Worming Around in the Soil:
A Look at Worm Behavior

Essential Question:
How can we observe worm behavior?
How do worms react to various stimuli?

At a Glance: In this activity learners investigate the body parts of worms as well as their reactions to stimuli such as light, vinegar, shelter (rocks).

Location: School Site and classroom

Objectives: *Learners will*
1) observe and investigate the behavior of worms.

Skills: data collection, observation, communication, inference

Supplies:
- worms (earthworms can be collected on your school site or red wigglers can be purchased at a bait shop)
- rocks
- worksheet and pencil for each child
- clear plastic plates
- flashlights
- spray bottle (to keep worms moist during investigation)
- foods – pickle slices and grapes (to observe a worm's reaction to different foods)

Subjects: Science, math

Time: 30 minutes

Background Information:
Earthworms play a major role in improving soil fertility. They plow the soil by tunneling burrows through it. Their tunnels provide the soil with passageways though which air and water can circulate which is important for soil microorganisms and plant roots to survive. Also, these burrows can be a major conduit for soil drainage, particularly under heavy rainfall. At the same time, the burrows minimize surface water erosion.

Earthworms also aid in converting large pieces of organic matter into rich humus. Humus is the stable, long lasting remnant of decaying organic material. It improves soil structure and increases water retention. Earthworms pull down in the soil organic matter found on the dried dirt (i.e., leaves, manure) either for food or when it needs to plug its burrow. Once in the burrow, worms shred the leaves and partially digest them. Then they excrete wastes in the form of casts, a type of soil aggregate.

In this investigation, learners will explore the habits of worms, important workers in the Soil Department. See the attached page, *Wormformation*, for background information about worms.

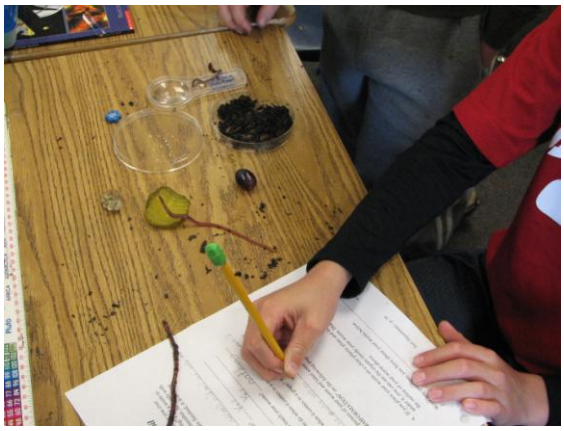
Getting Ready:
Buy or dig up worms. Either red wigglers or earthworms are fine. Be sure to keep them in moist material (potting soil is good) until you begin the activity.

Procedure:
Part A:
1. Provide learners with background information about how worms aid in soil production. Refer to the *Wormformation* side of the worksheet.
2. Provide each group of learners at least two worms and a clump of moist soil on a clear plastic plate (or petri dish). Spray the worms as needed so they don't lose body moisture during the activity.

3. Allow learners to observe the worms and think of 'I Wonder' questions before moving on to Part B.

Part B:

1. Learners can work with a partner. To complete the investigation, learners will also need a rock, a grape, a slice of pickle, and use of a flashlight.



2. Give each learner a worksheet, *Worming Around in the Soil*, to complete as they begin the investigation. *Wormformation* can be printed on the back of the worksheet. Questions on the worksheet will guide learners through the investigation.

Extension: Vermiculture in a Bottle

1. Introduce the topic of 'vermiculture' – worm composting. Remind learners that worms and other organisms break down organic matter into healthy soil.
2. Have the kids collect a two 2-liter soda bottles each.
3. Cut off the top, punch holes around the bottom for aeration. You can cut the bottom off another bottle and use it as a lid. Or place cheesecloth over the top with a rubber band.
4. Shred newspaper into a bowl; add water to paper and mix in a bowl.
5. Add soil to the bowl and mix with the newspaper/water until it is slightly damp.
6. Add a couple of handfuls of the soil/damp paper mixture to the bottle.
7. Add in some red worms (4 or so will do). Add a couple more handfuls of soil/paper. Then put some kitchen scraps (no meat or dairy) on top.
8. Put the lid or cheesecloth over the top. Wrap the bottle in brown paper or keep it someplace dark, as worms do not like bright environments.

www.chccs.k12.nc.us/mdelem/dwsite/**Worm**%20Hotel%20Booklet.pdf

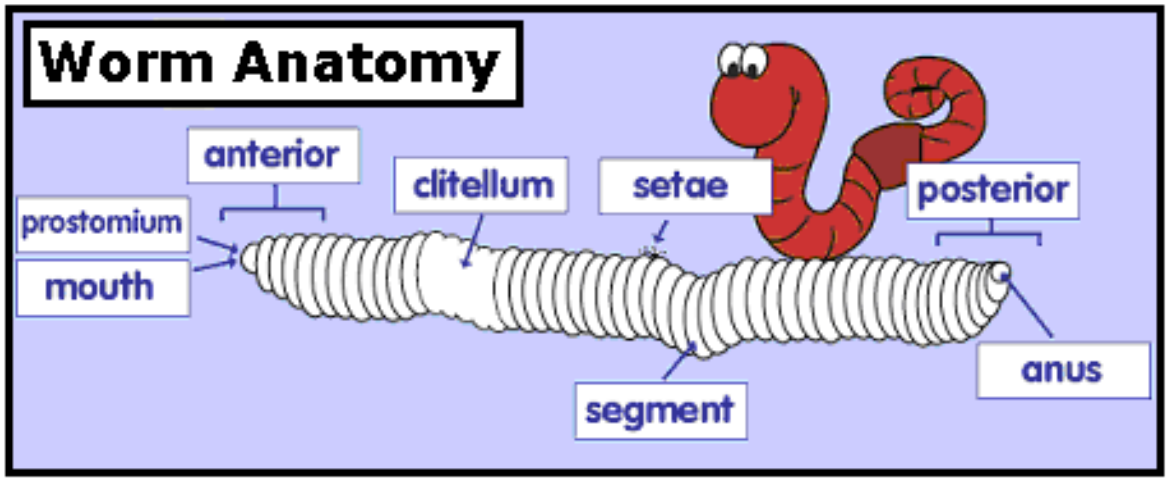
Discussion/Assessment:

Once learners complete their investigation, review their answers and their 'I wonder' questions. Suggest ways they might answer their own 'I wonder' questions.

Worming Around in the Soil

WORMFORMATION

- The shape of a worm is long and thin.
- It has a soft body.
- It has no bones.
- The body of the worm is made of lots of tiny rings with grooves between them.
- Each of these rings is called a **segment.**
- Each segment has bristles called **setae.**
- A worm has no arms, or legs, or eyes.
- The **tail** end of the worm is called the posterior.
- The **head** end is called the anterior.
- There is a flap over the worm's mouth. It is called the **prostomium.**
- The band around the worm is called the **clitellum.**
- A worm has 5 pairs of **hearts.**
- A worm has **intestines.**



http://www.urbanext.uiuc.edu/worms/anatomy/anatomy7h1.html

Name _____

Worming Around in the Soil

Worms are important workers in the Soil Department. Have you ever wondered how worms do such good work decomposing? Find a worm to investigate and answer the following questions. Remember, be gentle with your worm and put it back in the soil when you are finished; it is a living creature.

1. Describe a worm's natural habitat. _____

_____

2. Can your worm move backwards? _____

3. Can your worm move fast? _____

4. What happens when you touch your worm? _____

5. What does your worm do when it comes to a rock? _____

6. What does it do when it comes to a grape? What about a slice of pickle?

_____

7. Draw a picture of your worm and label some of its parts using the "WORMFORMATION" on the following page.

8. If you place your worm on a clear plastic plate and hold a flashlight under it, you can see the organs inside your worm. Draw those organs on the outline of your worm above.

Write any questions you have about your worm below.
*I wonder…*_____

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