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Earthworm Exploration



Gearing Up

Get students thinking about earthworms by generating a three-column KWL chart. Ask students what they know (K) about earthworms. On a large piece of paper, list all their responses (accurate or not). Then in the second column, list what the students want (W) to know about earthworms. Leave the third column empty. Later, you will record what the students say they have learnt (L) about earthworms.

Process Skills Used

observing
measuring
comparing
communicating

Guided Discovery

Background information for the teacher:

Earthworms belong to a group of animals called annelids. The word annelid means 'ringed.' The worm's body is divided into ringlike segments called annuli. Each segment has eight tiny bristles, called setae. The worm uses the setae to help it move through the earth.

The earthworm moves using two types of muscles. By tightening the muscles that circle each segment, the earthworm stretches out and gets skinnier. By contracting the long muscles that run down the length of the worm, the earthworm becomes shorter and fatter.

The top side of an earthworm is rounded and cylindrical while its underside is flat and lighter in colour.



Materials needed for each student:

earthworm*
one clear plastic cup filled with soil
magnifying glass
ruler
triple-beam balance scale

Directions for the activity:

Using page 5 as a guide, students will explore, observe and draw their earthworm.

Note: Earthworms must be kept moist at all times or they will die.

- Earthworms are available from bait shops or pet stores.

Responding to Discovery

Have students pair up and compare and discuss their activity sheets. On a separate sheet of paper, have students create a graphic organiser to visually show the similarities and differences between their worms.

Use cheesecloth to cover the worms in the cups of moist soil and store overnight in a cool, dry place.

Applications and Extensions

Have students put two worms in the same cup and observe. Challenge the students to dig for worms either at home or in the school playground. Have them predict where they will find the most worms. Discuss what they found and ask them to propose explanations. Assign research to find the names of other types of worms.

Real-World Applications

- Why do earthworms come out of the ground when it rains?



Name _____

Earthworm Exploration

In this discovery, you will be observing and drawing your earthworm.

- Use a magnifying glass to observe the earthworm. Record five observations.

- Contrast the earthworm to the human body. What features are different?

- Compare and contrast the top side of the earthworm to its underside.

- Measure your earthworm.

Length (take three measurements) _____cm _____cm _____cm

Width at its widest point _____mm

Find the mass of your earthworm _____grams

- Gently touch your earthworm with a wet finger. Describe how it feels.

- Name something that feels similar to the skin of your earthworm.

- Draw a detailed picture of your entire earthworm in the large box. In the smaller box, draw an enlarged close-up section of any part of the earthworm.

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Earthworm Environments

Gearing Up

Review the information gathered in the previous lesson on the KWL chart. Ask the students what they have learnt so far. Record their responses in the L column. Allow students to observe their earthworms for 5 minutes.

Process Skills Used

observing
communicating
comparing
forming hypotheses

Guided Discovery

Background information for the teacher:

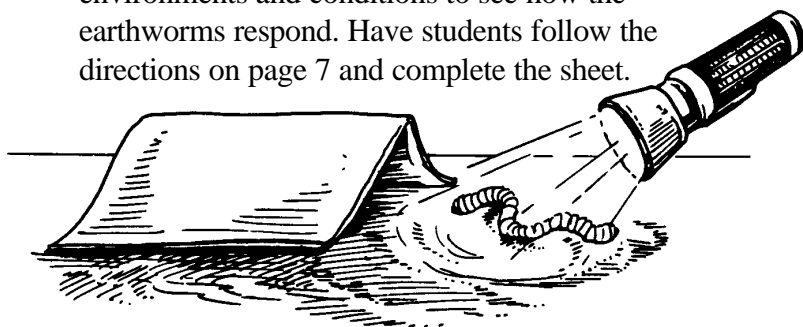
Earthworms have neither ears nor eyes. They use their skin to sense light and darkness, sound, moisture or lack of moisture, textures, and their environment in general. Earthworms are nocturnal animals and prefer darkness to light. They prefer dampness to dryness and smooth surfaces as opposed to rough ones.

Materials needed for each group:

earthworm for each student
three paper towels
black construction paper
torch
20 x 25 cm piece of fine mesh screen with edges taped
white sheet of paper

Directions for the activity:

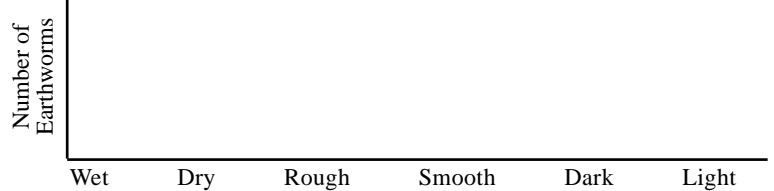
In this lesson, students will be exploring different environments and conditions to see how the earthworms respond. Have students follow the directions on page 7 and complete the sheet.



Responding to Discovery

Students should analyse their results and draw conclusions. For example, if Reba's worm chose the wet paper towel 3 out of 5 times, she can conclude that her earthworm prefers a wet environment. Discuss the results from individual experiments.

On a large sheet of paper or the blackboard, make a bar graph. Students should fill in their individual data on the class graph.



Discuss the graph data. Challenge students to explain, find patterns and come to conclusions regarding earthworms and their environments.

Use cheesecloth to cover the worms in the cups of moist soil and store overnight in a cool, dry place.

Applications and Extensions

Students can design and carry out their own experiments. (Students will need teacher approval in order to ensure that the experiment will not be harmful to the earthworm.) Encourage experiments that explore how earthworms respond to touch, food preferences, sounds and textures.

Real-World Applications

- Compare earthworm preferences to those of other animals.
- How do deaf or blind people sense their environments?



Name _____

Earthworm Environments

In the following experiments, you will discover which environments or conditions your earthworm prefers.

Conduct five trials for each experiment so that you may have the most accurate conclusions.

• **Do earthworms prefer light or dark?**

Materials: torch, black paper

Directions:

Fold the black construction paper lengthwise and put it on the table so it resembles a tent. Standing next to the tent, hold the torch 20 cm from the table top. Shine the light down on one side of the tent. Place the earthworm in the torch beam. Wait a few minutes and observe the earthworm. Record your results in the chart. Repeat the experiment 4 more times.

Test Number	1	2	3	4	5
Prefers light area					
Prefers dark area					

• **Do earthworms prefer rough or smooth surfaces?**

Materials: white paper, mesh screen

Directions:

Overlapping slightly, place the screen next to the paper. Put the earthworm where the screen meets the paper. Observe the earthworm for a few minutes. Record your results. Repeat the experiment 4 more times.

Test Number	1	2	3	4	5
Prefers mesh screen					
Prefers white paper					

• **Do earthworms prefer a moist or dry environment?**

Materials: a wet and a dry paper towel

Directions:

Place the two paper towels next to each other and put your earthworm where the two paper towels meet. Observe the earthworm. Record your results in the chart. Repeat the experiment 4 more times.

Test Number	1	2	3	4	5
Prefers wet towel					
Prefers dry towel					

Based on the above experiments, I conclude that earthworms prefer _____

My evidence is _____
