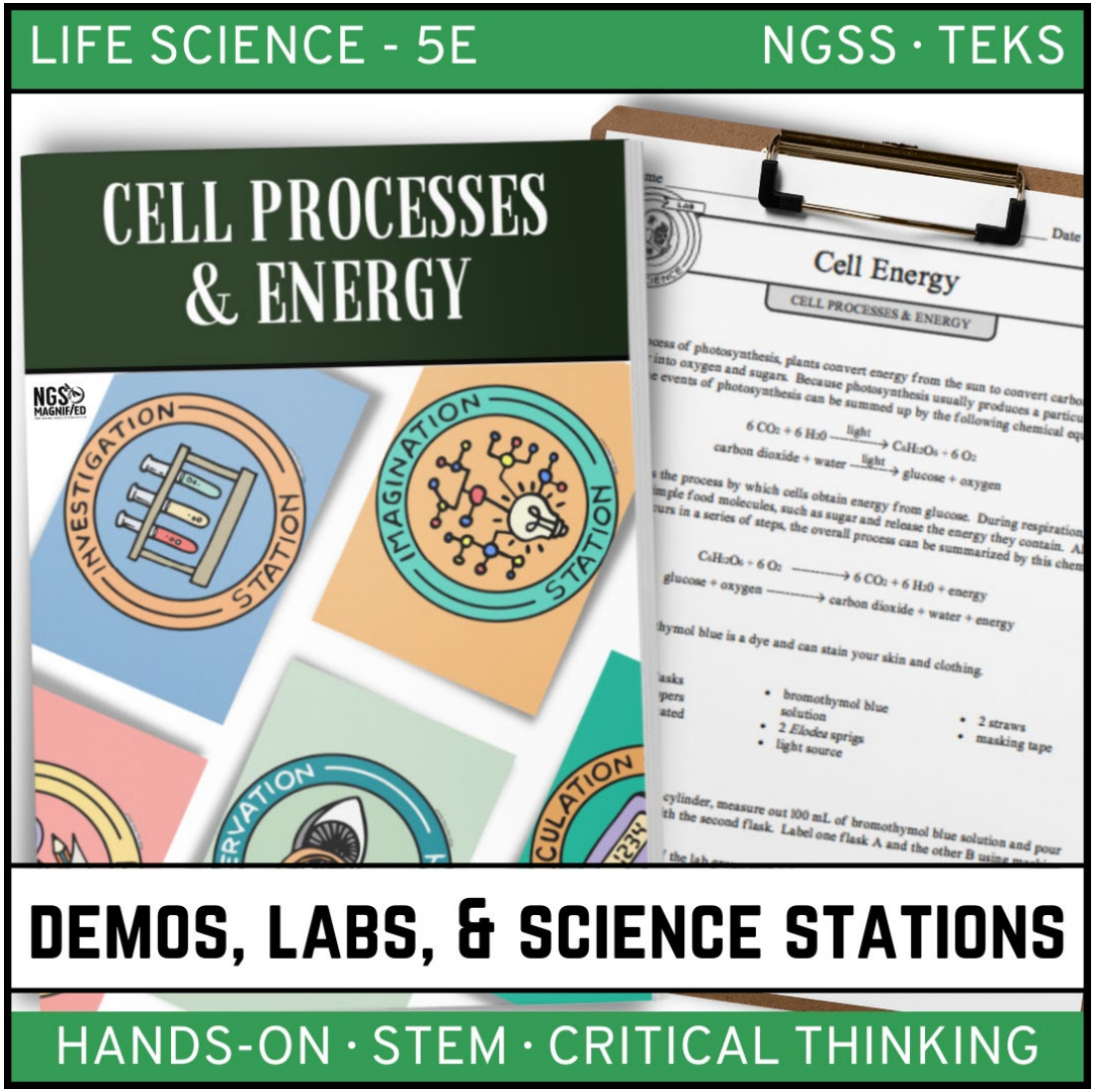
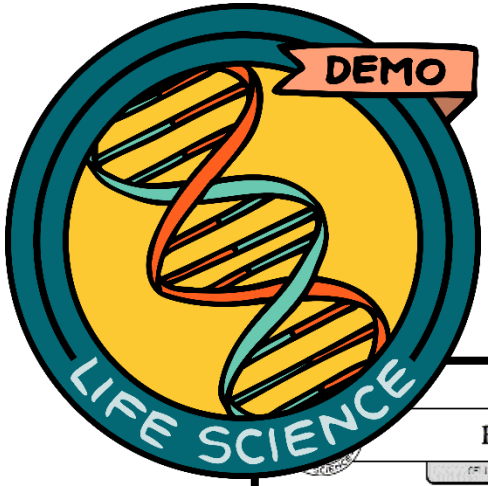
Demos, Labs, & Science Stations Feature:

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



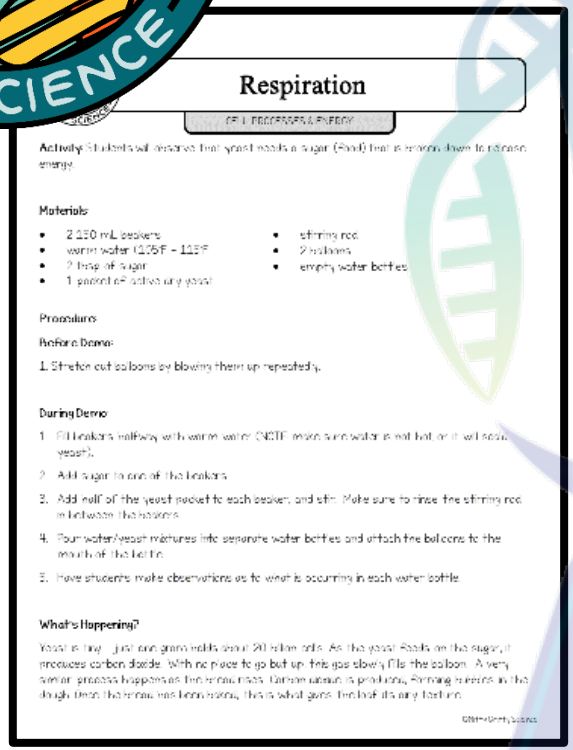
ALL Station Signage Included!!

Color & Black and White



Teacher guide and answer key offered for every lab!

Easy-to-get materials!



Respiration

CELL PROCESSES & ENERGY

Activity: Students will observe how yeast feeds a sugar (food) that is broken down to release energy.

Materials

- 2 250 mL beakers
- warm water (105°F – 115°F
- 2 tbsp. of sugar
- 1 packet of active dry yeast
- stirring rod
- 2 balloons
- empty water bottles

Procedure

Before Demo:

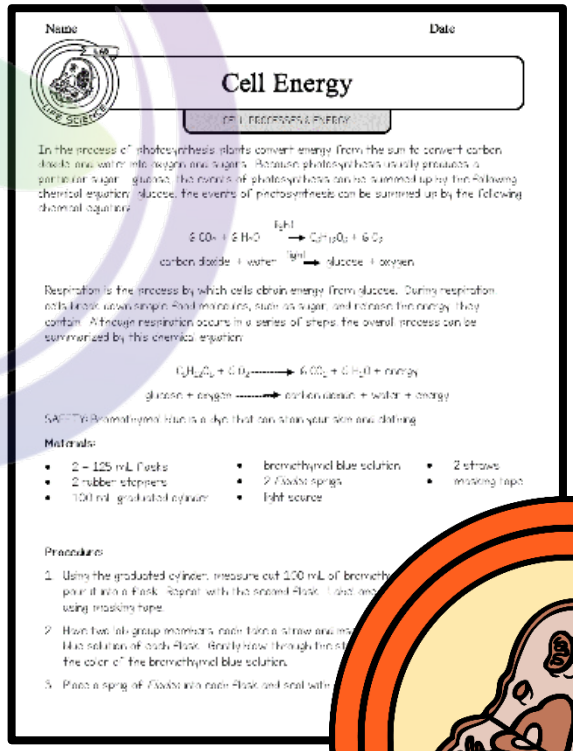
1. Stretch out balloons by blowing them up repeatedly.

During Demo:

1. Fill beakers halfway with warm water. (NOTE: make sure water is not hot or it will scald yeast).
2. Add sugar to one of the beakers.
3. Add half of the yeast packet to each beaker, and stir. Make sure to rinse the stirring rod in between the beakers.
4. Pour water/yeast mixtures into separate water bottles and attach the balloons to the mouth of the bottle.
5. Have students make observations as to what is occurring in each water bottle.

What's Happening?

Yeast is tiny – just one gram holds about 20 billion cells. As the yeast feeds on the sugar, it produces carbon dioxide. With no place to go but up, this gas slowly fills the balloon. A very similar process happens as bread rises. Carbon dioxide is produced, forming bubbles in the dough. Once the bread has been baked, this is what gives the loaf its airy texture.



Name Date

Cell Energy

CELL PROCESSES & ENERGY

In the process of photosynthesis plants convert energy from the sun to convert carbon dioxide and water into oxygen and sugars. Because photosynthesis usually produces a particular sugar, glucose, the events of photosynthesis can be summed up by the following chemical equation. Glucose, the events of photosynthesis can be summed up by the following chemical equation:

$$6\,CO_2 + 6\,H_2O \xrightarrow{\text{light}} C_6H_{12}O_6 + 6\,O_2$$

carbon dioxide + water $\xrightarrow{\text{light}}$ glucose + oxygen

Respiration is the process by which cells obtain energy from glucose. During respiration cells break down simple food molecules, such as sugar, and release the energy they contain. Although respiration occurs in a series of steps, the overall process can be summarized by this chemical equation:

$$C_6H_{12}O_6 + O_2 \longrightarrow 6\,CO_2 + 6\,H_2O + \text{energy}$$

glucose + oxygen ⟶ carbon dioxide + water + energy

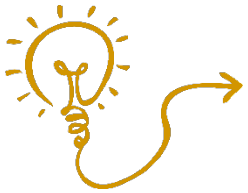
SAFETY: Bromothymol blue is a dye that can stain your skin and clothing.

Materials:

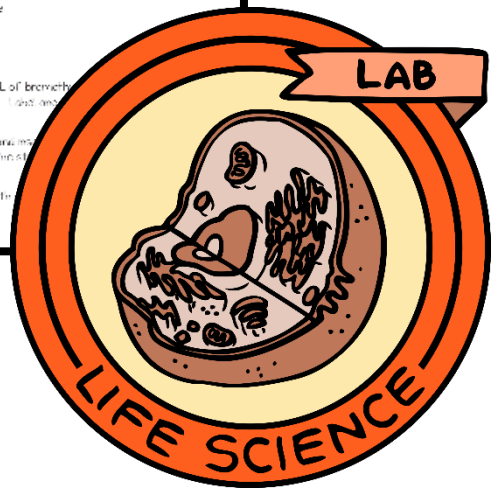
- 2 – 125 mL flasks
- 2 rubber stoppers
- 100 ml graduated cylinder
- bromothymol blue solution
- 2 Alka-Seltzer sprigs
- light source
- 2 straws
- masking tape

Procedure:

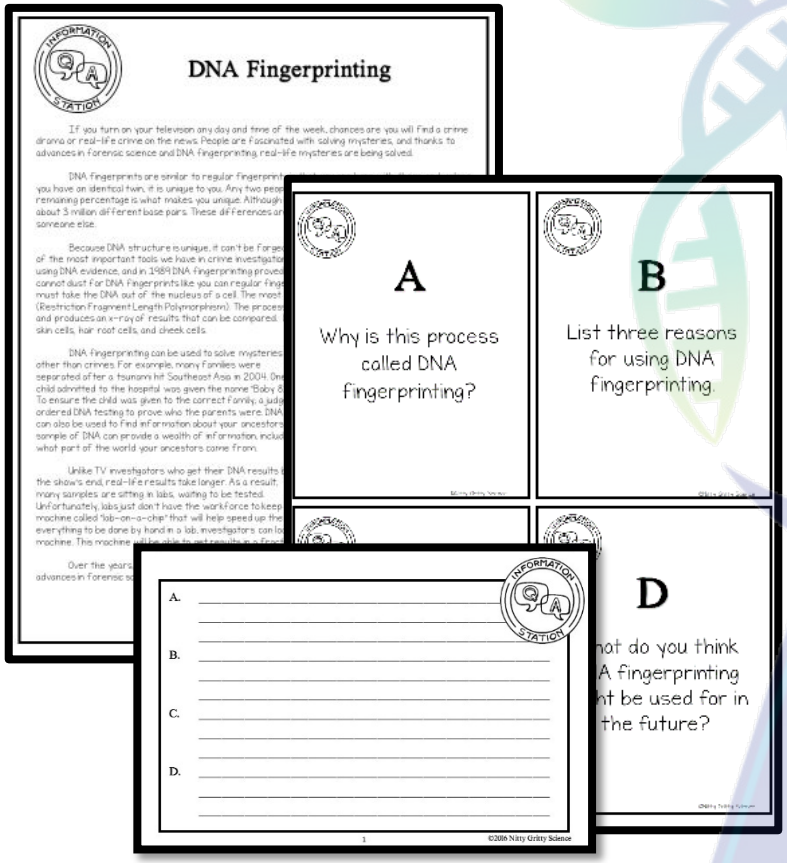
1. Using the graduated cylinder, measure out 100 mL of bromothy… pour it into a flask. Repeat with the second flask. Label one… using masking tape.
2. Have two lab group members each take a straw and… blue solution of each flask. Gently blow through the st… the color of the bromothymol blue solution.
3. Place a sprig of Alka-Seltzer into each flask and seal with…



Discussion questions and teacher set-up included!

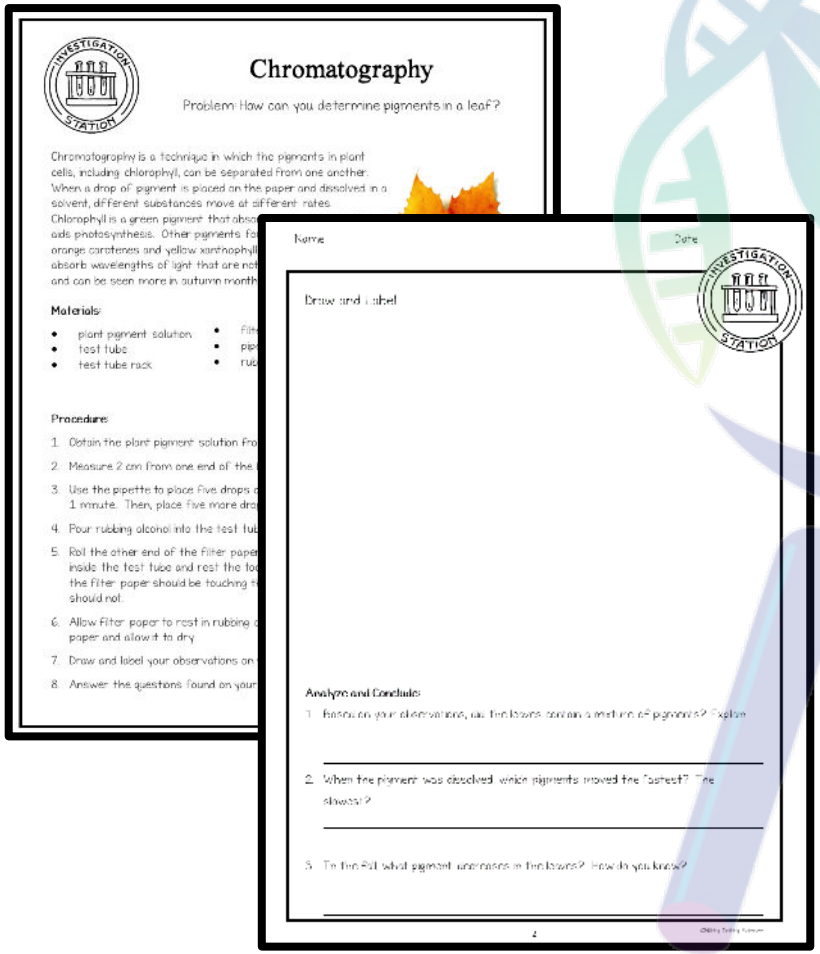


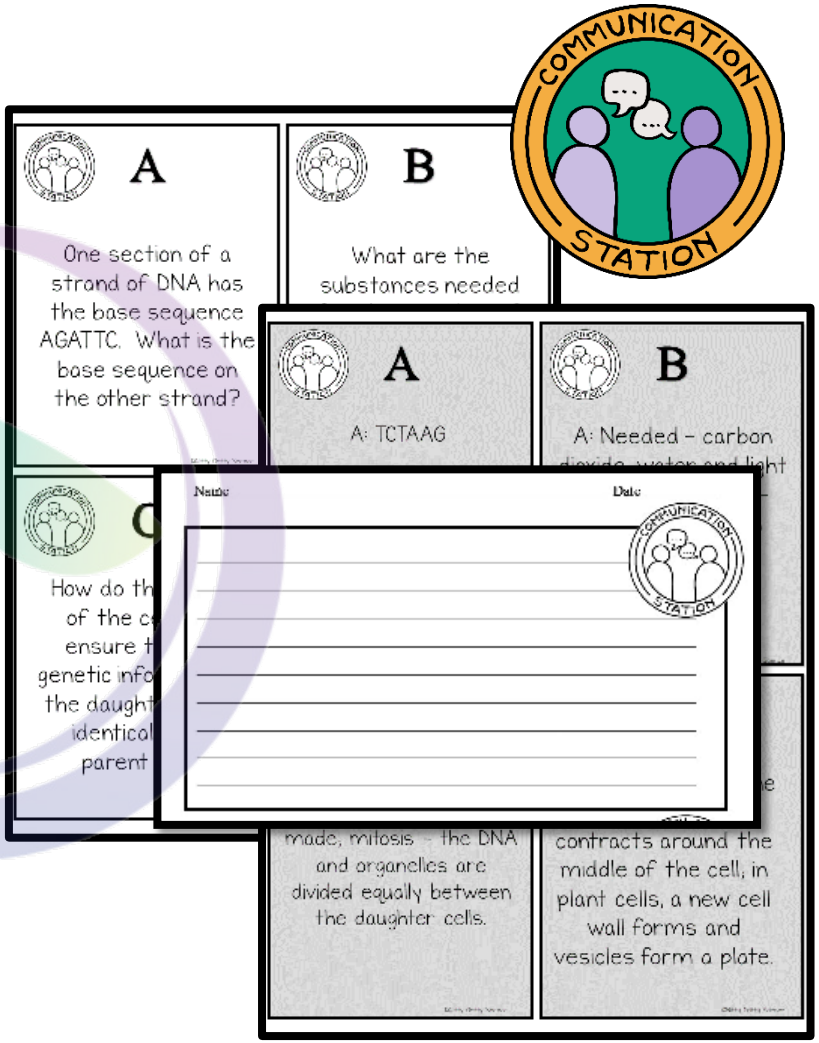
Group members will read a passage and then complete a task to help increase science literacy and deepen their understanding of the science concept.



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

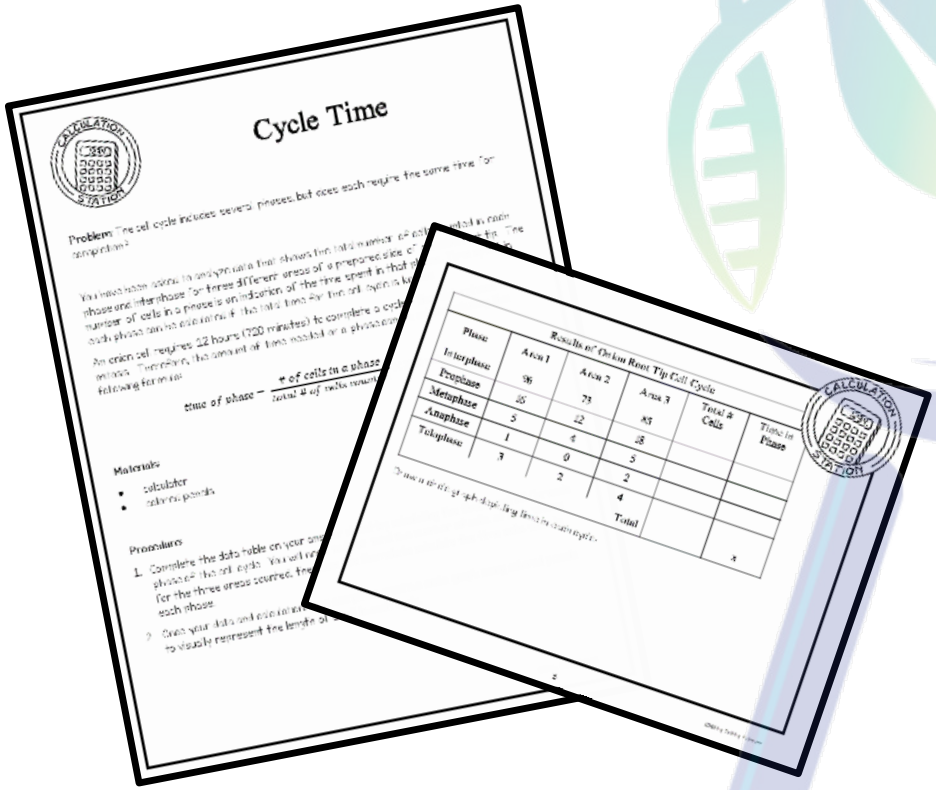
Group members will work with one another to explore the concept through hands-on activities, so they may practice specific inquiry process skills as they learn.

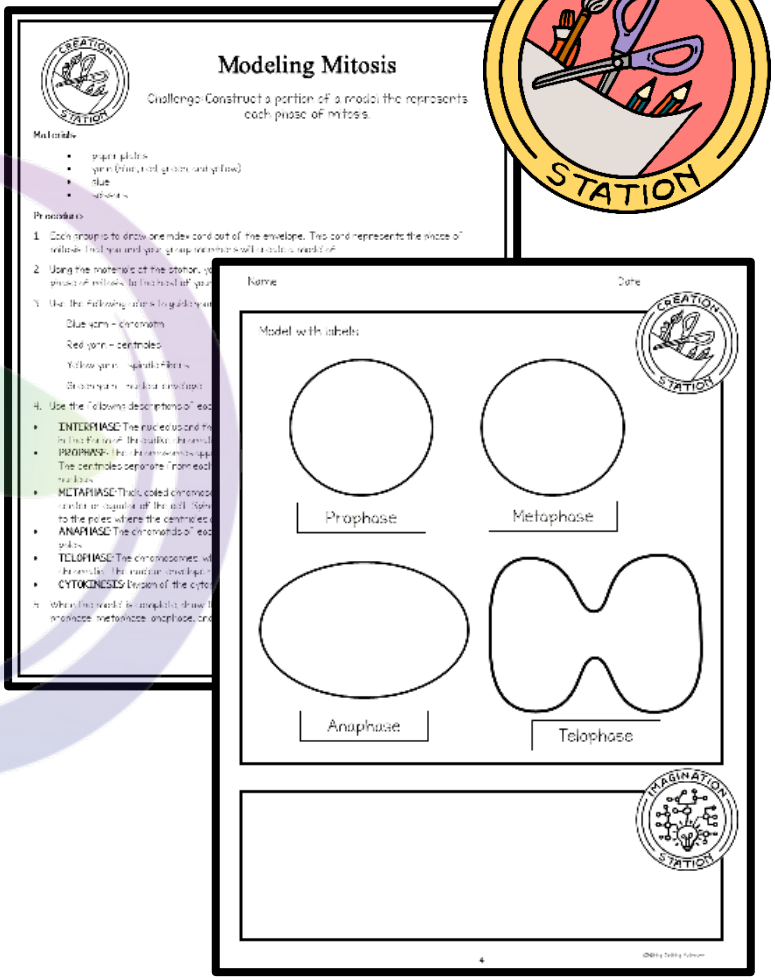




There are three different options for this station: interviews, videos, or group essay. Depending on the option you choose, group members will communicate what they know by answering questions in creative ways.

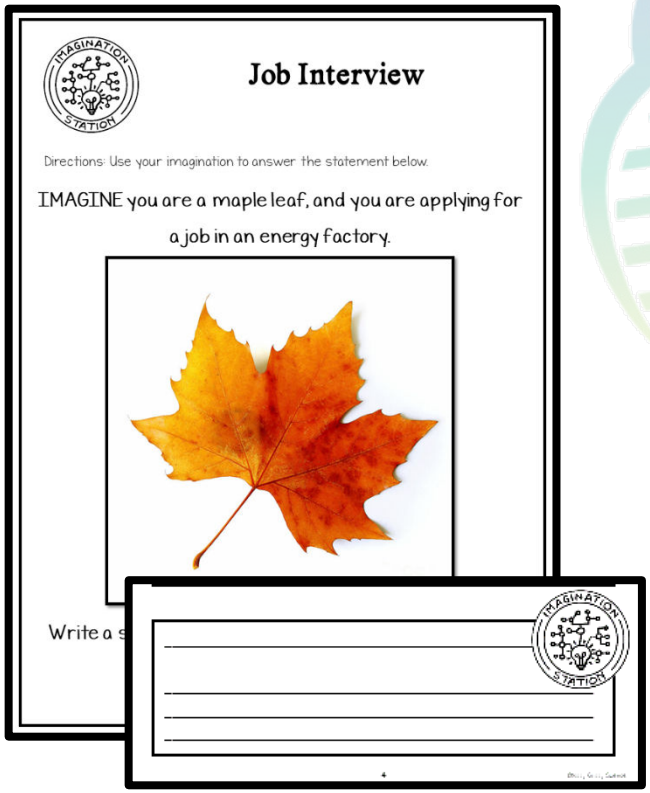
Group members use their math skills to complete the station challenge. Skills may include graphing, analyzing data, using models, measurement, and calculating formulas or word problems.



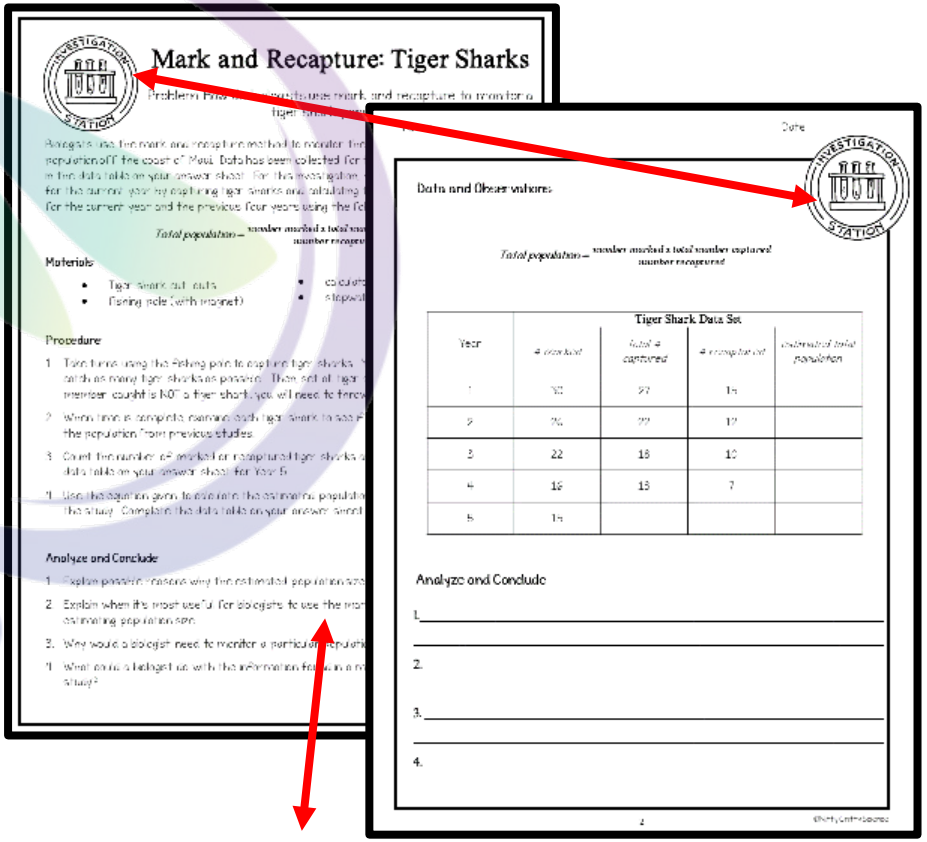


Group members will work together to solve a STEM (Science, Technology, Engineering, Math) challenge by creating models or designs that demonstrate their understanding of the science topic being taught.

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: Cell Processes and Energy	Classifying	Communicating	Compare & Contrast	Creating Models	Gather/Organize Data	Generalizing	Identifying Variables	Inferring	Interpreting Data/Diagrams	Making Decisions	Manipulating Materials	Measuring	Observing	Predicting
Respiration		X	X			X							X	X
Divide and Conquer		X	X			X		X					X	X
Cell Energy	X	X	X	X	X			X	X		X	X	X	
Information Station: DNA Fingerprinting	X				X	X			X					
Observation Station: Images & Questions	X	X	X			X		X	X	X			X	
Investigation Station: Chromatography	X	X	X		X		X			X	X		X	
Calculation Station: Cycle Time	X		X				X		X			X		
Communication Station: Questions		X	X			X		X		X				
Creation Station: Modeling Mitosis		X		X	X		X			X	X	X	X	X
Imagination Station: Job Interview		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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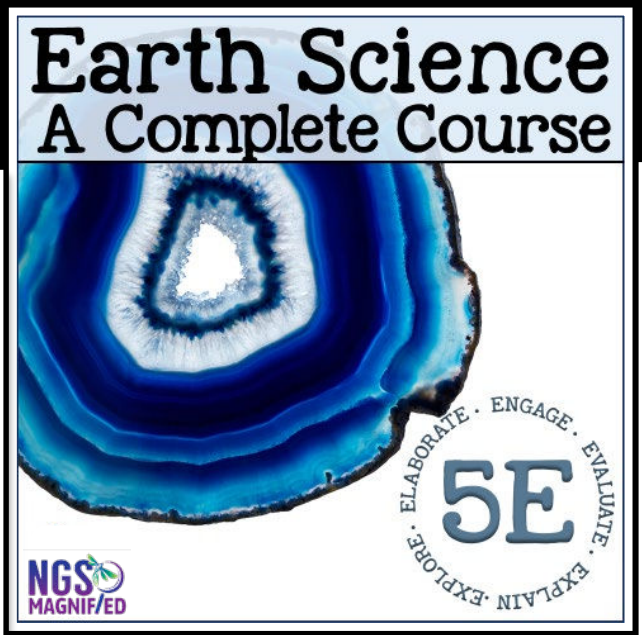

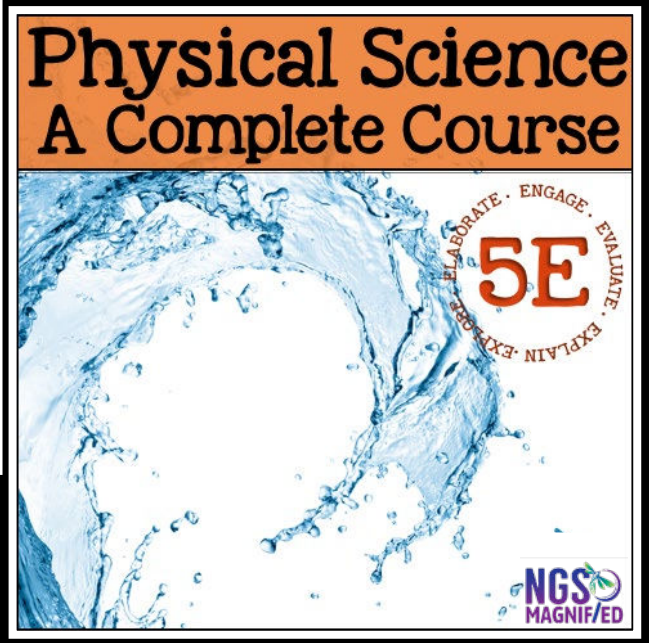

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