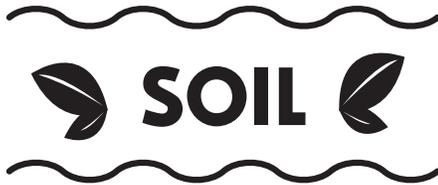




Spring into Science



JOIN US AS WE DISCOVER SOIL!

Soil is not just dirt. It is the thin layer of material that covers the Earth's surface. Soil is a mixture of minerals, water, living things, the remains of living things, water and more. Soil comes in many colors and textures depending on the mixture of things within it. It can be sandy, clay-like, soft or hard. One of the reasons soil is important is because many plants need soil to grow. Soil provides a place for a plant's roots to grow and take in water and nutrients.

In many areas of the world, the soil hardens in the winter because it has water in it and the water can freeze or even evaporate, leaving the soil dry and hard. In the spring, when the weather warms up and rain begins to fall, the soil softens and is ready for new plants to grow.

Let's learn more about soil as we spring into science!

LET'S READ

Find a comfortable spot and read about soil! Here are some ideas to get you started:

- *Soil: Let's Look at a Garden* by Angela Royston
- *Soil by Nelson Robin*
- *Composting: Decomposition* by Buffy Silverman
- *Soil: green science projects for a sustainable planet* by Robert Gardener
- *Composting* by Nicky Scott

You can download digital copies of these books for free from openlibrary.org. Here is how:

1. Go to openlibrary.org.
2. Click the blue "sign up" button on the top right to create a free account. You will be sent a confirmation email.
3. Sign in.
4. Type the book title and author into the search bar.
5. Find your book and click the blue "borrow" button.
6. Don't forget to return your book when you are finished reading it!

KEEP GOING:

Set up an online reading group with some of your friends or family. You can read the same book, then talk about what you learned, or you can read different books and share amazing soil facts.

EXPLORING SOIL!

Does all soil look the same? Because soil is made up of different minerals and organisms, you may find lots of different things in soil like plant parts, pebbles and sand or even worms and insects. However, you may not find all these things in the same scoop of soil. Some insects or worms might live in shallow or deeper soil. The same is true of parts of plants, like roots. You may find things on top of the soil that you don't find underneath. Exploring soil is a fun way to learn just what it is made of!

Before you start, you should have:

- A garden trowel or metal spoon
- Three pieces of white paper or three white paper plates
- Paper and art supplies like markers, colored pencils or crayons

GET STARTED:

1. Go outside to your yard or to a place where you can find soil.
2. With permission from an adult, dig one inch deep into the soil and place a small scoop of soil on a piece of paper or plate.
3. Observe the scoop of soil:
 - Is it one color or different colors?
 - Can you see any pebbles or rocks in the soil?
 - Can you see any plant roots or plant parts like leaves or stems?
 - Can you see any animals like worms or insects in the scoop of soil?
 - Is it damp or dry?
4. Record your observations and draw a picture of what the soil looks like.
5. Dig another inch or two deeper into the ground, in the same place you took the first scoop. Place a scoop of soil on another piece of paper or plate.
6. Observe the scoop of soil:
 - Is it one color or different colors?
 - Can you see any pebbles or rocks in the soil?
 - Can you see any plant roots or plant parts like leaves or stems?
 - Can you see any animals like worms or insects in the scoop of soil?
 - Is it damp or dry?
7. Record your observations and draw a picture of what this second scoop of soil looks like.
8. Dig another inch or two deeper into the ground, in the same place you took the other scoops. Place the scoop of soil on another piece of paper or plate.
9. Observe the scoop of soil:
 - Is it one color or different colors?
 - Can you see any pebbles or rocks in the soil?
 - Can you see any plant roots or plant parts like leaves or stems?
 - Can you see any animals like worms or insects in the scoop of soil?
 - Is it damp or dry?
10. Record your observations and draw a picture of what the third scoop of soil looks like.

11. Compare all three scoops. Think:

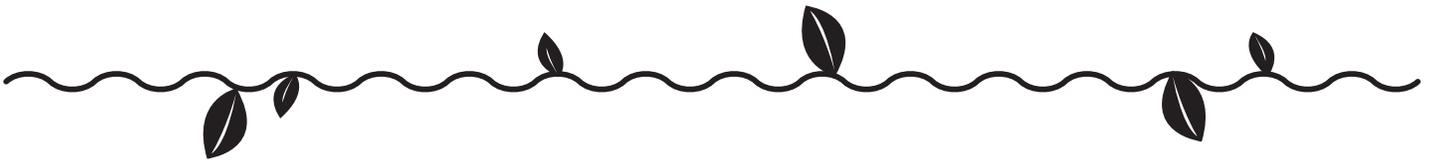
- How was each scoop of soil different?
- How were they the same?
- Did you notice different plant matter or animals in each scoop?
- Did you notice any differences between how damp the soil was or the feel of the scoops of soil?
- Do you think all soil is the same, even if it is taken from the same place?

12. When you are finished, put the soil back where you got it from and clean up all other materials.

13. Share what you discovered with someone!

KEEP GOING:

- Take a piece of string and place it in a circle on a patch of soil, or draw a circle in the soil. Make a list of all the different things you can find just in that circle of the soil.
- Take scoops of soil from different places and observe how they are the same or different.



MAKE EDIBLE SOIL!

Many materials and organisms make up soil. A scoop of soil is like its own ecosystem in which living and non-living things are connected and work together. Animals such as insects, worms and millipedes live in soil, as do bacteria. Fungi, like mushrooms, also live in soil. These organisms find everything they need to survive in the soil such as their food, water, air and protection from predators. You can make your own edible soil containing different ingredients that represent things found in soil.

Before you start, you should have:

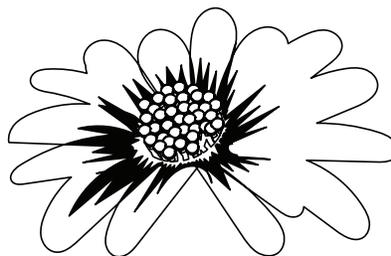
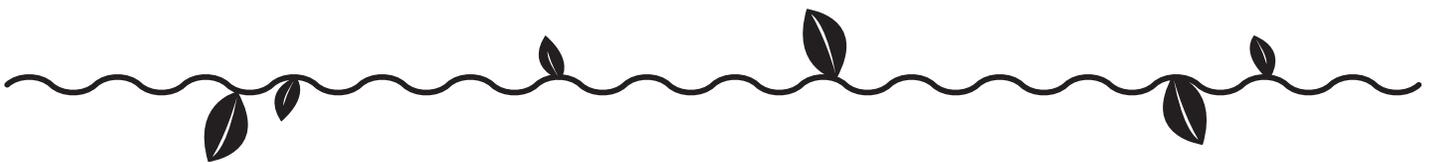
- 1 cup chocolate sandwich cookies or another type of cookie (graham crackers also work well)
- 2 tbsp coconut flakes or crushed cereal like corn flakes
- Green food coloring or natural green food dye
- 2 tbsp chocolate chips, peanut butter chips, cinnamon chips or other baking chips
- Gummy worms
- 1/2 cup chocolate pudding or another flavor
- A clear bowl or cup
- Two small mixing bowls
- A baking sheet
- A spoon or baking spatula

GET STARTED:

1. Place the coconut flakes or crushed cereal in a small mixing bowl and add a few drops of green food coloring.
2. Mix the coconut flakes or cereal and spread it out on a baking sheet to dry.
3. Crush 1 cup of cookies.
4. Mix 1/4 cup of cookies with 1/2 cup of pudding and set the other 3/4 cup of cookies aside.
5. Put a layer of the cookie and pudding mixture in the bottom of the clear bowl or cup.
6. Place 3/4 cup of cookies in a small mixing bowl.
7. Add the gummy worms and chocolate chips or other baking chips to the crushed cookies.
8. Combine using the spoon or baking spatula.
9. Put this dry mixture on top the pudding and cookie mixture in the cup.
10. Add the coconut or crushed cereal mixture on top of the dry mixture.
11. Now you have your own cup of edible soil! The cookies and pudding represent the wet soil deeper under the surface. The dry cookies and baking chips represent the different minerals and pebbles found in soil. The gummy worms represent the worms and other organisms found in soil and the coconut or crushed cereal is like the plant material found in soil closer to the surface and on the surface. Dig in and enjoy!

KEEP GOING:

- Search the internet to find ways to adjust the recipe to explore different layers of soil.
- Think of other ingredients you can add to represent other parts of soil such as seeds, fungi or clay.



CONTINUE →

LET'S PLAY: EARTHWORM TOSS

Have you seen an earthworm before? These long, wriggling animals live the soil and are important to a healthy ecosystem. Earthworms burrow through the soil and make tunnels. These tunnels allow water and air to better soak into the soil. They, like insects, help break down, or decompose, dead plants and animals. When earthworms eat fungi, bacteria and dead plants and animals, they put nutrients back into the soil, which helps plants to grow. Let's make an earthworm and play a game!

Before you start, you should have:

- An old, long tube sock
- A tennis ball, cup of rice or cup of beans
- A rubber band or string
- Optional: markers
- Optional: containers like buckets or Tupperware
- Optional: a partner

GET STARTED:

1. Put the ball, cup of rice, or cup of beans in the sock.
2. Tie off the end of the sock with the string or rubber band.
3. Optional: Color the sock to look like a worm.
4. Use your sock earthworm to play earthworm toss. Try:
 - Tossing the earthworm to a partner back and forth, taking a step away from each other each time until someone misses.
 - Toss the earthworm into plastic containers or buckets.
 - If you use a tennis ball for your sock earthworm, you can toss it against a wall and catch it when it bounces back to you!

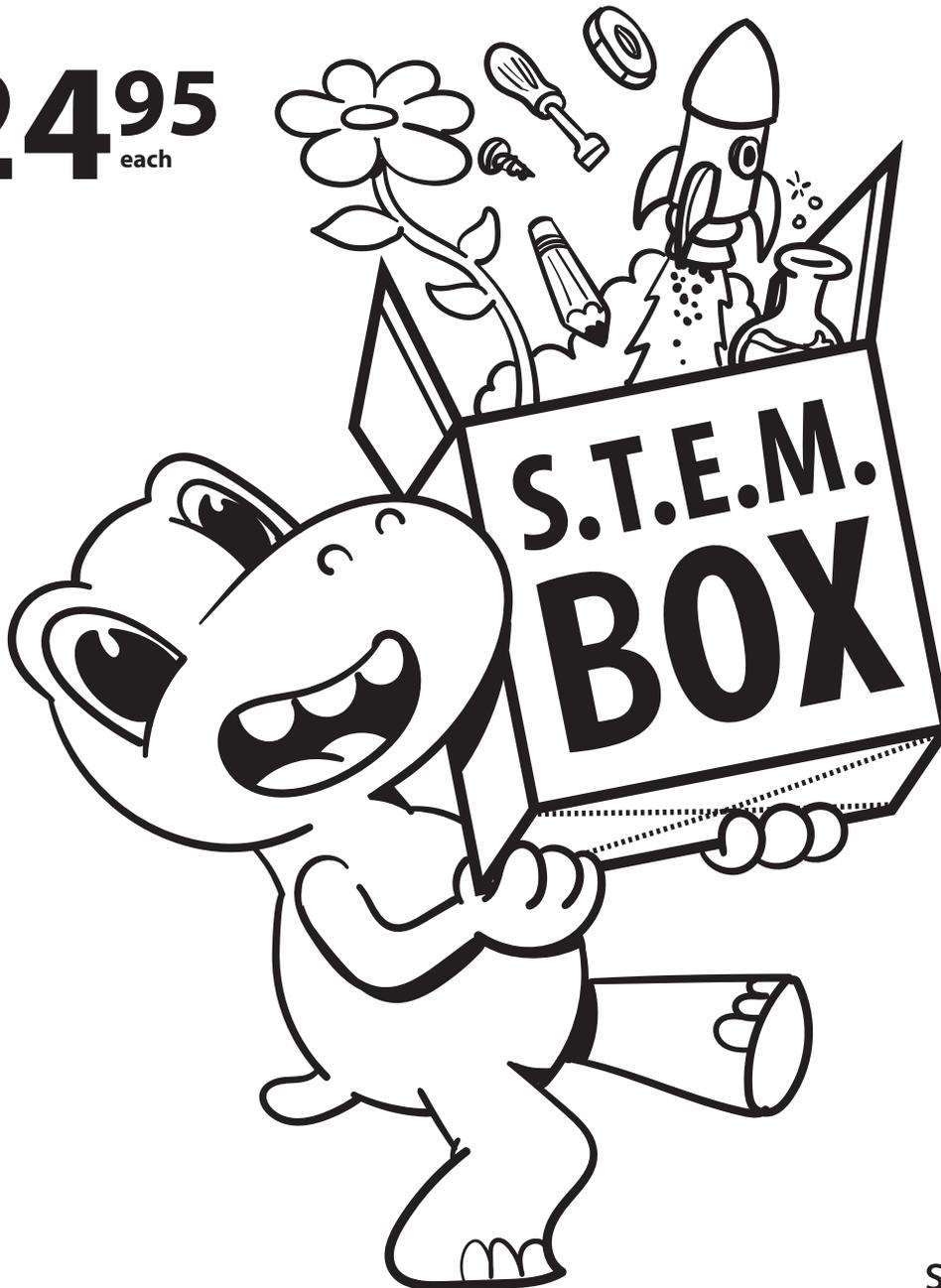
KEEP GOING:

- Create your own game that you can play with your earthworm.
- Soak your earthworm in water and have fun playing with a slippery earthworm.

The Sam Noble Museum brings the excitement of science discovery to learners at home with STEM Boxes.

Each themed box contains step-by-step directions and supplies needed to complete two or more hands-on activities that meet Oklahoma Academic Standards (OAS) and Next Generation Science Standards (NGSS) for grades K to 5.

\$24⁹⁵
each



Sam Noble Home