



Demos, Labs, & Science Stations Feature:

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

LIFE SCIENCE - 5E

NGSS • TEKS

ANIMAL DIVERSITY INVERTEBRATES

NGS
MAGNIFIED



Earthworm Response

ANIMAL DIVERSITY: INVERTEBRATES

Earthworms are found throughout North America, Europe and western Asia. They are normally 1 to 2 inches in length although some have been known to grow up to 14 inches. They are normally called annuli and are covered in setae which are hair like bristles that help them move. Earthworms live in soil and feed on decaying organic matter like leaves and roots. They are critical in maintaining a healthy soil via their waste by transporting nutrients below the surface to the top.

How do earthworms respond to different environmental conditions?

- | | |
|-----------------|--------------|
| • sandpaper | • flashlight |
| • water dropper | • trays |
| • cardboard | • stopwatch |

Rank each of the environments you think the earthworms will prefer:

Environment _____

Environment _____

Environment _____

DEMOS, LABS, & SCIENCE STATIONS

HANDS-ON • STEM • CRITICAL THINKING

**ENGAGING
READING!**

**GRAPHING,
WORD
PROBLEMS &
MEASUREMENT!**

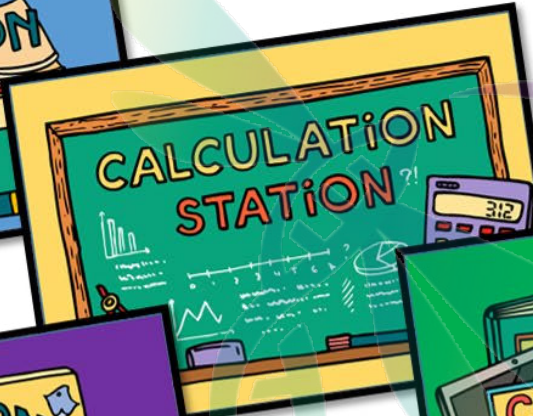
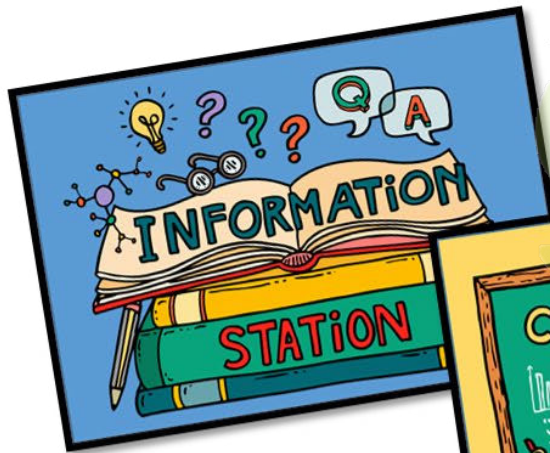
**INQUIRY
SKILLS &
PROCESSES!**

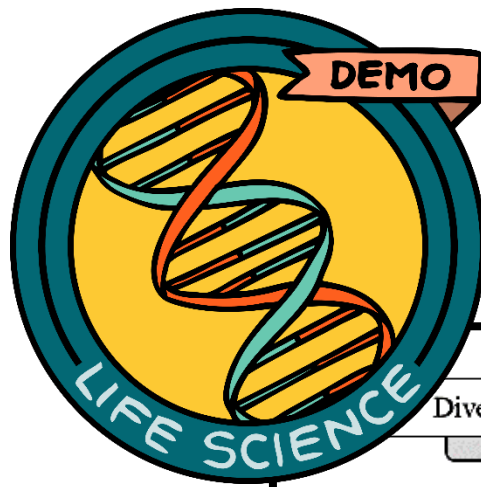
**HANDS-ON
INVESTIGATIONS!**

STEM CHALLENGES!

ALL Station Signage Included!!

Color & Black and White





Teacher guide and answer key
offered for every lab!

Easy-to-get materials!



Diversity of Invertebrates

ANIMAL DIVERSITY/INVERTEBRATES

Activity In this activity, students will learn the characteristics of invertebrates.

Materials

• Magnifying lens • Ant • Spider • Grasshopper • Crab • Natural sea sponges • Starfish	• Earthworm • Honeybee • Beetle • Butterfly • Snail • Lizard • Sea anemone	• Snail • Jellyfish • Clam • Sea urchin • Spider crab • Brachiopod • Sea cucumber
--	--	---

Procedure

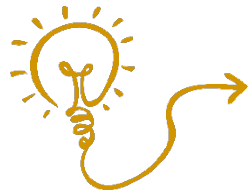
Before Class:

- Prepare and place around the classroom samples of invertebrates. You may use professional or live samples. Try to obtain at least one organism from each of the following groups:
 - Arachnids
 - Mollusks
 - Crustaceans
 - Anteropoda – Insects, Crustaceans, and Arachnids

During Class:

- Pass out magnifying glasses to each student.
- Explain to the students that they are to rotate around the room and investigate each of the organisms. Trying using what they know, they understand, what that the organism is a vertebrate or invertebrate.
- Next, have students note if they know if a certain organism belongs to a certain group – arachnid, mollusk, crustacean, or arthropod.

DIVERSITY/SCIENCE



Discussion questions and
teacher set-up included!

Earthworm Response

ANIMAL DIVERSITY/INVERTEBRATES

Name _____ Date _____

Earthworms are found throughout North America, Europe, and western Asia. They are normally only a few inches in length, although some have been known to grow up to 14 inches. Their bodies are made up of segments called annuli and are covered in setae, hair-like bristles that help them burrow. They have a muscular outer body wall surrounding their digestive tract, with a muscle layer in the first segment. For breathing in soil and food, earthworms rely on their skin for gas exchange. For breathing in air and food, earthworms rely on their skin for gas exchange. For breathing in air and food, earthworms rely on their skin for gas exchange.

Problems

How do earthworms respond to different environmental conditions?

Materials:

• five earthworms • paper towels • warm water	• sandpaper • water dropper • cardboard	• flashlight • trays • stopwatch
---	---	--

Procedures:

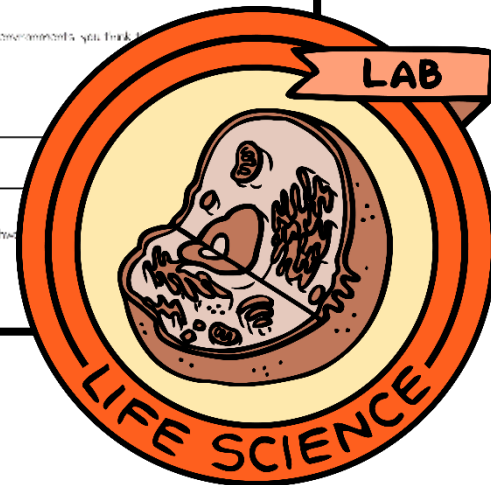
- Record your hypothesis for each of the environments you think a worm will prefer.

A. Moist or dry environment _____

B. Light or dark environment _____

C. Rough or smooth environment _____

- Use the water dropper to keep the earthworms wet with wet mucus.
- Test the following three environments:





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



Teamwork

Jellyfish are some of the most amazing sea animals. Hundreds of different kinds of these beautiful invertebrates are found in the ocean's warm waters. The dictionary definition of jellyfish describes them as a "free-swimming animal with a jelly-like bell or saucer-shaped body, typically transparent and stinging tentacles around the edge." If you were to stumble upon a Portuguese man-of-war, you would think it fits this dictionary definition perfectly. These animals look exactly like jellyfish, but their outside appearances can be deceiving. The man-of-war isn't a single-celled organism like jellyfish. It is actually a siphonophore or a colony of genetically identical individuals with various functions that work together as one.

The Portuguese man-of-war is a colony consisting of four types of polyps, each responsible for a different task. The first gives the Portuguese man-of-war its name because it floats on top of the water resting on an old warship of full sail. This gas-filled balloon is often purple-blue and is called a pneumatophore.

If there is a threat on the water's surface, the pneumatophore can deflate, submerge underwater briefly. This balloon of war has no independent way of propelling the man-of-war to drift on currents or catch its "hundred." Some man-of-war prefer to drift.

The second polyp is the gastrozooid, about 10 meters in length but can extend covered in nematocysts. They have a sensory tentacle and other small creatures. While deadly to small fish and other small creatures, while deadly to humans, but rarely deadly to humans. Even deliver a sting.

The third polyp contains digestive and flexible mouths. When not being used, they extend around prey. Tentacles also extend during the digestion process, along with a variety of other functions.

The gastrozooids are the final polyp. The man-of-war can reproduce on its own top.

Each polyp on the man-of-war performs a different function. If they were separated, they would not be able to survive.

A

Why is a Portuguese man-of-war not a jellyfish?

B

Describe a pneumatophore.

C

How does a Portuguese man-of-war move across the ocean?

D

How is the Portuguese man-of-war able to reproduce even if it never comes in contact with another?

A

B

C

Name _____
Date _____

1. What groups are the d _____

2. Besides s _____ mentioned

1. What groups are the d _____

2. Besides s _____ mentioned

B

C

2. How is complete metamorphosis different from incomplete metamorphosis?

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.

Lobster Characteristics

Problem: What characteristics make lobsters unique among arthropods?

Materials:

- lobster
- forceps
- magnifying glass

Procedure:

1. Study your lobster, making notes on arthropod traits you observe.
2. Using your forceps carefully, flip lob. You will see feather-like structures (respiratory system).
3. Wash your hands when finished.
4. Answer the questions on your worksheet.

Summertime activities
Project for students

Name _____
Date _____

Directions: Complete the table below.

Arthropod Traits	
Traits	Lobster
Exoskeleton	
Segmented body	
Jointed Appendages	
Bilateral Symmetry	
Antennae	
Jointed	

Analyze and Conclude:

1. Referring to your table, do lobsters have all the traits of an arthropod?

2. How do you think a lobster may find food?

3. Lobsters, crabs and shrimp are crustaceans. Crustaceans are arthropods. Can you explain what this means?

© 2014 Living Science



A

Describe the main characteristics of an animal.

B

Identify the major groups of _____.

A

A: Animal is a eukaryotic heterotroph that _____.

B

A: crustaceans, arachnids, centipedes, millipedes and _____.

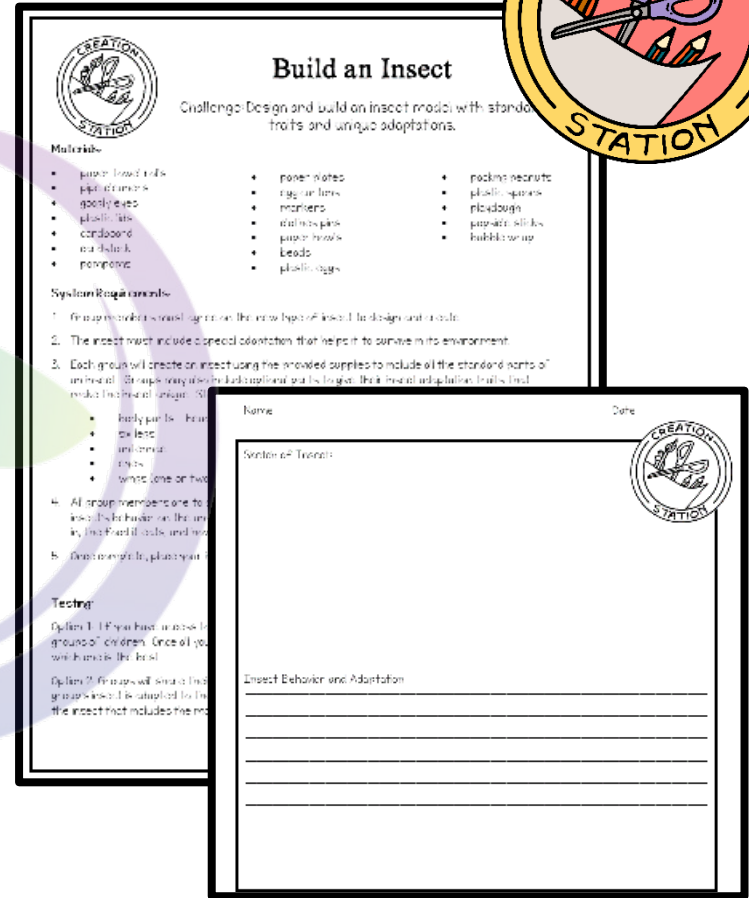
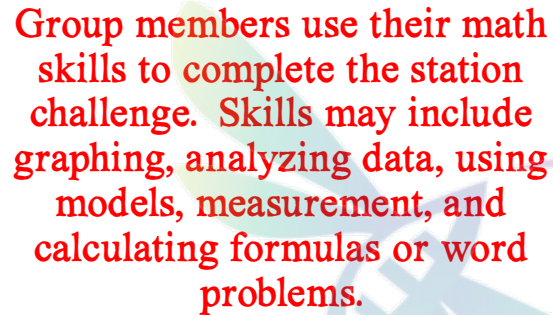
Name _____
Date _____

Most _____ lack _____.
What _____ advantage _____?

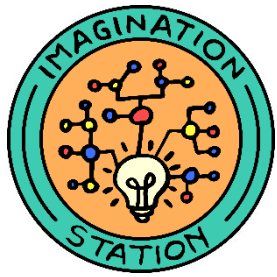
_____ rapidly, helping them be strong predators.

_____ covered in waxy layer protecting against water loss, tracheal tubes for breathing, flight and landing mechanisms.

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 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.



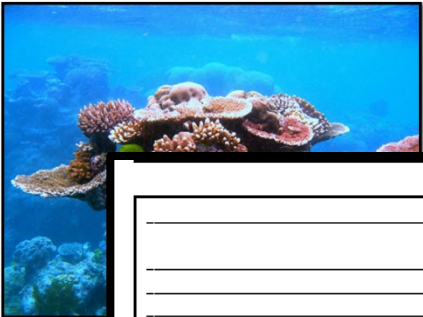
This station makes science concepts relevant for students by asking them to imagine scenarios that will bring about discussion and critical thinking.



Rocky Misconception

Directions: Use your imagination to answer the statement below.

IMAGINE you and a friend are snorkeling and she asks you if you saw that big, colorful rock.



Explain to _____

© 2015 Gilly Science



I'm "Lichen" This Relationship

Problem: Which symbiotic relationship is found in a lichen?

Lichens grow in places where few organisms can survive – usually on top of rocks. They can survive in this environment because of the symbiotic relationship between two organisms that make up lichen – fungus and cyanobacteria (or algae). The algae or cyanobacteria cells are green or blue-green and carry out photosynthesis, providing the fungus with food. The fungus, in turn, hangs around the algae with its threads. The fungus provides the algae with water and minerals.

Materials:

- lichen
- forceps (tweezers)
- microscope
- slide

- coverslip
- water
- colored pencils

Procedures:

1. Tear a small piece of lichen off from the sample provided.
2. Tear the lichen piece apart using the forceps.
3. Prepare wet mount slide of the lichen.
4. Observe the lichen under the microscope on low power.
5. Observe the lichen on high power and draw what you see in the space provided. Make sure to label the diagram and make clear magnification.
6. Answer the questions below on your answer sheet.

Analyze and Conclude:

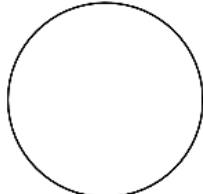
1. Identify the symbiotic relationship that exists in lichen. Give evidence to support.
2. Lichens are pioneer species. What does this mean, and how do they change the environment?

Name _____ Date _____

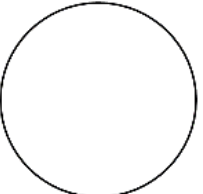


Data and Observations:

Low



High _____



Analyze and Conclude:

1. _____
2. _____

© 2015 Gilly Science

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

Inquiry and Process Skills

©NGS

 Demo

 Guided Inquiry Lab

 Science Stations

Inquiry-Based Science Unit: Invertebrates	Classifying	Communicating	Compare & Contrast	Creating Models	Gather/Organize Data	Generalizing	Identifying Variables	Inferring	Interpreting Data/Diagrams	Making Decisions	Manipulating Materials	Measuring	Observing	Predicting
Diversity of Invertebrates		X	X			X				X			X	
Earthworm Response	X	X	X	X	X			X	X		X	X	X	
Information Station: Teamwork	X				X	X			X					
Observation Station: Images & Questions	X	X	X			X		X	X	X			X	
Investigation Station: Lobster Characteristics	X	X			X				X	X		X	X	
Calculation Station: Super Soaker	X		X				X		X			X		
Communication Station: Questions		X	X			X		X		X				
Creation Station: Build an Insect		X		X	X		X			X	X	X	X	X
Imagination Station: Rock Misconception		X				X				X				

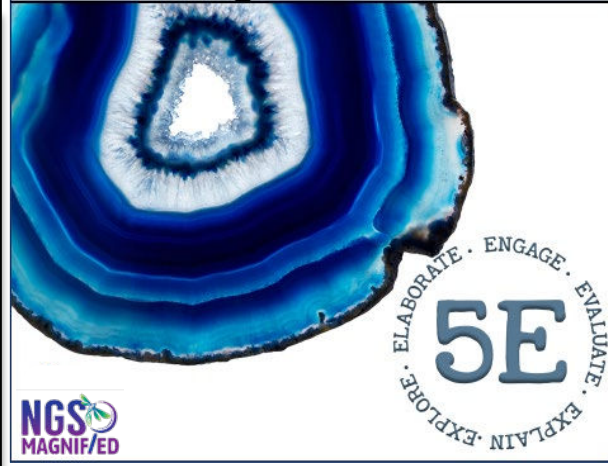
NGS Magnified promotes scientific inquiry throughout the curriculum. Students become more confident and effective learners while developing problem-solving and critical thinking skills. Process skills, such as planning, organizing, and evaluating, help students to complete projects and assignments. These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

This download is part of the
NGS MAGNIFIED
Complete Course Collection.
Click below to learn more.

Life Science A Complete Course



Earth Science A Complete Course



Physical Science A Complete Course





Thank you for sharing NGS Magnified with your students!

Terms of Use

Copyright © NGS Magnified, LLC (formerly Nitty Gritty Science, LLC.) All rights reserved by author Dr. Erica Colón. This product is to be used by the original downloader only. Copying for more than one teacher, classroom, department, school, or school system is prohibited. This product may not be distributed or displayed digitally for public view. Failure to comply is a copyright infringement and a violation of the Digital Millennium Copyright Act (DMCA). Clipart and elements found in this PDF are copyrighted and cannot be extracted and used outside of this file without permission or license. Intended for classroom and personal use ONLY.

Contact Information:

Email: admin@nittygrittyscience.com

Website: www.NGSmagnified.com

TPT: <https://www.teacherspayteachers.com/Store/Nitty-Gritty-Science>

