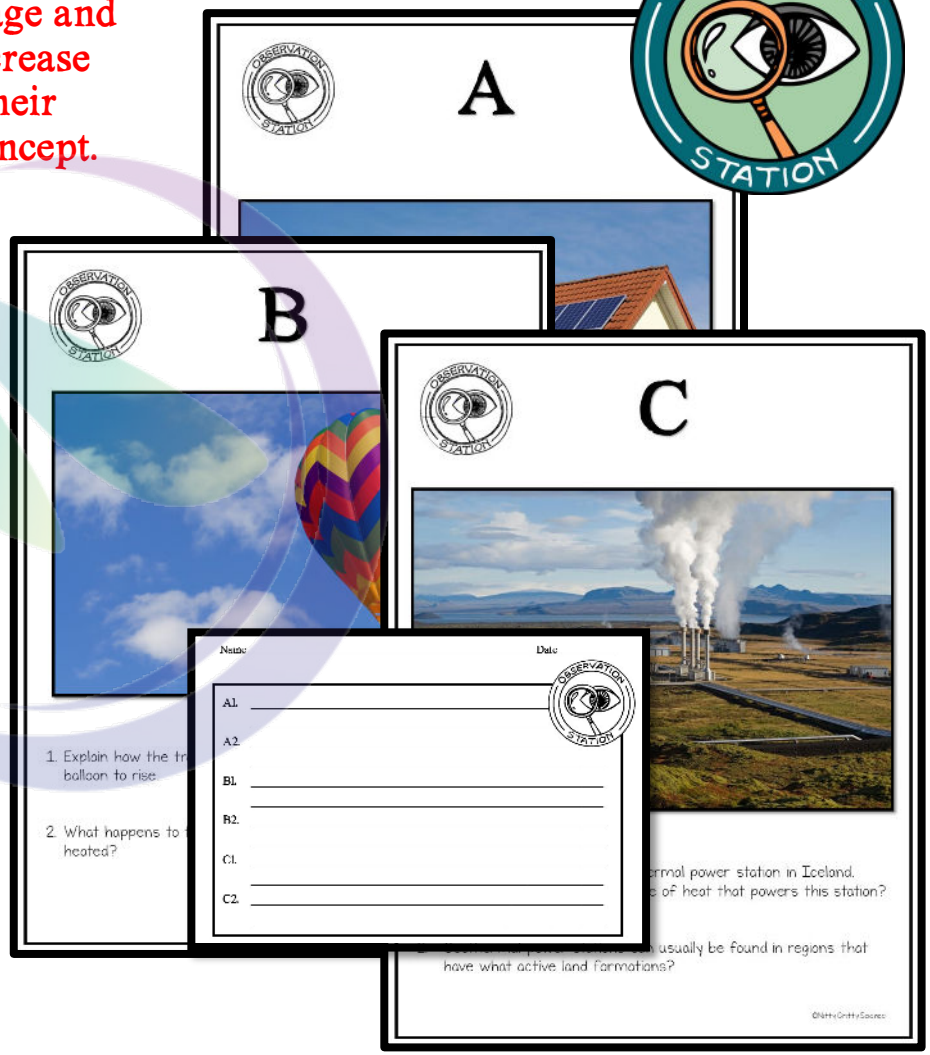
Procedure:

1. Cut three 2.5 cm x 15 cm strips of black construction paper. Tape a strip over the bulb of each thermometer.
2. Place one thermometer inside a sandwich bag and blow air into the bag to trap air in the bag by twisting around the thermometer, then sealing with a twist-tie or piece of tape.
3. Place the second thermometer into the other sandwich bag and trap air in this bag inside the gallon-size plastic bag. Inflate the gallon-size bag and seal closed.
4. Read the initial temperature on each thermometer and record in the data table on your answer sheet.
5. Place all three thermometers in the sun or under the heat lamps. Record the final temperature of each thermometer and record in the data table.



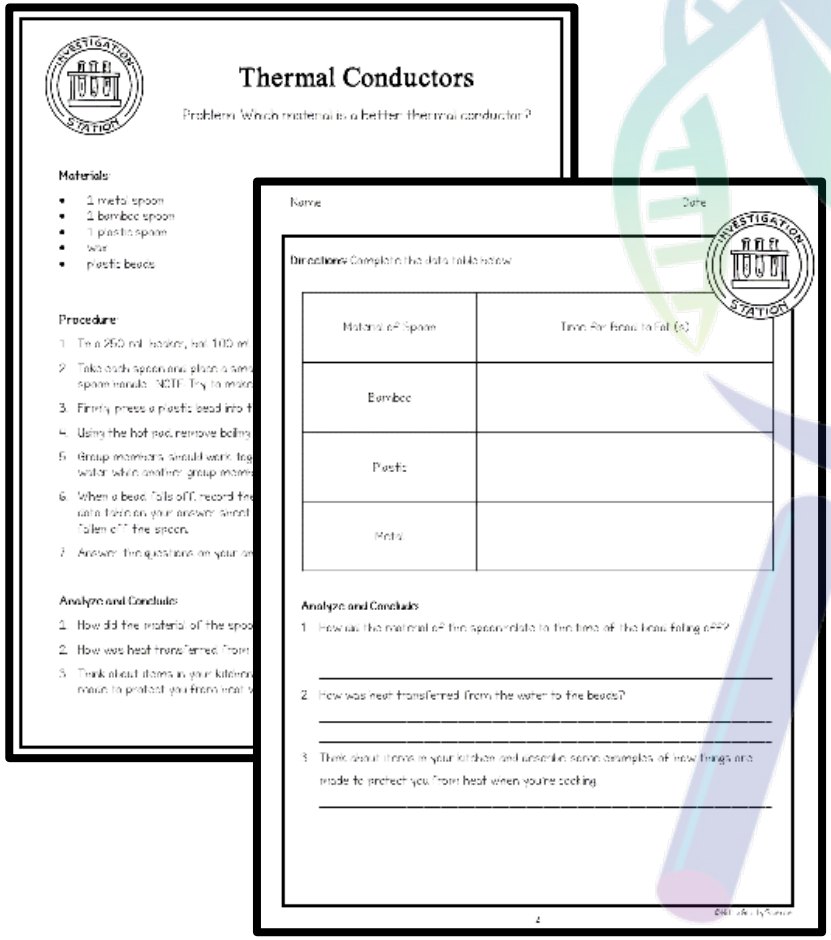
Group members will read a passage and then complete a task to help increase science literacy and deepen their understanding of the science concept.





Group members will have images, illustrations, or actual samples at this station that show applications or processes of the science topic.

Group members will work with one another to explore the concept through hands-on activities, so they may practice specific inquiry process skills as they learn.



Thermal Conductors

Problem: Which material is a better thermal conductor?

Materials:

- 2 metal spoon
- 2 bamboo spoon
- 1 plastic spoon
- wax
- plastic beads

Procedure:

1. In a 250 ml beaker, boil 100 ml
2. Take each spoon and place a small spoon handle. NOTE: Try to make
3. Firmly press a plastic bead into t
4. Using the hot pad, remove boiling
5. Group members should work tog water while another group membe
6. When a bead falls off, record the data here on your answer sheet. Then take off the spoon.
7. Answer the questions on your sh

Analyze and Conclude:

1. How did the material of the spoo
2. How was heat transferred from
3. Think about items in your kitchen and describe some examples of how things are made to protect you from heat when you're cooking.

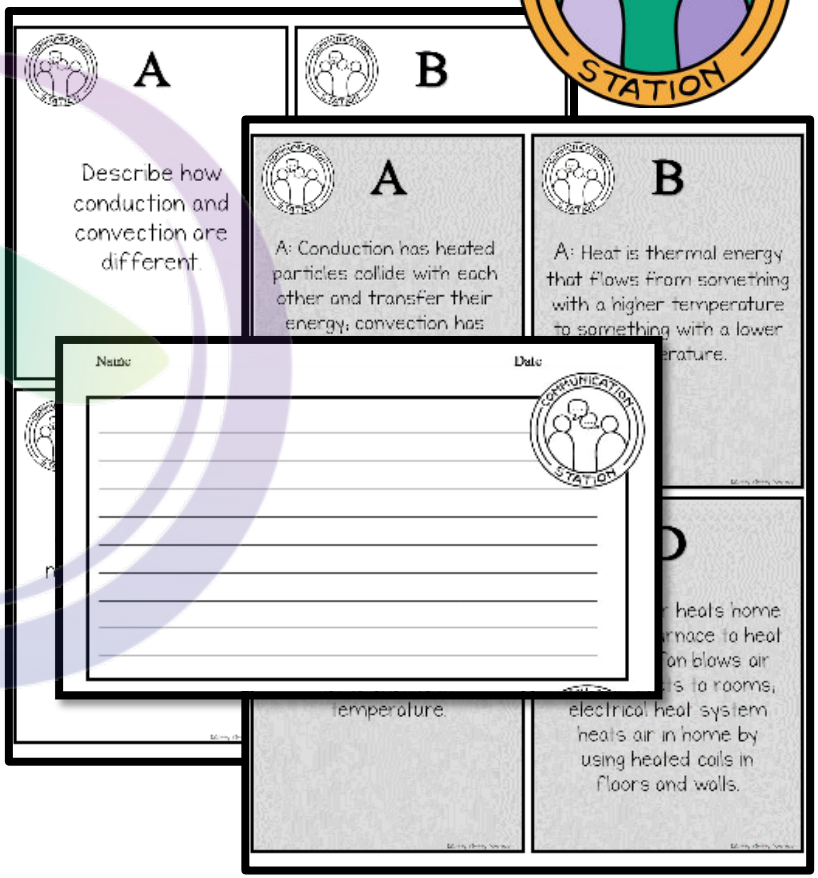
Name: Date:

Directions: Complete the data table below.

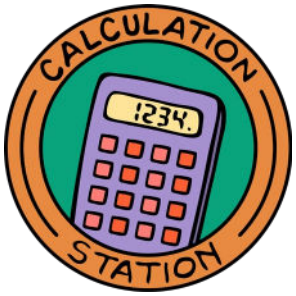
Material of Spoon	Time for Bead to Fall (s)
Bamboo	
Plastic	
Metal	

Analyze and Conclude

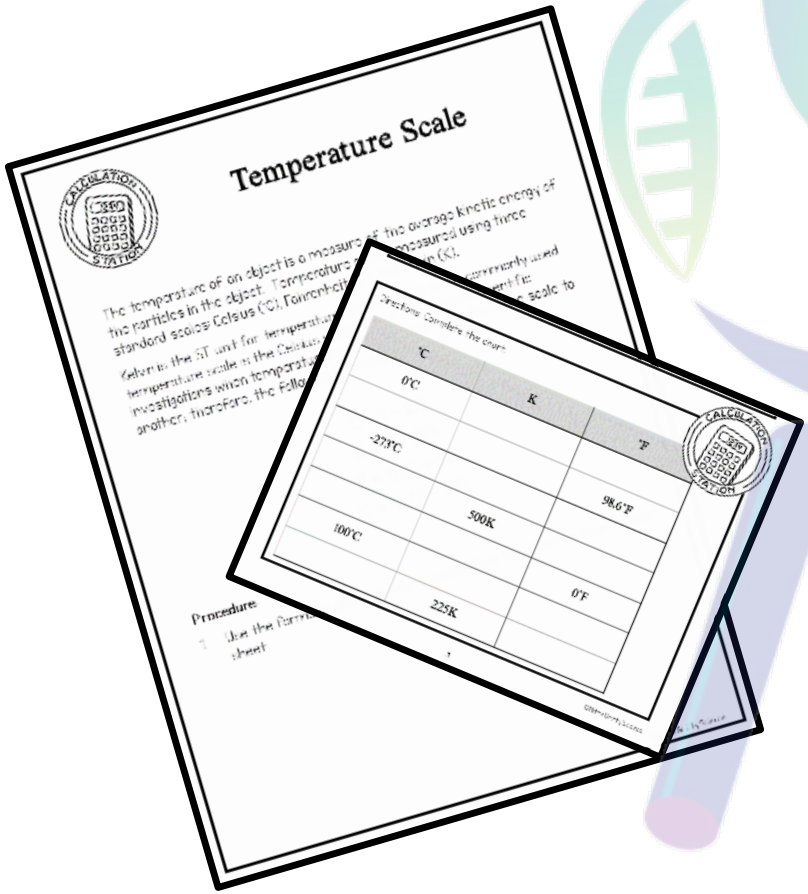
1. How did the material of the spoon relate to the time of the bead falling off?
2. How was heat transferred from the water to the beads?
3. Think about items in your kitchen and describe some examples of how things are made to protect you from heat when you're cooking.

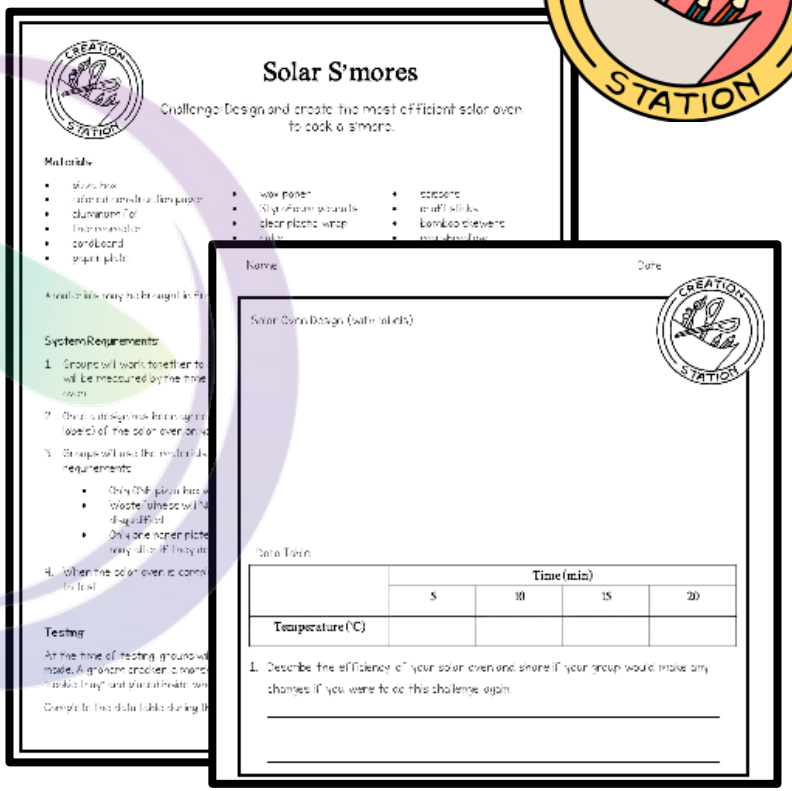


There are three different options for this station: interviews, videos, or group essay. Depending on the option you choose, group members will communicate what they know by answering questions in creative ways.



Group members use their math skills to complete the station challenge. Skills may include graphing, analyzing data, using models, measurement, and calculating formulas or word problems.

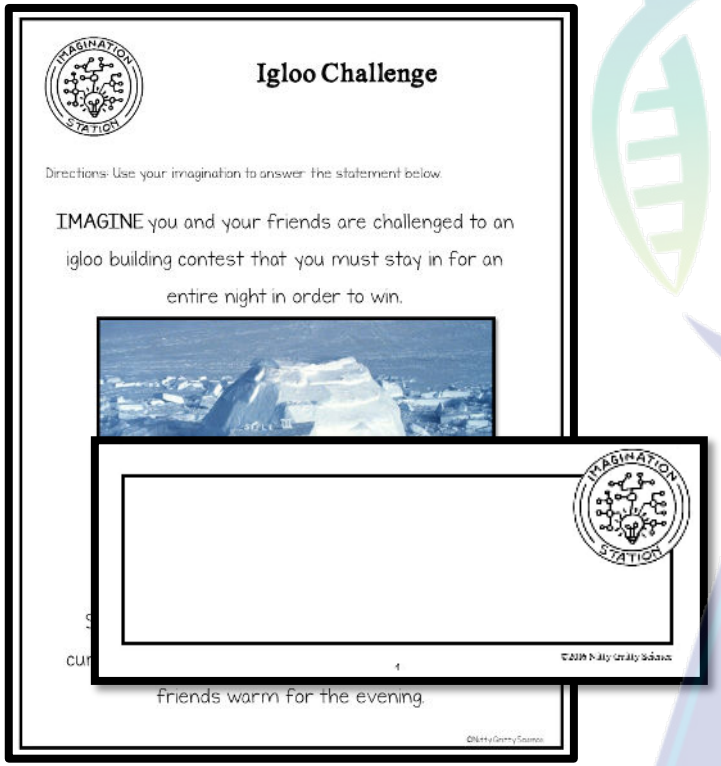


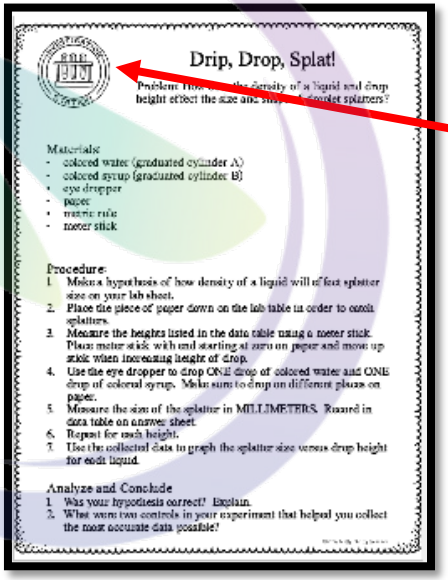


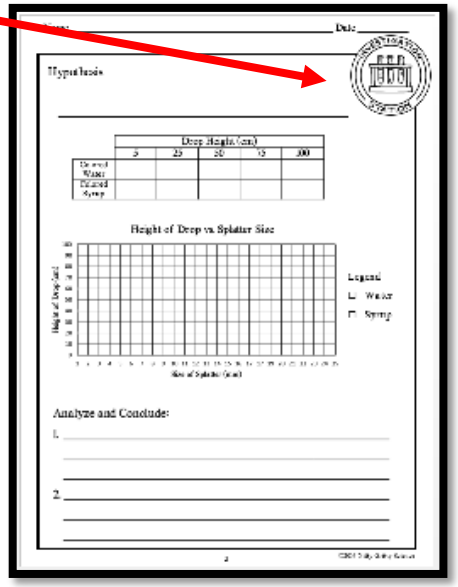
Group members will work together to solve a STEM (Science, Technology, Engineering, Math) challenge by creating models or designs that demonstrate their understanding of the science topic being taught.

This station makes science concepts relevant for students by asking them to imagine scenarios that will bring about discussion and critical thinking.

USER-FRIENDLY PAGES:
Students easily recognize which answer sheet to use at each station by matching station icons located on each page!







TEACHERS SAVE TIME:
Laminate station pages and reuse for each class and for years to follow!

Inquiry and Process Skills

Demo | Guided Inquiry Lab | Science Stations

Inquiry-Based Science Unit: Thermal Energy	Classifying	Communicating	Compare & Contrast	Creating Models	Gather/Organize Data	Generalizing	Identifying Variables	Inferring	Interpreting Data and Graphs	Making Decisions	Manipulating Materials	Measuring / Calculating	Observing	Predicting
Water as Coolant	X	X	X			X		X		X	X		X	
Thirsty Bird	X	X				X					X	X		X
Layer of Insulation		X	X	X	X		X		X		X	X		X
Information Station: Thermoregulation					X	X		X						
Observation Station: Images & Questions	X		X		X	X		X					X	
Investigation Station: Thermal Conductors	X		X		X		X		X		X	X	X	
Calculation Station: Temperature Scale					X		X			X		X		
Communication Station: Questions	X	X				X				X				
Creation Station: Solar S'mores		X		X	X				X	X	X	X	X	X
Imagination Station: Igloo Challenge		X		X						X				X

NGS Magnified promotes scientific inquiry throughout the curriculum. Students become more confident and effective learners while developing problem-solving and critical thinking skills. Process skills, such as planning, organizing, and evaluating, help students to complete projects and assignments. These skills allow students to independently gather information, analyze it, and draw their own conclusions.

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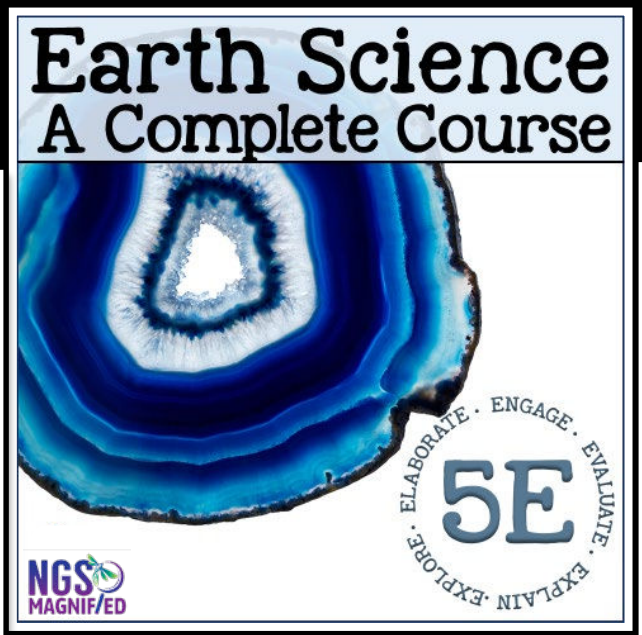
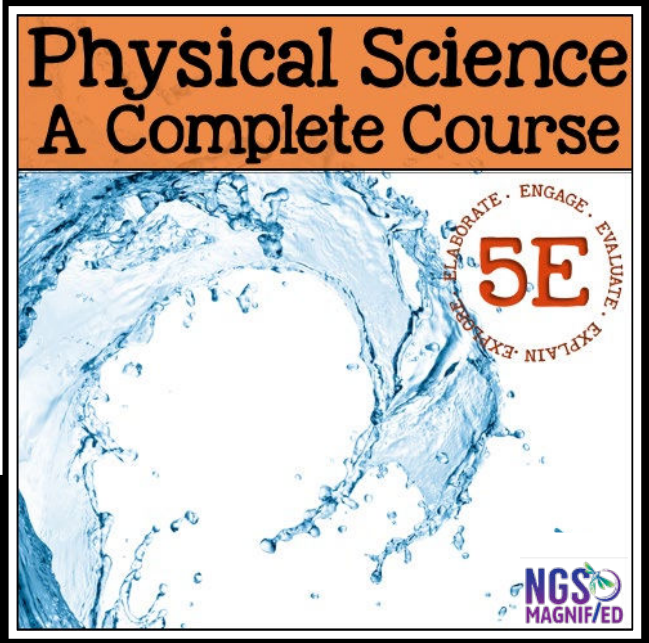
Click below to learn more.





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