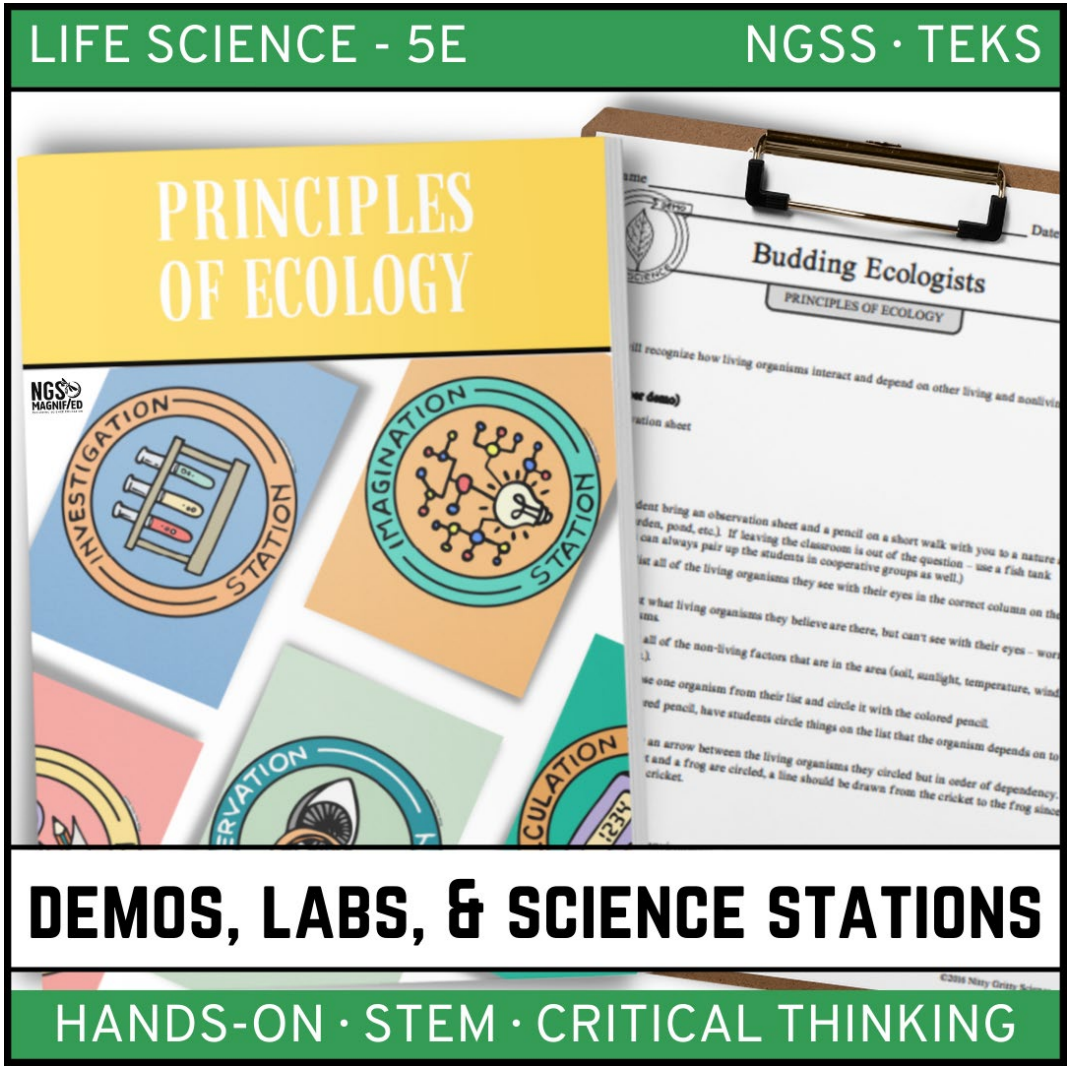
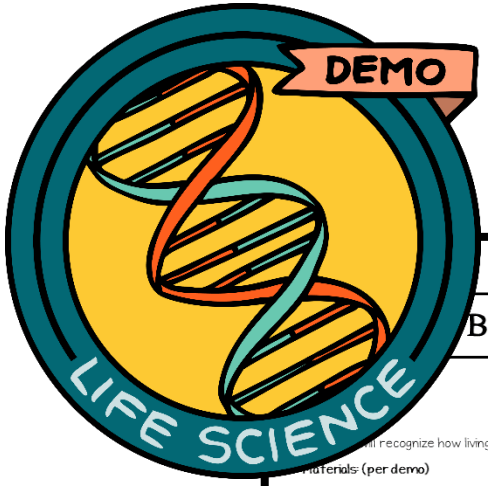
Demos, Labs, & Science Stations Feature:

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



ALL Station Signage Included!!

Color & Black and White



Budding Ecologists

PRINCIPLES OF ECOLOGY

...ill recognize how living organisms interact and depend on other living and nonliving factors.

...aterials (per demo)

- observation sheet
- pencil

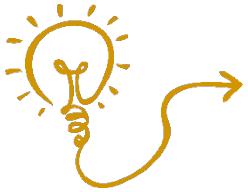
Demo:

1. Have each student bring an observation sheet and a pencil on a short walk with you to a nature area nearby (park, garden, pond, etc.). If leaving the classroom is out of the question – use a fish tank ecosystem. (You can always pair up the students in cooperative groups as well.)
2. Have students list all of the living organisms they see with their eyes in the correct column on their observation sheet.
3. Have students list what living organisms they believe are there but can't see with their eyes – worms, microscopic organisms.
4. Have students list all the non-living factors in the area (soil, sunlight, temperature, wind, rocks, soil, water, etc.).
5. Have students choose one organism from their list and circle it with the colored pencil.
6. Using the same colored pencil, have students circle things on the list that the organism depends on to survive.
7. Ask students to draw an arrow between the living organisms they circled but in order of dependency. For example, if a cricket and a frog are circled, a line should be drawn from the cricket to the frog since the frog depends on the cricket.

What's Happening?

Students are observing an environment with both living and nonliving factors – this is an ecosystem. They are becoming ecologists by studying a community of organisms that live in a particular area, along with their nonliving surroundings.

This activity will also help teachers identify many misconceptions students have about their environment – common ones being that plants, mushrooms, moss, etc., are not alive. Also, nonliving factors such as rocks and the wind do not affect living organisms.



Discussion questions and teacher set-up included!

Teacher guide and answer key offered for every lab!

Easy-to-get materials!

Name _____ Date _____

Predator-Prey Adaptations

PRINCIPLES OF ECOLOGY

Overview: Competition is the demand for resources that are in limited supply in an ecosystem. These resources include water, shelter, and food. In addition, for some organisms to survive, many animals in a community are in a predator–prey relationship, meaning that larger ones eat smaller ones to survive.

Successful predators have adaptations that allow them to catch prey, and prey has adaptations to avoid being caught and eaten by predators. Some adaptations of predators include keen senses, ultraviolet vision, speed, sharp teeth, claws, and camouflage to avoid being seen by prey. Animals avoid being prey using adaptations which include defense such as stinging, quills, or poison, traveling in large groups, and also camouflage to avoid being seen. stinging, quills or poison, traveling in large groups and also camouflage to avoid being seen.

Materials:

- 500 colored pieces (100 of each of 5 different colors – ex. plastic discs, toothpicks, pipe cleaner pieces, etc.)
- stopwatch
- pencil and paper for recording data
- UV light (blacklight)
- Colored pencils

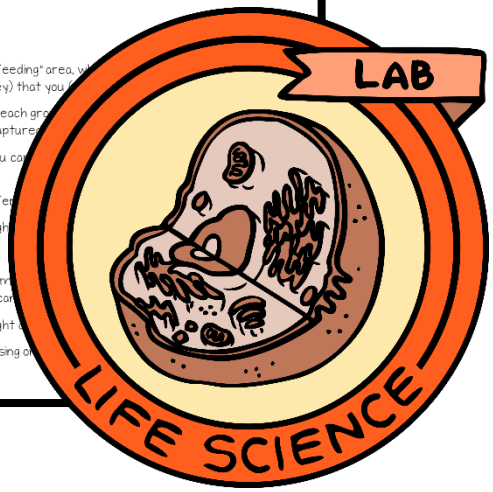
Procedure:

Part A

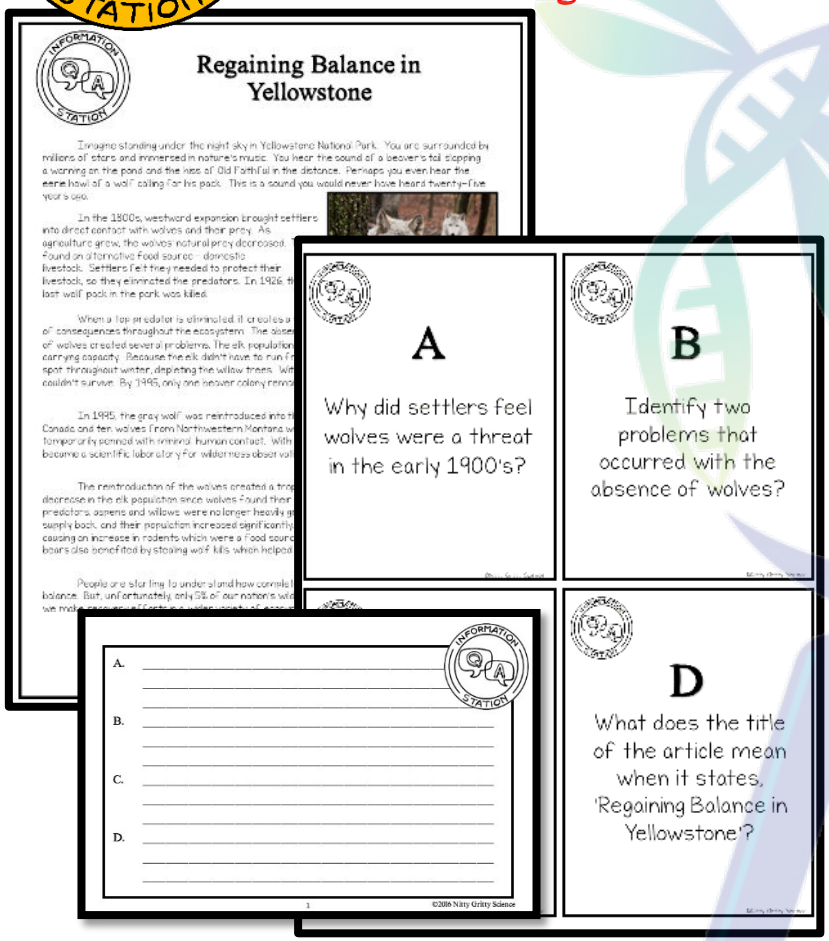
1. All groups are to stand around the designated "feeding" area, w... teacher has scattered as your food source (prey) that you ...
2. After the initial signal is given, one person from each gro... capture in the allotted time. Prey can only be capture...
3. Count the number of prey of each color that you ca... provided.
4. Repeat steps 2 and 3 two more times with diffe...
5. Calculate the average of each color of prey caugh...

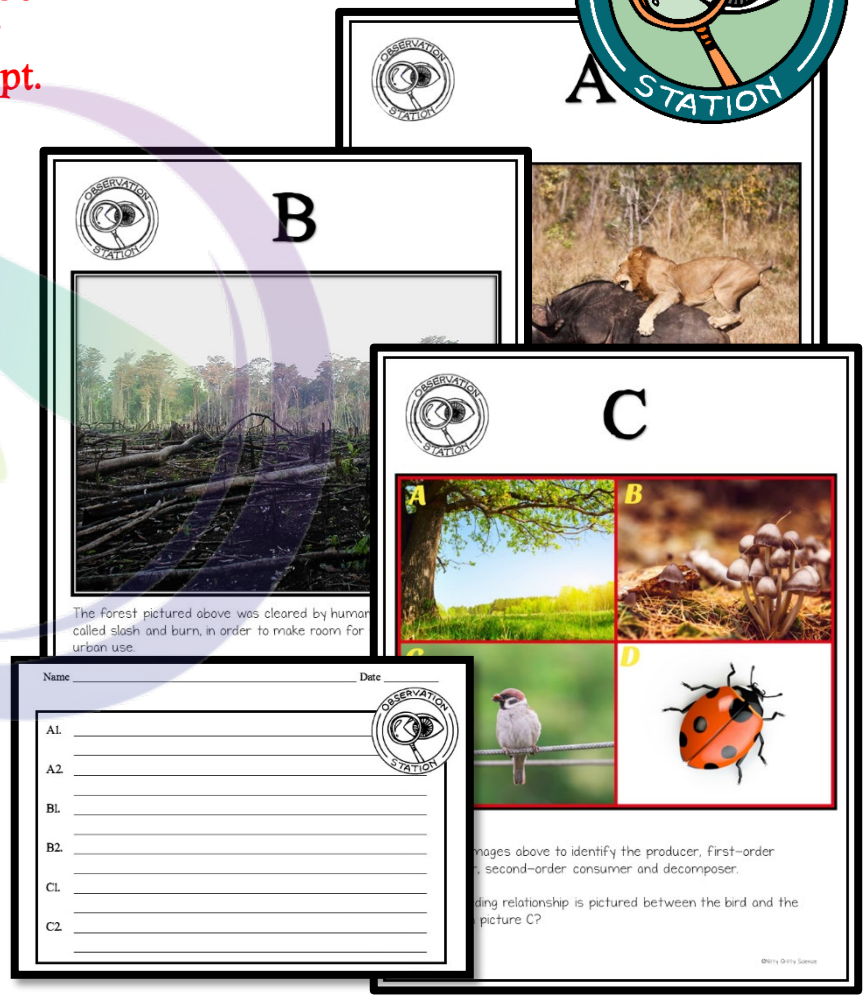
Part B

1. You will now repeat steps 2 – 4. However, this tim... flashlight), as used by many birds of prey who ca...
2. Calculate the average of each color of prey caught ...
3. Make a bar graph of each colored prey caught using o... colored pencil for Part B.



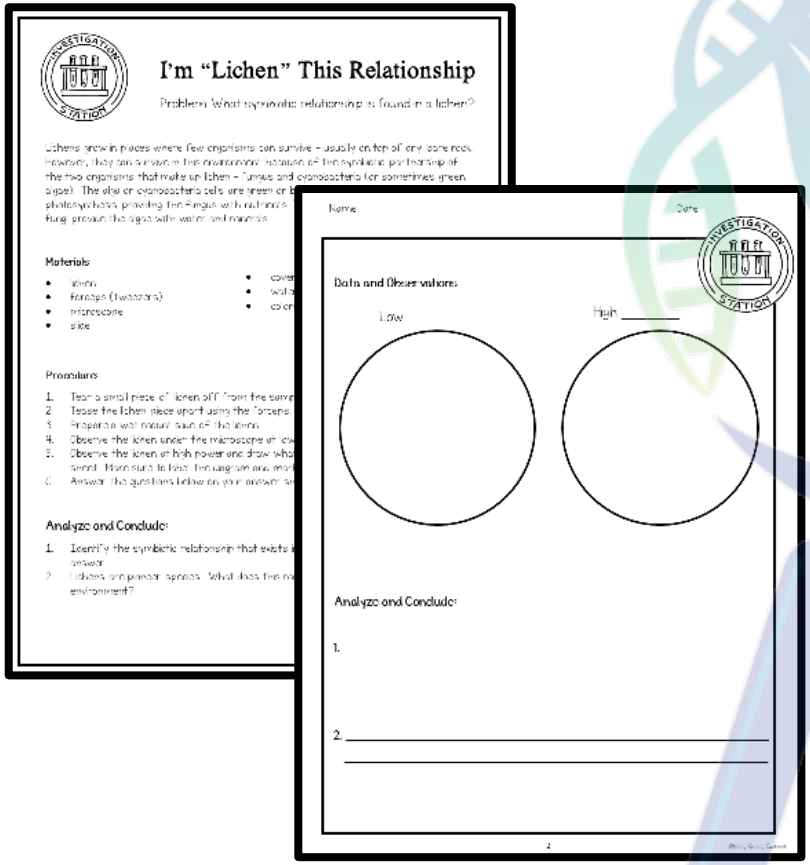
Group members will read a passage and then complete a task to help increase science literacy and deepen their understanding of the science concept.

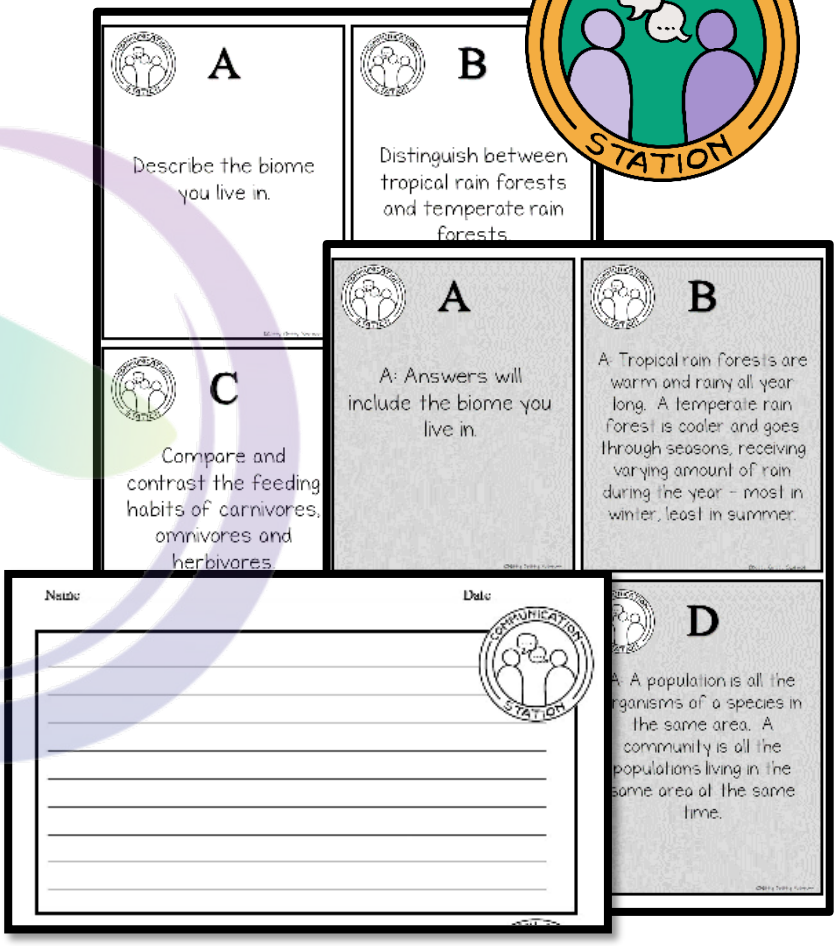




Group members will have images, illustrations, or actual samples at this station that show applications or processes of the science topic.

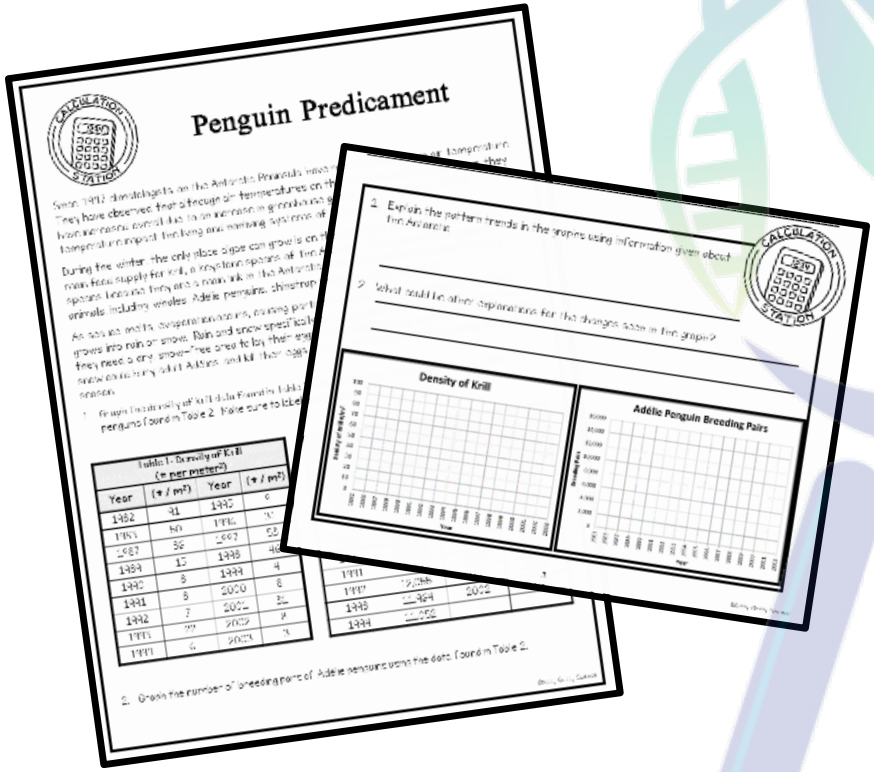
Group members will work with one another to explore the concept through hands-on activities, so they may practice specific inquiry process skills as they learn.

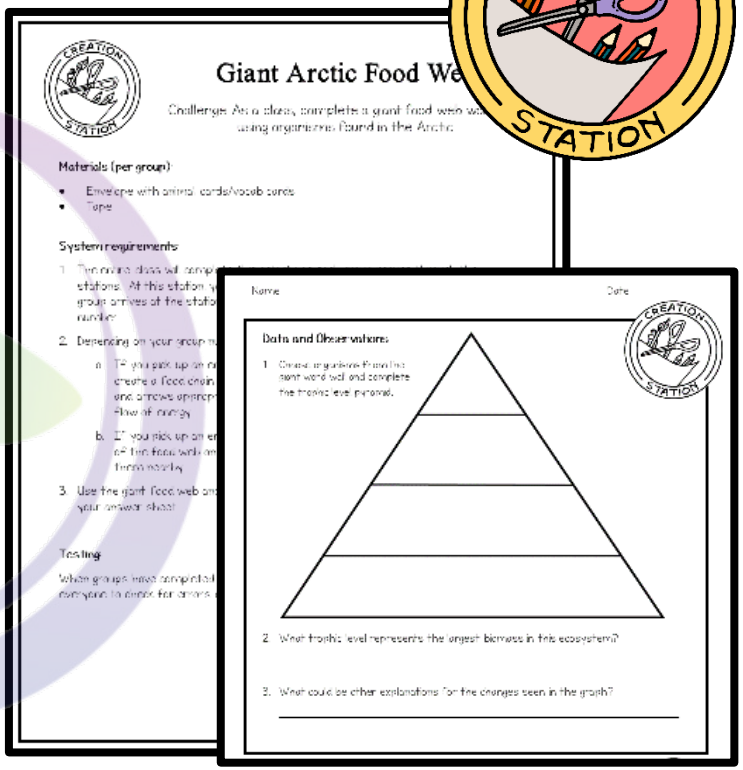




There are three different options for this station: interviews, videos, or group essay. Depending on the option you choose, group members will communicate what they know by answering questions in creative ways.

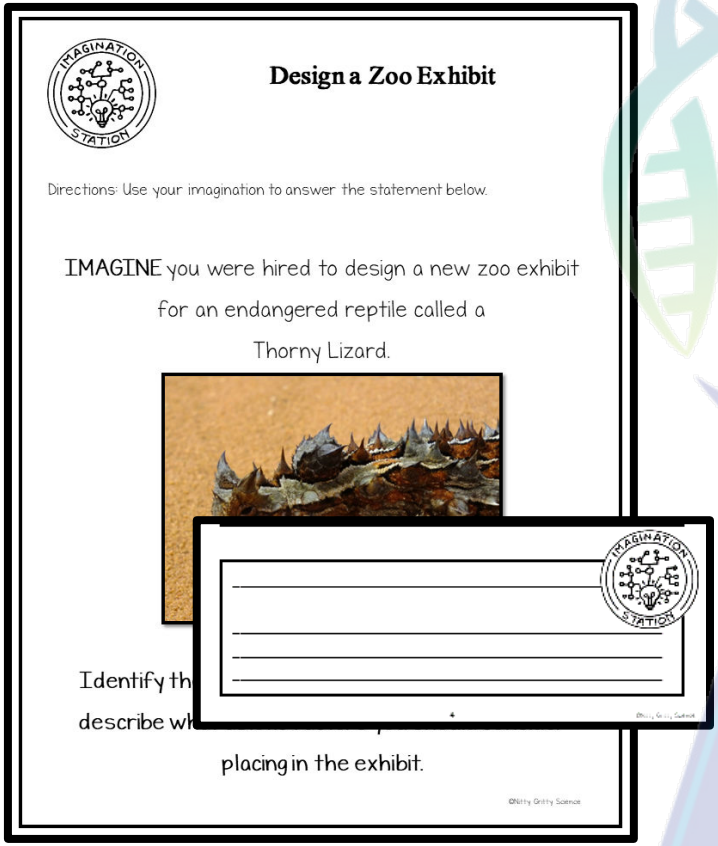
Group members use their math skills to complete the station challenge. Skills may include graphing, analyzing data, using models, measurement, and calculating formulas or word problems.



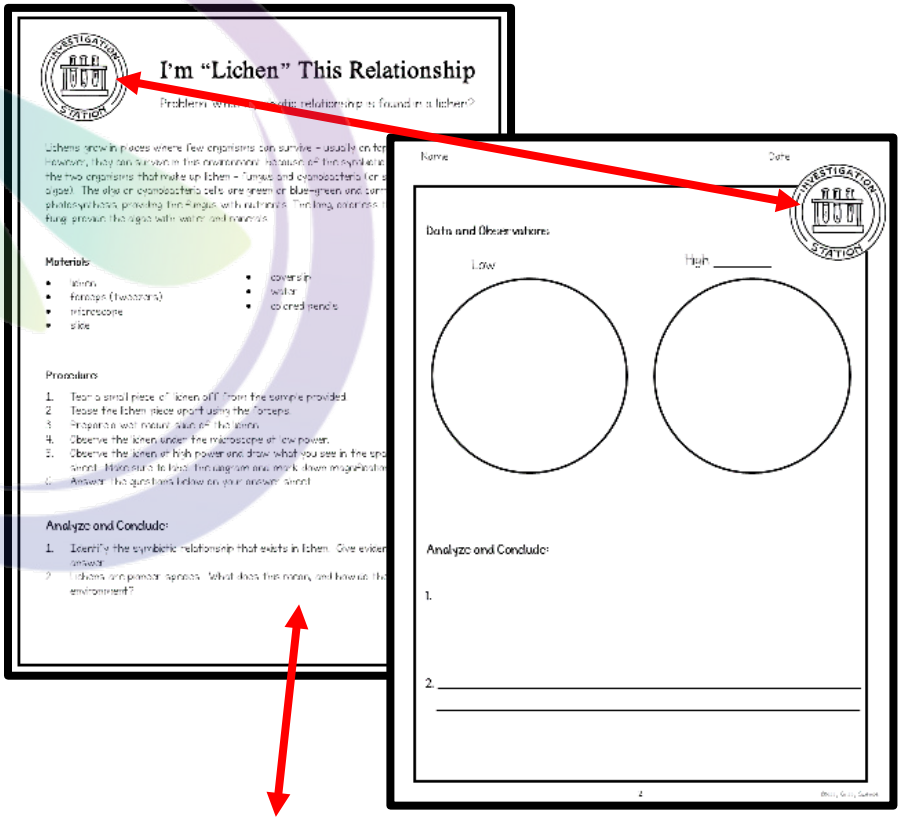


Group members will work together to solve a STEM (Science, Technology, Engineering, Math) challenge by creating models or designs that demonstrate their understanding of the science topic being taught.

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: Principles of Ecology	Classifying	Communicating	Compare & Contrast	Creating Models	Gather/Organize Data	Generalizing	Identifying Variables	Inferring	Interpreting Data/Diagrams	Making Decisions	Manipulating Materials	Measuring	Observing	Predicting
Budding Ecologists		X	X			X							X	X
Predator-Prey Adaptations	X	X	X	X	X			X	X		X	X	X	
Information Station: Regaining Balance in Yellowstone	X				X	X			X					
Observation Station: Images & Questions	X	X	X			X		X	X	X			X	
Investigation Station: I'm "Lichen" This Relationship	X	X	X		X		X		X	X	X		X	
Calculation Station: Penguin Predicament	X		X		X		X		X					
Communication Station: Questions		X	X			X		X		X				
Creation Station: Giant Arctic Food Web		X		X	X		X			X	X	X	X	X
Imagination Station: Design a Zoo Exhibit		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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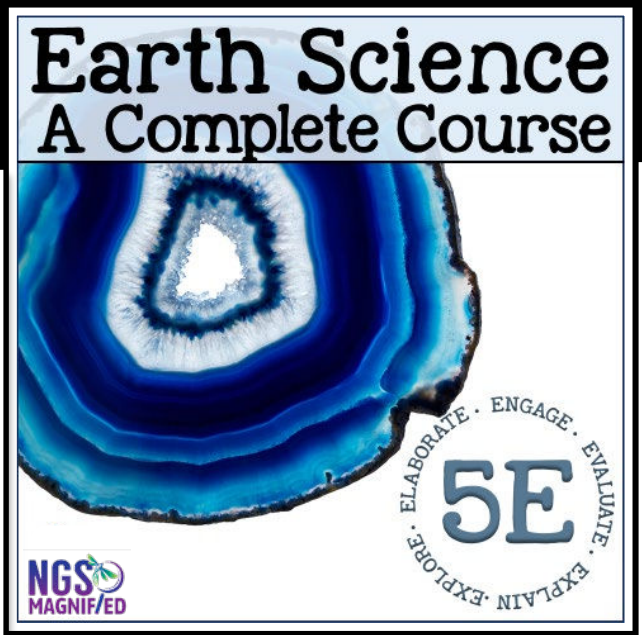

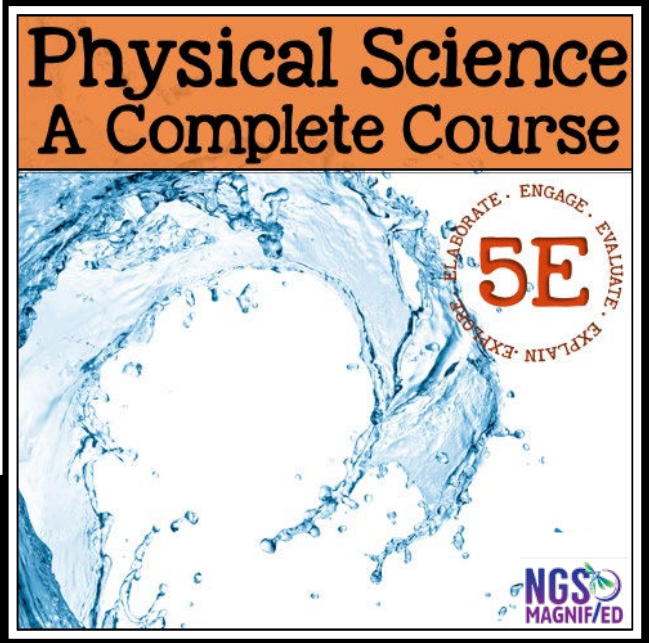

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