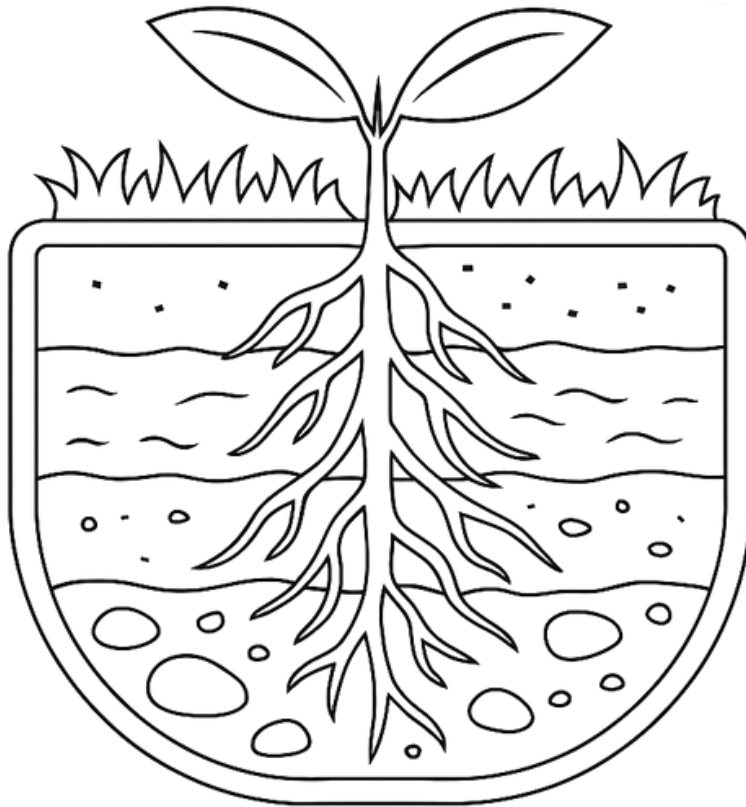


# Soil

## Where it all Begins



**NATIONAL ASSOCIATION  
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**STUDENT ACTIVITY JOURNAL**

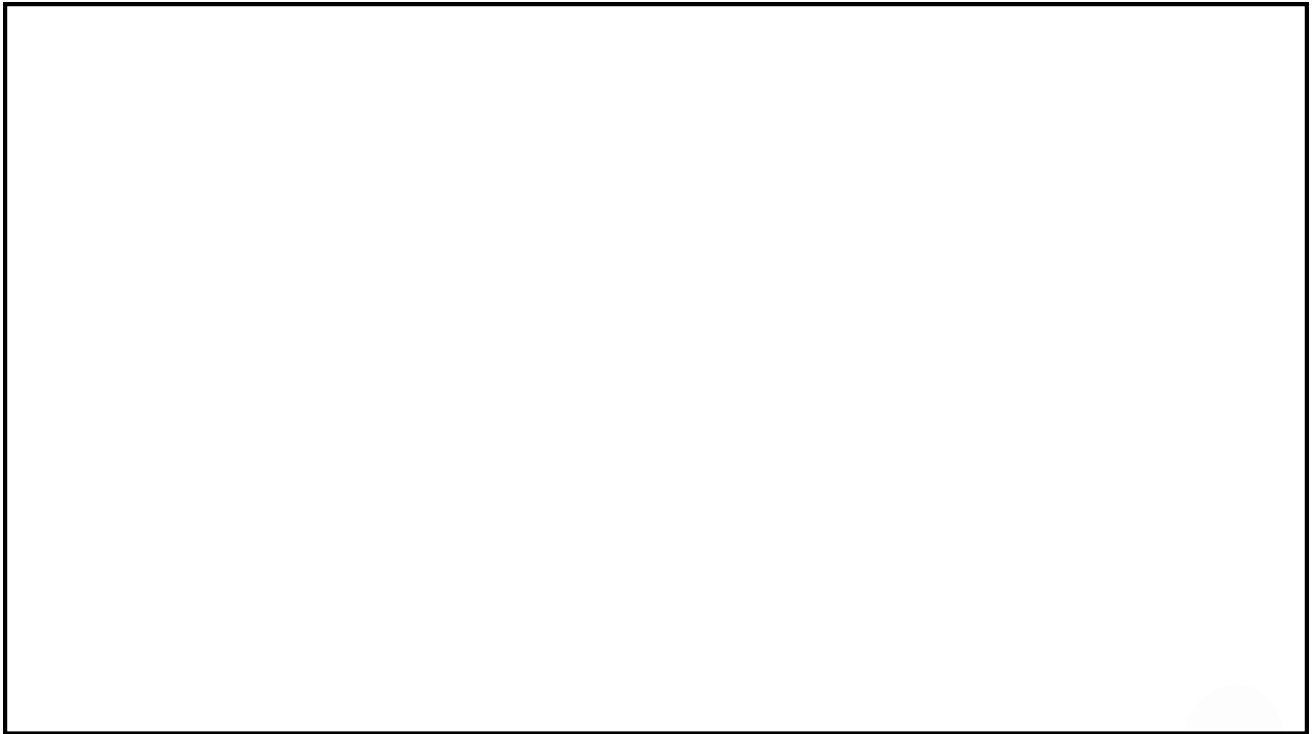
**THIS JOURNAL BELONGS TO:**

# SOIL TELLS THE STORY

Soil is more than just the ground beneath our feet. It is a storyteller. When we look closely, soil can tell us the history of a place. Layers of soil hold clues about the plants and animals that once lived there, the people who used the land, the weather that shaped it, and even buildings that stood long ago. Every rock, root, bug, or bit of clay has a story to share.

## ***What story does your soil tell?***

Take a close look at the soil around you. What do you notice? Is it dark or light, wet or dry, crumbly or smooth? Are there roots, bits of leaves, or tiny creatures in it? Draw what you see and write a few sentences about what this soil might say if it could tell you about its past.



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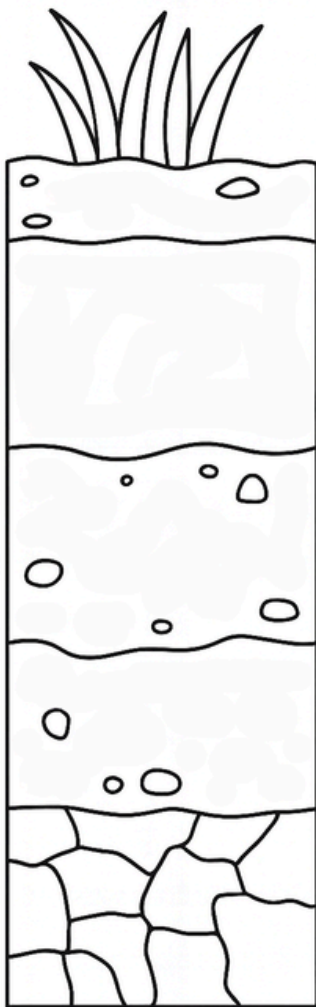
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# SOIL SANDWICH

Did you know that soil is made of different layers stacked on top of each other like a sandwich? The top layer is full of leaves, roots, bugs, and other living things that help plants grow. Below that is the topsoil, which is dark and rich and holds water and nutrients. Deeper down is the subsoil, which is harder and has more clay. At the very bottom is the rocky layer that has been there for a long time.

Each layer plays an important role in helping plants, animals, and people. When we protect the soil by not letting it wash or blow away, we help keep all those layers healthy. Conservation helps soil stay strong and full of life, so it can continue to grow our food, filter water, and support nature all around us.

**Read the descriptions below to learn what makes each layer unique.  
Then color the layers and add in what belongs inside each one.**



ORGANIC  
MATERIAL

TOPSOIL

SUBSOIL

PARENT  
MATERIAL

BEDROCK

**Organic Material:** This top layer is full of plant parts like grass, leaves, and tiny bits of dead plants. It's where worms, insects, and fungi live and help turn this material into nutrients. Color the grass and add bugs or leaves. Draw something you think lives in this layer.

**Topsoil:** Topsoil is dark and full of nutrients. It holds water and is where most plant roots grow. It's also where seeds start to sprout. Color this layer brown or black. Draw some roots or tiny seeds starting to grow.

**Subsoil:** This layer has more clay and fewer living things. It stores water and minerals that plants need to grow strong. Color it orange or reddish-brown. Draw some clay chunks or deep roots reaching down.

**Parent Material:** This layer is made of pieces of rock that have broken down over long periods of time. It is the base material that soil forms from. Water and plant roots can slowly move through it, and over time, it helps create the layers above. Use gray or tan to color this layer.

**Bedrock:** This is the solid rock deep below all the other layers. It's very hard and has been here the longest. Over time, it breaks down to help form the layers above. Color this layer dark gray. Imagine what kind of rock might be under your feet.



# Make Your Own Soil Jar

Understanding Soil Layers – Soil is made of sand, silt, clay, and bits of plants and rocks. When mixed with water, these particles separate into layers that you can see. This simple test shows how soil works and helps you spot its different parts.

## WHAT YOU'LL NEED

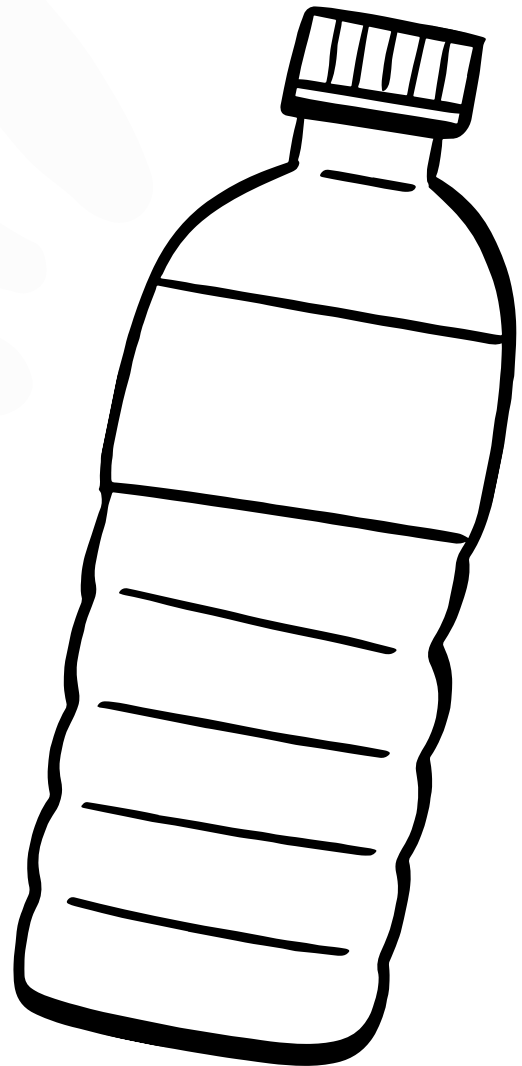
- 1 clear jar with a lid
- Soil (fill halfway)
- Water (fill the rest)
- Spoon or stick to stir
- Marker or tape to label layers

## INSTRUCTIONS:

1. Fill the jar halfway with soil.
2. Add water, leaving some space at the top.
3. Stir or shake the jar.
4. Let it sit to observe the layers form.

## WHAT TO LOOK FOR

- Sand and rocks sink first.
- Silt makes a middle layer.
- Clay takes the longest to settle and may make the water cloudy.
- Organic bits might float on top.



## What Do You See?

The bottom layer is made of \_\_\_\_\_.

The middle layer is made of \_\_\_\_\_.

The top cloudy layer is \_\_\_\_\_.

On the surface, I see \_\_\_\_\_.

## Draw It!

In the empty bottle,  
color the contents of  
your container and  
label each layer.

## My Observation:

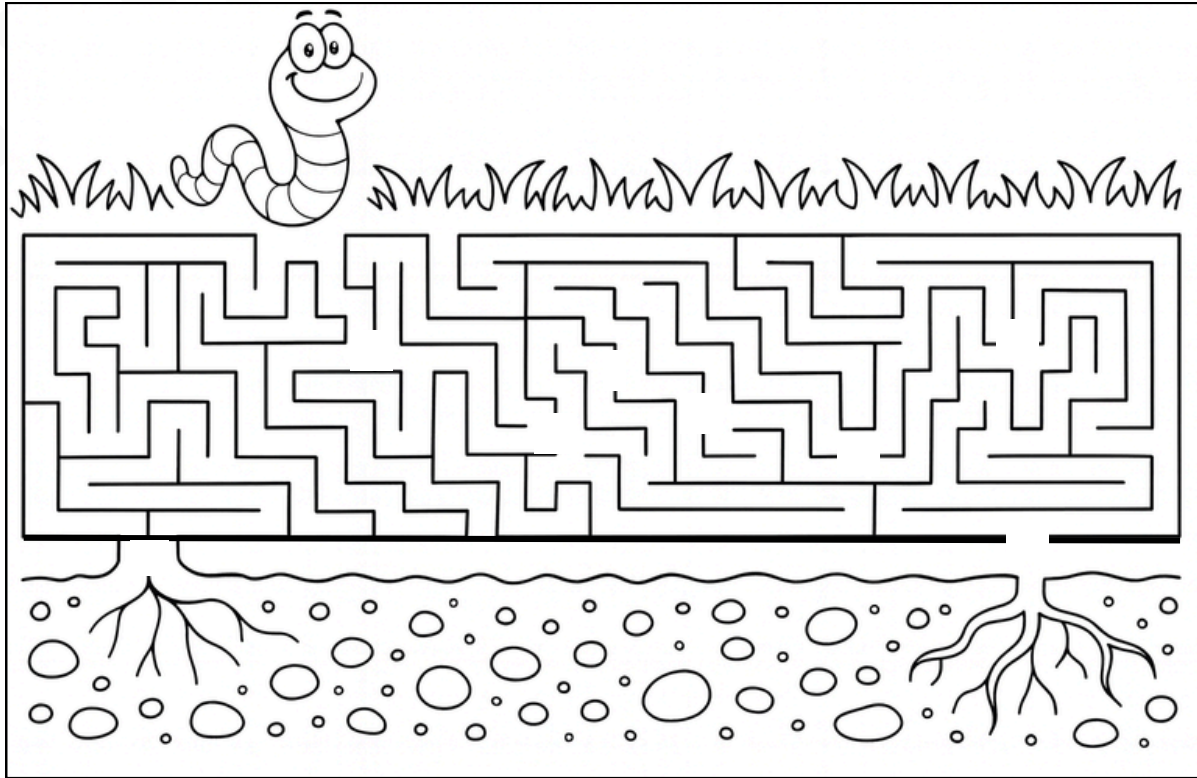
The \_\_\_\_\_ layer is the thickest.

The \_\_\_\_\_ layer is the thinnest.

The soil colors I see are \_\_\_\_\_.



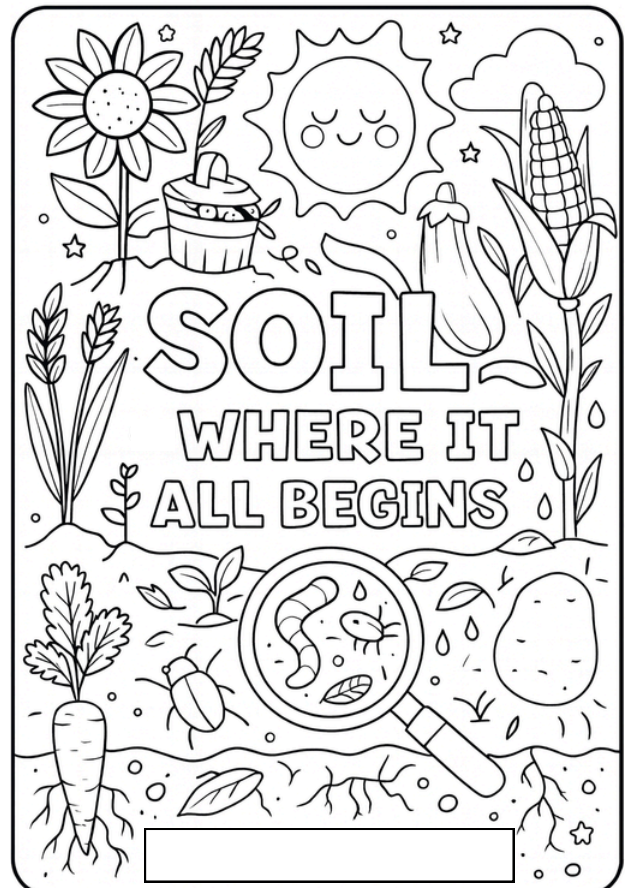
# Help the Worm get to the Soil!



## Soil Riddles

- 1: I am made of sand, silt, and clay. I help plants grow every day. What am I?
- 2: I wiggle and squirm beneath your feet. I mix the soil and make it neat. Who am I?
- 3: I fall from trees and pile on the ground. I turn into food for soil all around. What am I?
- 4: I make soil colors red, yellow, or gray. I'm part of rocks that wear away. What am I?
- 5: I hold the water nice and tight, helping roots drink day and night. What am I?
- 6: I'm full of tiny holes of air. Roots and water find me there. What am I?
- 7: I march in lines and dig all day. I make small tunnels along the way. Who am I?
- 8: I'm gritty and rough. I slip through your hand. I'm found on the beach and in soil land. What am I?
- 9: I'm stacked in layers, one by one, from top to bottom, work gets done. What am I?
- 10: I'm dark and rich, where roots like to stay. Without me, plants can't grow each day. What am I?

Answers on page 8





# Outdoor Fun!

## Nature Tic Tac Toe



### MATERIALS

- 4 sticks to make the board
- 5 small rocks for each player

### THREE WAYS YOU CAN MAKE THE ROCKS DIFFERENT

- Choose two different colors (light vs dark)
- Two different shapes (round vs jagged)
- Mark your rocks with your initial using a piece of chalk, charcoal, or a crayon

## Soil Art

- Collect small amounts of different soils, ensure soils vary in colors and textures.
- Mix each with a little water in a cup or dish to make “soil paint.”
- You might even create a paintbrush using all natural items, such as grasses with seed heads, dried botanicals, and more!
- Create your masterpiece on strong, durable paper. You can use leaves, sticks, and more as stamps too!
- Connection: Demonstrates natural soil colors and minerals, and how humans have used soils as pigments for thousands of years.



## Soil Testing

### STEP 1. COLLECT YOUR SAMPLE

- Dig 2–4 inches deep with a clean spoon or trowel and collect soils. Be sure to remove rocks, roots, and leaves. Place soils on a paper plate or newspaper until they dry completely.
- Place about 1 cup of soil in a clean zip-sealed bag and write your name, location, and date on the bag in permanent marker.

### STEP 2. OBSERVE YOUR SOIL

- Color: \_\_\_\_\_ Texture (gritty, smooth, sticky): \_\_\_\_\_
- Moisture (dry, damp, wet): \_\_\_\_\_

### STEP 3. SEND IT FOR TESTING

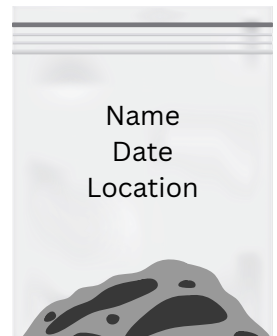
Every state and U.S. territory has a Cooperative Extension Service linked to a land-grant university. These offices accept soil samples and either test them directly or send them to a state lab. Many states offer free or very low-cost testing. Follow local instructions for mailing samples to the lab.

Fill in the contact information for your area:

- Local Extension Office: \_\_\_\_\_
- Phone or Website: \_\_\_\_\_ Cost: \_\_\_\_\_

### Step 4. Compare Results

- When your results come back, record them here:
- Soil pH: \_\_\_\_\_ Nutrients (N, P, K): \_\_\_\_\_
- Recommendations:



*Testing tells us if the soil is healthy and how it can best support plants, water, and wildlife.*

# Life in a School Garden

Mia and Jay walked to the school garden with their science notebooks. They touched the soft, dark soil in the bean bed. "This is loam," Mia said. "Loam is good garden soil. It is a just-right mix of sand, silt, and clay. It holds water for plants, but it is not too muddy and not too dry." They both scooped a little in their hands and smiled.

An Earthworm wriggled up to say hello. "Thanks for mixing the soil," Jay said. The worm slipped back down through tiny spaces. Soil pores let in air and water, so roots can breathe and drink.

Leaves floated down from the tree and landed softly on the ground. "These will break down and feed the soil," Mia said. "Minerals help too. They can give soil colors like red or yellow."

They felt a small patch of sand. "Gritty," Jay laughed. Then they pressed a lump of Clay. "Sticky and good at holding water," Mia added.

Ants marched by in a line, carrying little crumbs. "They make tunnels that help water move," Jay said.

They dug a shallow hole and peered at the layers. "Soil horizons are like a stack," Mia read from her notes. "The dark Topsoil on top is where most roots grow. Deeper down the layers get lighter and harder."

Mia and Jay patted the soil back in place. "Life begins here," Mia whispered. The garden seemed to nod yes.

## Spooktacular Faces

Have you ever seen an ant's face under a microscope? It looks spooktacular with big jaws, long antennae, and lots of tiny hairs.

Those hairs are called setae. They help ants feel gentle touches and vibrations, sense smells and tastes, keep dust away, like eyelashes, and grip rough surfaces. Antennae help ants smell and share messages. Mandibles are strong jaws for cutting, carrying, and digging. Eyes help them see light and movement. All of these parts help ants survive in soil and garden habitats.



Soil. Where it all Begins.

Ants tunnel through the ground, bringing air and water into the soil, mixing and breaking down leaves to recycle nutrients, and helping seeds and roots grow strong.

# The Bug in the Soil

Read the poem below and fill in the missing words to finish the rhyme.  
Use your imagination or look closely at real bugs you might find in soil!

I saw a bug in a clump,  
It crawled around a tiny \_\_\_\_\_.  
It gave the ground a tiny thump,  
Then disappeared behind a \_\_\_\_\_.  
It squirmed and snuck right past a \_\_\_\_\_,  
Its back was speckled, round, and \_\_\_\_\_.  
It didn't buzz, it didn't hum,  
It wiggled by a piece of \_\_\_\_\_.  
I asked the bug, "What's your daily routine?"  
It said, "I help you keep the soil clean!"