

# Compost Science Investigation



# Activity Book

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## THE COMPOST CYCLE



# PURPOSE

The Compost Science Investigation activity book offers a series of observations and experiments, so students will learn the process of composting organic matter. This is a way that students can help the environment by reducing the amount of yard waste and food waste being thrown away in a landfill and by reducing the loss of nutrients that should remain in nature to be cycled.

The lessons can be used together or separately to compliment current classroom activities. Science indicators are listed below, and other indicators for social studies can be met with these activities as well.

## COMPOST SCIENCE INVESTIGATION SCIENCE INDICATORS

Grade	Indicator	No.	
Kinder-garden	Earth	2	Explore that animals and plants cause changes to their surroundings.
	Life	1	Explore difference between living and non-living things.
	Science Ways of Knowing	3	Interact with living things and the environment in ways that promotes respect.
	Science and Technology	1	Explore that objects can be sorted as "natural" or "man-made."
First	Earth	1	Identify that resources are things that we get from the living and nonliving environment and that resource are necessary to meet the needs and wants of a population.
		3	Explain that all organisms cause changes in the environment where they live; the changes can be very noticeable or lightly noticeable, fast or slow.
		4	Explore changes that greatly change the properties of an object and changes that leave the properties largely unchanged.
	Physical	4	Work in a small group to complete an investigation and then share fiends with others.
		8	Use oral, written and pictorial representations to communicate work.
Scientific Inquiry	9	Describe things as accurately as possible and compare with the observations of others.	
Second	Life	4	Compare similarities and differences among individuals of the same king of plants and animals, including people.
	Scientific Ways of Knowing	3	Describe ways in which using the solution to a problem might affect other people and the environment.
Third	Earth	4	Observe and describe the composition of soil.
		5	Investigate the properties of soil.

# INTRODUCTION

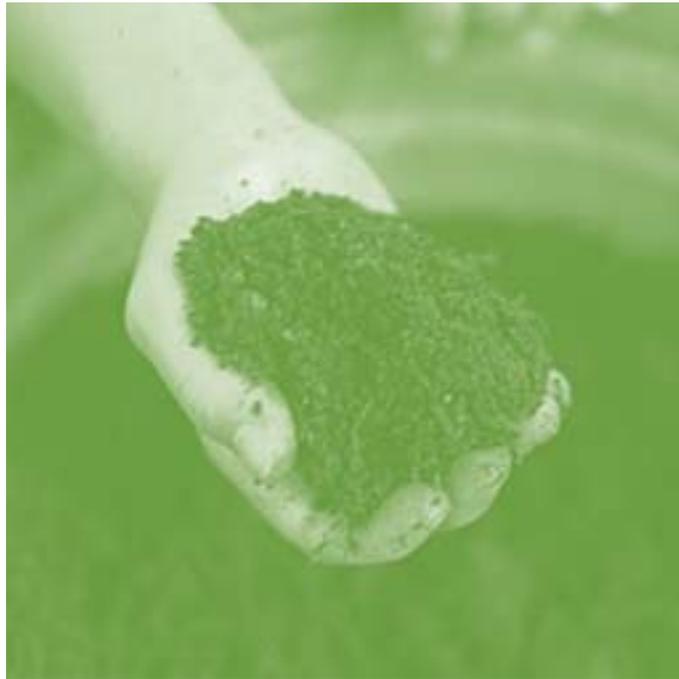
**Composting is a natural cycle** like the seasons, day and night or the water cycle. Compost is made from once living things or organic matter such as dead leaves, flowers, grass, certain crops and wood. The cycle begins, when leaves, grasses and plants die and start to decompose. The sun, water and compost creatures are also needed to start the decomposition process. The organic matter as it decomposes releases nutrients that the plant absorbed or generated. The living plants and trees absorb the released minerals and nutrients from the compost, which creates the cycling of nutrients in nature.

Not only is compost made of once living matter, non-living matter is found in the compost. Soil, minerals and stones are non-living or inorganic matter. The rocks are not broken down by living creatures such as worms that work in the compost process. Instead, rocks erode into smaller and smaller bits of minerals or sand, silt or clay. For example, a stone erodes by weathering and an orange composts as it is consumed by insects and microorganisms.

Decomposition happens when the sun, water and compost creatures break down or decay organic matter such as leaves, flowers, seeds etc... For example, the leaves will be digested by compost creatures like insects, worms, bacteria, antimycetes and fungi. Compost creatures' waste products are full of nutrients such as nitrogen, phosphorus and potassium and more that were once stored in the organic matter that they consumed. Just like when people eat food, the end waste product contains nutrients that were not absorbed by the stomach or intestines.

Compost improves soil health and helps plants to grow. Compost provides a larger surface and space for water and oxygen to attach, and it allows water to drain. Water is needed to help plants grow; however, if water does not drain, it can rot plants. Also, the compost creates spaces so roots can grow easily. Oxygen is needed for the aerobic bacteria as well as other compost creatures to survive. It is more difficult for a plant's roots to break through compacted soil, so they may not grow as fast or as large. This is partial why gardeners and farmers turn over or plow the soil before planting.

Compost provides nutrients to help plants grow. Compost contains unused nutrients from decomposed organic matter. When compost is applied to the soil, the nutrients are cycled back into the earth. Adding compost is like adding a vitamin to the soil as it is a natural fertilizer for gardens, flower pots and around trees. When plants need more nutrients to grow fast in the summer, the compost creatures are more active. They eat more decaying matter releasing more nutrients. In spring, the compost creatures are less active and thus, only produce small amount of nutrients for the plants.



Good, rich compost is usually dark brown to black, much darker than regular top soil because of all the decomposed organic matter. Observing compost with the naked eye or under a magnifying glass should reveals bits of twigs, leaves and seeds. The interior of the compost pile should be much warmer than the ground temperature of near by soil. A hot

piles means the microorganisms are active. The optimal temperature for a compost pile is between 90°F and 140° F. An active pile breaks down organic material easily and produces heat or energy and water.

Since organic matter accounts for 21% of the waste stream, composting is a solution to reduce waste going into Ohio landfills. Composting in your backyard or insuring grass clipping, leaves, brush and wood are composted by the city or a composting facility will benefit the environment. Composting conserves energy and natural resources, improves topsoil and soil health, conserves space in landfills, lowers the cost that a city pays for trash disposal and reduces the need for petroleum based fertilizers, which can harm humans, wildlife and pollute the water.

Start composting for a better earth.

# ACTIVITY ONE: WHAT'S ORGANIC?

## Organic

### Vocabulary

**Living (organic)** - Comes from a living or once living organism; has characteristics of a living animal or plant; obtained from plant or animals source; contains carbon atoms.

**Non-living (inorganic)** - Something that did not come from animals or plants; lacks carbon atoms like water.

**Natural** - Not created or altered by humans; something from nature.

**Man-made** - Something from nature that humans changed, created, constructed or manufactured.

**Objective:** Students will learn the difference between living (organic) and non-living (inorganic) natural resources and the difference between natural and man-made products.

**Skills:** Classifying, observing, comparing and describing.

**Materials:** Non-living objects: aluminum can, yogurt container, steel can, jewelry, rock, brick, glass and clay flower pot.

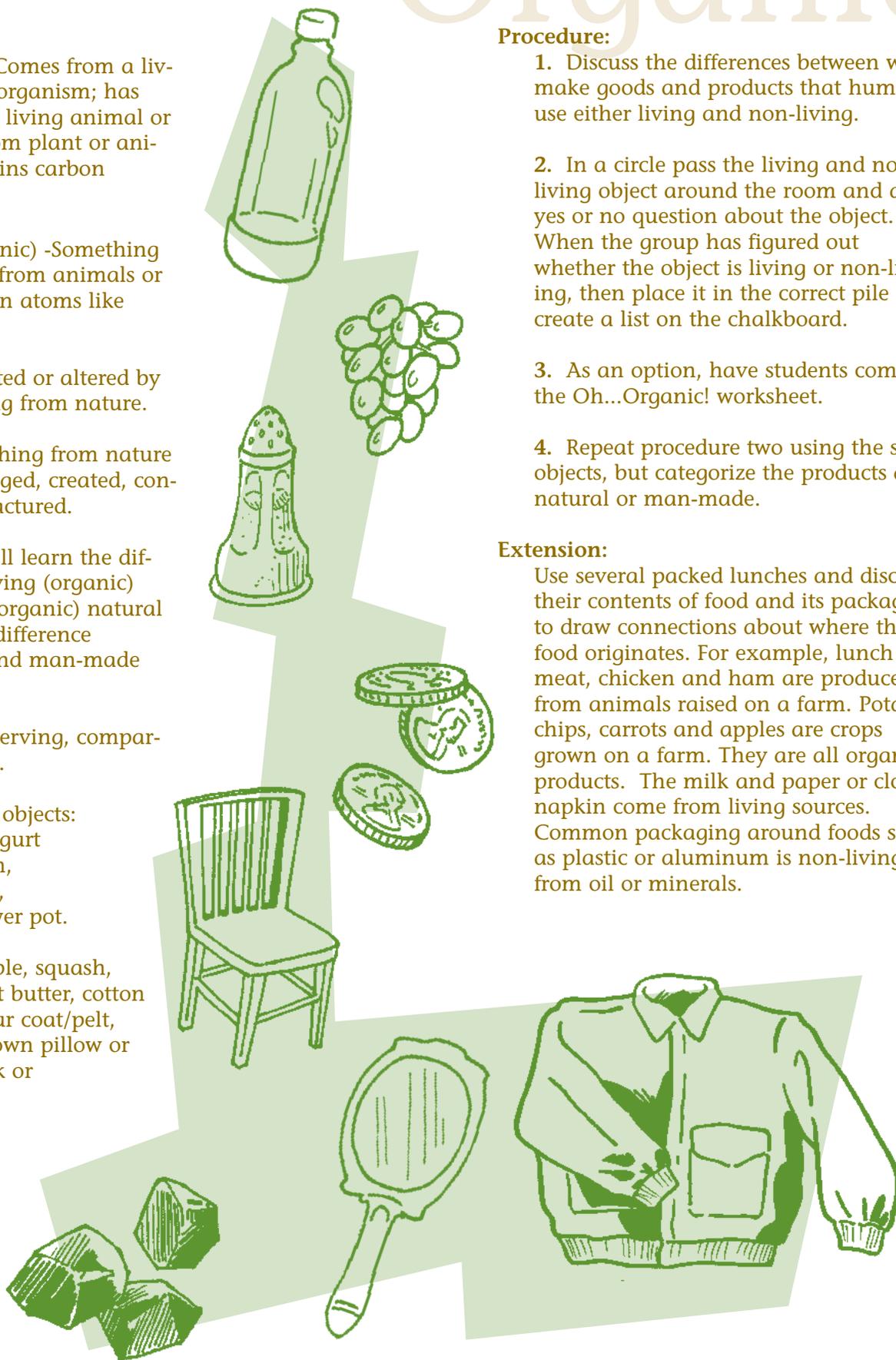
Living objects: Apple, squash, paper card, peanut butter, cotton cloth, dollar bill, fur coat/pelt, steak and goose down pillow or picture of fur, steak or goose feathers.

### Procedure:

1. Discuss the differences between what make goods and products that humans use either living and non-living.
2. In a circle pass the living and non-living object around the room and ask a yes or no question about the object. When the group has figured out whether the object is living or non-living, then place it in the correct pile or create a list on the chalkboard.
3. As an option, have students complete the Oh...Organic! worksheet.
4. Repeat procedure two using the same objects, but categorize the products as natural or man-made.

### Extension:

Use several packed lunches and discuss their contents of food and its packaging to draw connections about where the food originates. For example, lunch meat, chicken and ham are produced from animals raised on a farm. Potato chips, carrots and apples are crops grown on a farm. They are all organic products. The milk and paper or cloth napkin come from living sources. Common packaging around foods such as plastic or aluminum is non-living from oil or minerals.



# Teacher Answer Sheet

Product	Natural Resources	Living/Non-living	Natural/Man-made
Aluminum can (metal)	Bauxite (mineral)	NL	MM
Steel can/car (metal)	Iron ore	NL	MM
Terra cotta flower pot	Clay	NL	MM
Plastic Container	Oil	NL	MM
Jewelry/coins (metal)	Mineral	NL	MM
Rock	Mineral	NL	N
Brick	Clay	NL	MM
Glass/mirror	Sand	NL	MM
Coal	Coal	NL	N
Salt	Mineral	NL	N
Apple/squash/grape	Crops	L	N
Peanut butter	Crop	L	MM
Paper money/ card	Tree	L	MM
Tire swing	Tree	L	MM
Wash/cotton cloth	Plant	L	MM
Wooden chair	Tree	L	MM
Leather coat	Cow	L	MM
Chicken/ Steak	Animals	L	N
Honey	Bee	L	N
Wool sweater	Sheep	L	MM
Goose down or fur coat	Animals	L	MM

# Oh....Organic! Worksheet

Name: \_\_\_\_\_

## Directions:

1. Circle the objects that are living (organic) and put draw a box around the objects that are non-living (inorganic).

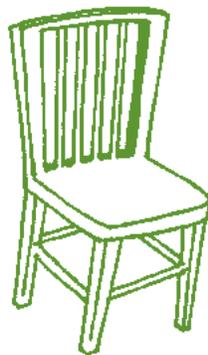
2. Color the shape green for products that are grown or came from nature. Color the shape orange for products that are man-made.



Leather Coat



Coins



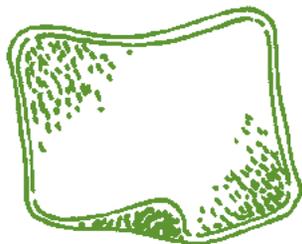
Wooden Chair



Salt



Chicken Wing



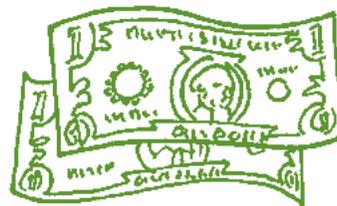
Wash Cloth



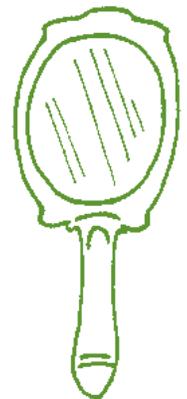
Coal



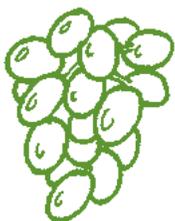
Tire Swing



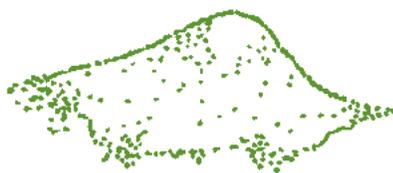
Paper Money



Mirror



Grapes



Sand



Plastic Bottle



Car

# ACTIVITY TWO: DECOMPOSITION DETECTIVES

## Vocabulary

**Cycles** - A series of reoccurring events, events that reoccur regularly and usually lead back to the starting point.

**Decompose** - The process of breaking down organic material into simple materials.

**Objective:** Students will observe how living and non-living materials decompose over time.

**Skills:** Observing, arranging, recording, cooperating, analyzing, drawing, sharing and comparing.

**Materials:** A large clear plastic bin or several smaller clear containers, marker, tape and soil

**Living materials:** Banana peels, cornstarch noodle, bread, lettuce, leaves, cotton cloth or ball and notebook paper.

**Non-living materials:** Steel can, plastic bag, plastic cap, glass marble and aluminum foil.

## Procedure:

1. Explain decomposition process through help from the lesson demonstrations.



2. Have students work on the Decomposition Cycle Sheet.

3. Prepare the bin by labeling a piece of tape with a living or non-living material's name placed 2-3 inches apart. A large bin can have multiple layers of testing materials lined along the edges.

4. Have students add soil and bury the materials as labeled. The materials should be visible from the outside of the bin. After students are finished making the decomposition bin have them wash their hands.

5. Have students observe one or more of the organic materials and the same number for non-living materials, and have them record initial observations on student observation sheet.

6. Have students record observations every week or two for several months.

## Demonstration

1. Fill a clear pitcher of water and add sugar or flavored drink. Mix together to show that the sugar dissolves in the water. Pour each student a small glass and ask what it tastes like. The sugar is still there even if you cannot see it. Like the sugar, leaves, grass and some food are in compost, but maybe too small or broken down to tell the difference.

2. Hand each student a cornstarch packing or craft noodle. Have students tear their noodle into pieces. Ask them how the noodle has change? Fill a bowl with water and have students drop noodle pieces in a bowl of water. Like the sugar in water, the cornstarch noodles will vanish in water. This demonstrates the differences between an object that maintains its physical appearance compared to a large change in the appearance of an object. Also, it shows what would happen to organic materials if decomposition was accelerated at warp speed. For example, materials such as apples take 1-6 months to decompose where as wax paper cup takes 5 years and plastic and glass containers will never decompose.

## Extension:

Use a non-compostable and non-recyclable plastic or light bulb for a craft project.

Since these materials do not decompose in the landfill, it becomes very important to reuse them.

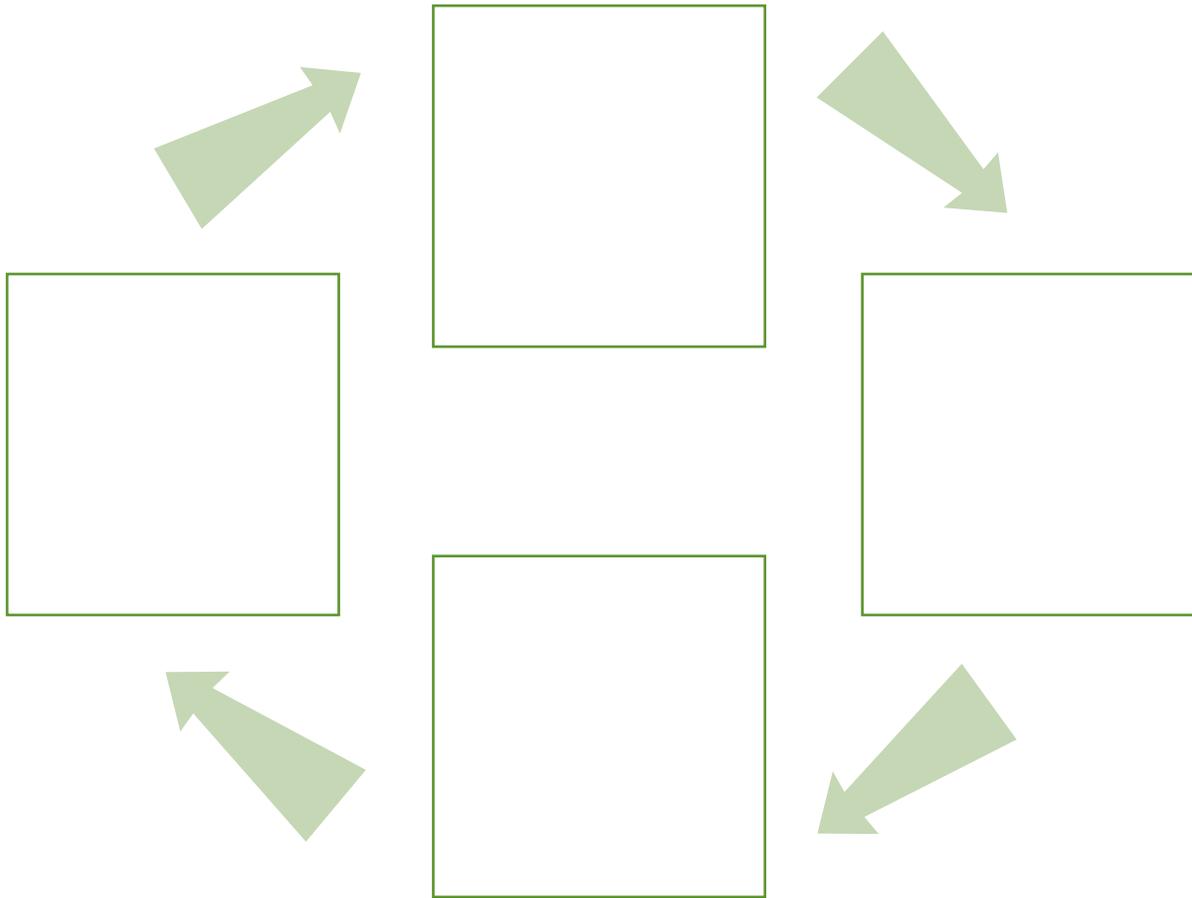
7. At the end of the investigation, have students share their findings with the rest of the class and discuss the following questions:

- Did any objects have fungi or mold growing on it?
- How did the materials change in color, shape or size?
- What are the physical changes to the organic matter?
- What are the physical changes to the inorganic matter?
- What materials may compost quicker than other materials that the class observed?
- What materials may not be compostable?

# Decomposition Cycle

Name: \_\_\_\_\_

**Directions:** Cut out the boxes and glue the pieces in the correct order of the decomposition cycle



# Decomposition Detectives

Name: \_\_\_\_\_

## Directions:

Label each square with the material that you are observing and draw a picture of what it looks like.

### LIVING

Week ____	Week ____	Week ____

### NON LIVING

Week ____	Week ____	Week ____

# ACTIVITY THREE: COMPOST CONSTRUCTION

## Construction

### Vocabulary

**Compost** - Material produced when micro-organisms break down organic matter; used as a soil conditioner.

**Soil** -Upper layer of earth made from organic matter and eroded rocks which make sand, silt and clay; a substance used to grow plants containing decomposers, oxygen and water.

**Objective:** Student will learn to construct a compost pile.

**Skills:** Observing, describing, recording, working cooperatively and drawing connections.

**Materials:** A large clear plastic bin, garden soil, compost, and tape, markers, garden gloves and shovels.

**Green stuff or nitrogen:** grass clipping, dead flowers, food, coffee grinds, manure. **Brown stuff or carbon:** leaves, needles, newspaper shredded, sawdust.

### Procedure:

1. Label a large clear plastic bin as "compost pile." Measure and label the layers of a compost in inches going upon the outside using tape and markers.

2. Have students work in groups to fill the compost pile bin with the proper amount of material.

3. Sprinkle with water, add the lid and place the bin near a window. After building the compost pile bin, have students wash their hands. Periodically, the lid should be opened to allow oxygen in the bin and add water to keep pile moist.

4. Every week or two have two students turn over compost pile by mixing the layers with shovels or other garden tools. If the pile is "cooking" or decomposing well more green materials can be added.

*TIPS: To help dry an over watered pile, add sawdust, straw or wood chips.*

*If pile is too dry, then turn over and water.*

*If pile smells rotten, then turn pile, leave lid open by open window and add sawdust, straw, brown leaves or wood chips.*

*If pile is damp and sweet smelling and will not heat up, then it needs nitrogen, so add fresh grass clippings, manure, blood meal or urea fertilizer.*

*If pile smells like ammonia, then add brown leaves, sawdust, straw or wood chips.*

5. Push a thermometer into the pile to keep a record of the pile's temperature.

6. Have students record observations on the bin sheet and share their observations with the class.

7. Draw on the board or overhead the happy compost pile. Have students discuss if their compost pile is cooking and why or why not?

### Extension:

1. Use compost to pot plants, grow seeds or for CSI activity four and five.
2. Have students copy the happy compost pile into a "recipe card" to be reproduced in their backyard.



# Compost Construction/ Student Observation Sheet

Directions: Fill in observations in the table when the compost pile is mixed.



Date/Day	Student names	Temperature	Smell	Add anything?

# ACTIVITY FOUR: INVESTIGATE SOILS OF THE GARDEN

## Vocabulary

**Clay** - Soil made of very fine particles of minerals that can be tightly compacted, which creates a waterproof like seal.

**Mulch** - A protective covering usually made of shredded wood that keeps soil moist, controls weeds, prevents soil loss and maintains ground temperature.

**Sand** - Loose grainy material that is created when rocks erode.

**Texture** - How something feels.

**Objective:** Students will learn to distinguish compost, soil and mulch properties.

**Skills:** Observing, describing, classifying, analyzing and drawing connections.

**Materials:** Samples of mulch, compost, sand, clay and garden soil. Shovels, tubs or trays, magnifying glasses and spoons.

## Procedure:

1. Discuss how students would use their five senses to describe materials and distinguish them by their properties.

2. Conduct the demonstrations on how different garden materials absorb water as one of the properties of soils, and/or have students color in water droplets and oxygen molecules on the Soils, Water and Oxygen student sheet.

3. Have students examine different types of gardening materials and fill out the Garden Soil's Properties student sheet.

4. Discuss the differences between each material's properties and why it is beneficial to a garden.

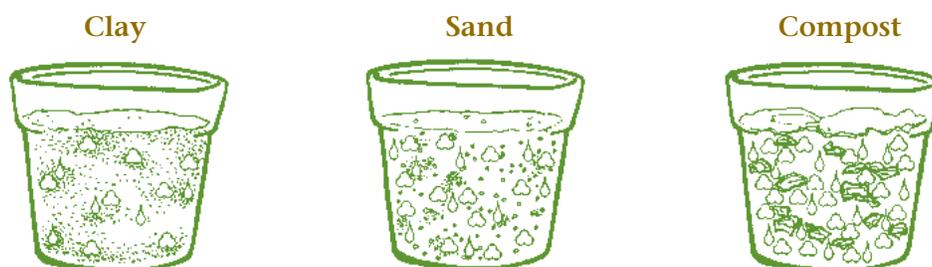
## Demonstrations:

1. Soil has many properties such as it is able to absorb water like a sponge. Clay is very small, sand is larger and compost has the largest clumps. Label a small flower pot as sand, clay or compost. Fill the flower pots with a cup of sand, clay or compost. Pour one cup of water in each pot while the students count out loud to determine how fast the water reaches the bottom. Catch the water runoff in a measuring cup underneath, and have the students compare the amount of water from each pot. Ask the students where is the rest the water? The compost should have a slower water flow rate and will absorb more water than the clay or sand. Since clay is the smallest particle, it should have a faster water flow rate than sand or compost.

2. Soil is made up of clay, silt and sand which are different sizes. Compost actually clumps as a large sized particles. Use a basketball as compost, soft ball as sand and golf ball as clay. Tell the students that their hands are water droplets. How many of them can be touching each ball at once. Or have students put stickers on softball as compost, golf ball as sand and marble as clay. The stickers represent water droplets, and have the students count them to determine which soil holds the most water. Compost has the largest surface area to attract the most water molecule.

## Extension:

Add 2-3 seeds to each pot and observe how plants grow.



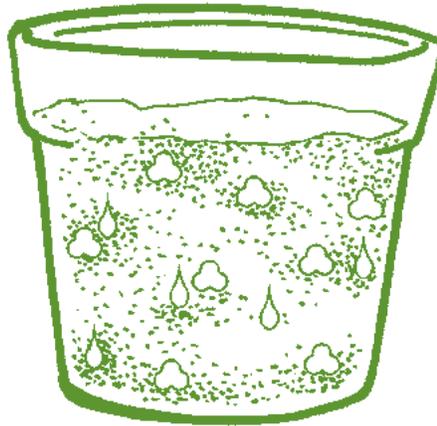
# Soils, Water and Oxygen

Name: \_\_\_\_\_

## Directions:

Color in water droplets  and oxygen molecules  in each picture.

Clay



Seconds \_\_\_\_\_

Amount of water \_\_\_\_\_ cup

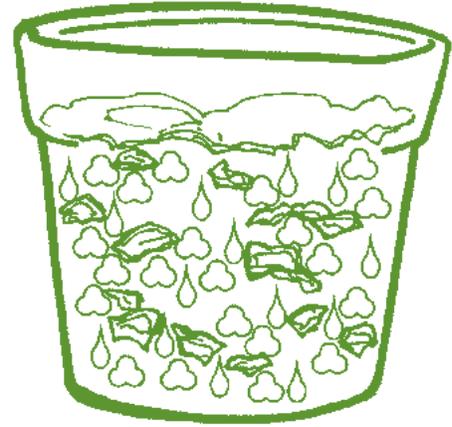
Sand



Seconds \_\_\_\_\_

Amount of water \_\_\_\_\_ cup

Compost



Seconds \_\_\_\_\_

Amount of water \_\_\_\_\_ cup

## Questions

1. Which pot has the most room for water?
2. Which pot has the most room for oxygen?
3. Which pot has the least room for water?
4. Which pot has the least room for oxygen?

# GARDEN SOIL'S PROPERTIES

Directions:

Name: \_\_\_\_\_

1. Look, smell, feel each of the materials and circle one or two words that best describe each material.



**Color**



**Feel**



**Smell**



**Shape**



**Size**



**Look**

	Color	Feel	Smell	Shape	Size	Look
Top Soil	tan light brown dark brown black red	smooth rough slimly gritty soft hard	musky fruity nutty pine	round square	big pieces  small pieces	pieces look alike
				even sized uneven sized		pieces look different
Mulch	tan light brown dark brown black red	smooth rough slimly gritty soft hard	musky fruity nutty pine	round square	big pieces  small pieces	pieces look alike
				even sized uneven sized		pieces look different
Compost	tan light brown dark brown black red	smooth rough slimly gritty soft hard	musky fruity nutty pine	round square	big pieces  small pieces	pieces look alike
				even sized uneven sized		pieces look different
Sand	tan light brown dark brown black red	smooth rough slimly gritty soft hard	musky fruity nutty pine	round square	big pieces  small pieces	pieces look alike
				even sized uneven sized		pieces look different
Clay	tan light brown dark brown black red	smooth rough slimly gritty soft hard	musky fruity nutty pine	round square	big pieces  small pieces	pieces look alike
				even sized uneven sized		pieces look different

2. Describe in a sentence what each material is like and what it is used for in a garden.

3. Answer the questions below:

How is top soil and compost similar?

Does sand and clay feel the same or different?

How are clay and sand different?

# ACTIVITY FIVE: COMPOST & COMPANY

## Vocabulary

**Microorganisms** - Organisms that can only be seen through a microscope such as bacteria, fungi, actinomycetes and amoebas.

**Macro organisms** - Creatures that are visible to the eye.

**Insects** - Organisms with three pair of legs.

**Fungus** - A plant that lives off of other living things, lacks chlorophyll and reproduces by spores.

**Bacteria** - A single celled, rod or spherical shaped organism that lacks chlorophyll.

**Amoeba** - A freshwater or marine parasite.

**Actinomycetes** - A branch like bacteria found in soil and some of which can be harmful to humans and animals.

**Objective:** Students will investigate soil, compost and mulch for compost creatures and identify their role in a compost pile.

**Skills:** Observing, describing, recording

**Materials:** Aluminum trays, spoons, magnifying glasses, critter cards

## Procedure:

1. Set up stations for groups of three or four students to search for critters in soil, compost and mulch. Use compost from activity three.

2. Review the compost critter cards, so students are familiar with the creatures.

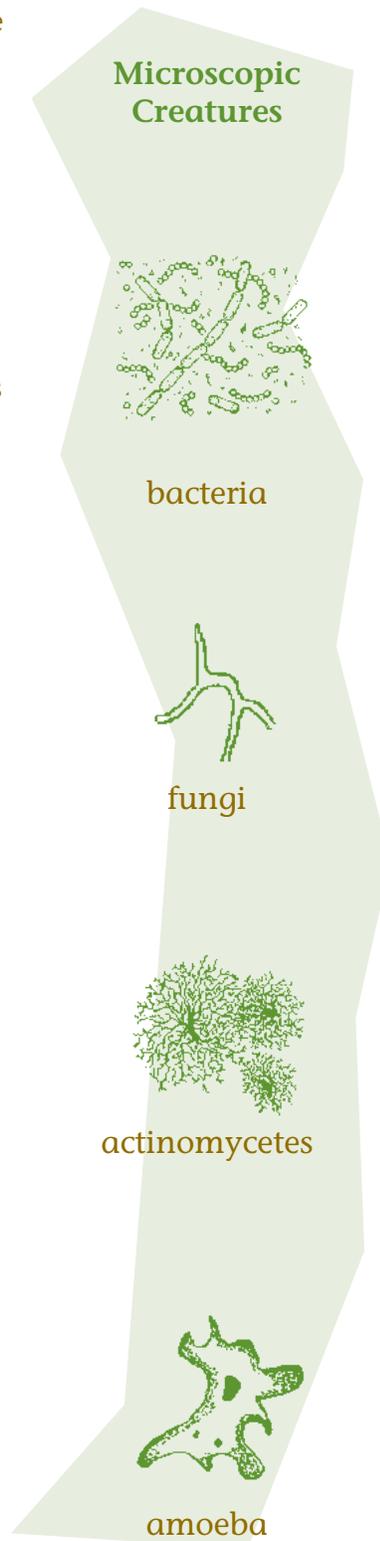
3. Have students split into groups and work on discovering creatures on the checklist.

4. Have students create a story or drawing that describes the compost critter's job in a compost pile.

## Extension:

1. Grow classroom compost creatures like a worm bin to compost veggie and fruit lunch leftovers.

2. Have each student become one of the compost creatures and have the class connect to each other as they interact (eat or be eaten by) with each other using yarn to create a compost web.



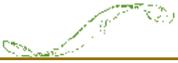
# Creature Checklist

Name: \_\_\_\_\_

Micro organisms (bacteria, fungi, actinomycetes and amoeba) will be in each of the samples, but you will not be able to see them.

**Directions:**

1. Slowly move around the material with a spoon to find compost creatures.
2. Use magnifying glass to identify the creature and mark the correct box.

Compost Creature	Soil	Mulch	Compost
Ant 			
Centipede 			
Crickets 			
Darkling Beetle 			
Earthworm 			
Flatworms 			
Feather Wing Beetle 			
Fly 			
Ground Beetle 			
Millipede 			
Mites 			
Potworms 			
Pseudoscorpions 			
Red Worm 			
Rotifera 			
Roundworm 			
Rove beetle 			
Snail 			
Sow Bug 			
Springtail 			

# COMPOST CRITTER CARDS

# Critter Cards

## CENTIPEDE

**Food:** Live insects, small animals

**Live:** Damp places



CENTIPEDE

## OPOSSUM

**Food:** Insects, snails, rodents, beetles, grubs, carrion, small animals, dead animals, frogs and toads, birds and their eggs, fruits, vegetables and garbage



**Live:** wooded area

OPOSSUM

## SOW BUG

**Food:** Plants, rotting plants and animals (omnivores/scavenger)

**Live:** Damp place under rocks, logs or in leaf litter

**Good:** Food source for many animals and insects. Improves soil a little.



SOW BUG

## RED WORMS

**Food:** Organic material, decomposing animals, manure

**Live:** Soil

**Good:** Add oxygen and mix soil. Eat large amounts of organic material



RED WORMS

## MILLEPEDE

**Food:** Plants, rotting organic matter, leaves, wood

**Live:** Dark, damp outer layer of compost heap or under rocks, logs



MILLEPEDE

## FUNGI

**Food:** Plants

**Live:** In soil, on plants and roots

**Good:** Eaten by other animals and it can change hard to digest organic material into forms that other organisms can use.



FUNGI

# COMPOST CRITTER CARDS

# Critter Cards

## ROVE BEETLE

**Food:** Carrion feeding and pest insects, snails, slugs

**Live:** Near decaying animal and plant matter, leaf litter, rotting logs

**Good:** Generalist predators



## ANT

**Food:** Live or dead insects nectar, honey dew (generalists)

**Live:** Surface layer of soil, almost finished compost pile

**Good:** Most important predator of small invertebrates, disperse seeds, mix and aerate soil. Food for toads, lizards, spiders, bats and birds.



## ROUNDWORM (NEMATODES)

**Food:** Dead organic matter, bacteria fungi, plants, algae, ameobas

**Live:** Soil

**Good:** Control disease and cycle nutrients

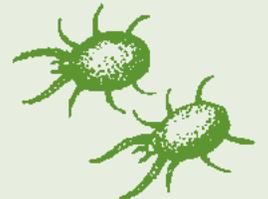


## MITE

**Food:** Decaying matter, fungi, manure

**Live:** Everywhere, soil, even on parasites

**Good:** Scrub bacteria and fungi off plant roots



## FLY

**Food:** Sugary food, nectar, rotting fruit

**Live:** Garbage, manure, decaying animals and meat

**Good:** Help eat and eliminate dead animals, converts what is eaten to soil and pollinates some flowers. Eaten by birds

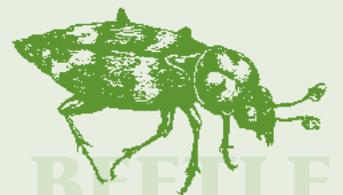


## GROUND BEETLE

**Food:** Other insects

**Live:** On the ground under rocks, logs, leaves, bark, decomposing wood and other ground debris

**Good:** Predator



# COMPOST CRITTER CARDS

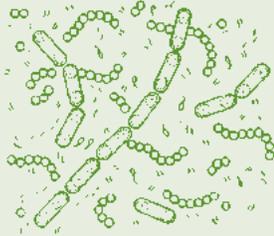
# Critter Cards

## BACTERIA

**Food:** Carrion feeding and pest insects, snails, slugs

**Live:** Everywhere in soil, plants and animals

**Good:** Generate heat and releases nutrients in soil



## ROVE BEETLE

## FEATHER-WINGED BEETLE

**Food:** Spores of fungi in rotten wood, litter and dung

**Live:** Compost pile

**Good:** Droppings nourish pile



## FEATHER-WINGED BEETLE

## DARKLING BEETLE

**Food:** Decaying leaves, sticks, grain and grass, dead insects

**Live:** Under rocks, logs, carrion, compost pile

**Good:** Turn organic matter to soil. Eaten by predator beetles, rodents, lizards, spiders and birds.



## DARKLING BEETLE

## ACTINOMYCETES

**Food:** Leaves and other organics (Decomposer)

**Live:** Near decaying matter



## ACTINOMYCETES

## PREDATORY MITE

**Food:** Potworms, roundworms and other microorganisms

**Live:** Moist soil, leaf litter or compost pile



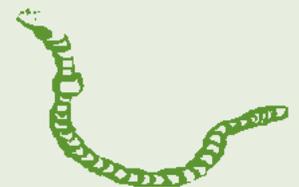
## PREDATORY MITE

## EARTHWORM

**Food:** Organic matter, soil, attached bacteria and fungi

**Live:** Soil, compost

**Good:** Create nutrients and aerate soil



## EARTHWORM

# COMPOST CRITTER CARDS

# Critter Cards

## CRICKETS

**Food:** Organic matter, decaying plants, fungi, seedling plants

**Live:** Under rocks and logs

**Good:** Breaks down plant material to renew soil minerals. Eaten by spiders, wasps, ground



## SPRINGTAIL

**Food:** Nematodes, decaying matter, fungi, manure, bacteria

**Live:** Moist places with soil, leaf litter and compost



## AMOEBA

**Food:** Decaying plants, other amoeba, fungi, bacteria

**Live:** Soil, everywhere

**Good:** Release nitrogen to be used by plants and other organisms



## SNAIL/SLUG

**Food:** Garden plants, vegetables, decaying plants and soil

**Live:** Surface layer of soil and compost pile



## PSEUDOSCORPIONS

**Food:** Roundworms, springtails, ants, mites, small flies

**Live:** Mulch, moss, leaf litter, under stones and tree bark, in manure

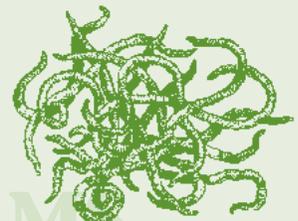
**Good:** Predator of microscopic animals living in soil, leaf litter and bark



## POTWORMS (WHITE)

**Food:** Organic matter, soil, attached bacteria and fungi

**Live:** Damp compost or soil



# COMPOST CRITTER CARDS

# Critter Cards

## SOIL FLATWORM

**Food:** Small invertebrates, living and decaying plant and other organic matter

**Live:** Moist, dark, cool place like compost piles, soil and rotting logs



SOIL FLATWORM

## ROTIFER

**Food:** Decaying matter, fungi, bacteria

**Live:** Waterfilled spaces



ROTIFER

## Compost Recipe



**Organic:** Leaves, grass clipping, plants, weeds, nuts, straw, flowers, fruits, vegetables, bread, wood ashes or shavings, egg shells, coffee or tea grounds, sawdust, lint, shredded paper/paper towel



**Activator:** Animal manure, blood meal or compost.  
Soil  
Water  
Air



**Microorganisms.** Bacteria and fungi do most of the decomposition and they need a warm, moist environment to work well.



Note: bury food under 8 inches of soil, compost, leaves, straw or sawdust.

**Compost:** Latin words **com** meaning together and **post** meaning to bring.

# The Compost Bin Song

(Tune: I'm a Little Tea Pot)

Here is the Compost  
Here is the Lid  
I wonder whatever inside is hid?  
Why it's a slug  
Without any doubt  
Open the lid and let it slide out.



# I'm a Little Earthworm

(Tune: I'm a Little Tea Pot)

I'm a little earthworm  
Under ground  
Munching on dead leaves  
That I have found  
When the ground fills up  
With spring rain  
Out I pop  
To breath again.



## Compost Resources

[www.dnr.state.wi.us/org/caer/ce/eeek/cool/natrec.htm](http://www.dnr.state.wi.us/org/caer/ce/eeek/cool/natrec.htm)  
*slide show on composting* [aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/kid4.html](http://aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/kid4.html)  
<http://place.scholastic.com/magicschoolbus/games/teacher/rot/index.htm>, along with story *Rot Squad*  
<http://cpmcnet.columbia.edu/dept/physio/schools/318/compost.html>  
[www.kidsgardening.com/Dig/DigDetail.taf?ID=1152&Type=Art](http://www.kidsgardening.com/Dig/DigDetail.taf?ID=1152&Type=Art)  
<http://compostingcouncil.org/index.cfm>

## Insect Resources

[www.urbanext.uiuc.edu/insects/index.html](http://www.urbanext.uiuc.edu/insects/index.html)  
[www.harcourtschool.com/activity/moby/insect/mobile\\_insect.html](http://www.harcourtschool.com/activity/moby/insect/mobile_insect.html)

## Soil Resources

Cuyahoga County Soil and Water Conservation District, 216-524-6580.

## Other Environmental Guidebooks

Sharing A Small World: Environmental Activities for Young Learners - download through Teacher PET Project  
Taking Care of Nature's Resources, download through Hamilton County Solid Waste District



CUYAHOGA COUNTY  
SOLID WASTE DISTRICT

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## Make It a Habit: Reduce Reuse Recycle

Jimmy Dimora  
**Commissioner**

Peter Lawson Jones  
**Commissioner**

Timothy F. Hagan  
**Commissioner**