



Lesson Plan



Grade: Middle

Title: Dirt Sundae - The Layers of the Soil

Supplies in the resource kit:

- Clear Plastic Cups
- Spoons
- Oreos - Solid & Crushed
- Chocolate Pudding
- Vanilla Pudding
- Gummy worms
- Chocolate Chips

Supplies needed:

- Paper Towels
- Copies of foldable
- *Optional: Newspaper to cover desks*
- *Optional: Sticky Note Labels*



Objectives

- Identify the layers and horizons of soil
- Create a soil profile model

Modifications/Ideas for implementation

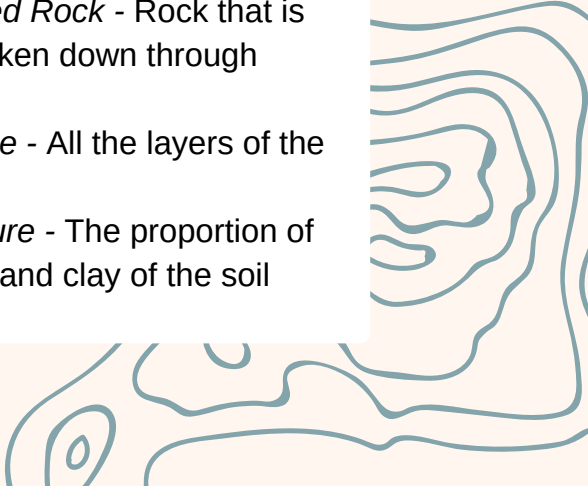
- Use foldable worksheet in interactive notebooks
- Color foldable tabs to represent the soil layers
- Have students explain what each layer represents to another student prior to eating

Background Information:

It takes many years for soil to form from the starting point of bedrock and parent material. As time goes by, soil develops into distinct layers and ingredients.

Soil is made up of air, water, animals, organic matter, sand, silt, and clay. The soil particles (sand, silt and clay) come from a process called weathering. Weathering is when bedrock is broken down and eventually erodes into tiny particles. The broken down rocks are called parent material.

Key Terms

- *Litter* - Fallen leaves, dead plants, animal waste, etc.
 - *Decompose* - The process of breaking down litter; to decay
 - *Weathered Rock* - Rock that is being broken down through erosion
 - *Soil Profile* - All the layers of the soil
 - *Soil Texture* - The proportion of sand, silt and clay of the soil
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Soil Layers:

O Horizon - Organic Layer

The Organic Layer is usually less than one inch thick. This layer is where litter decomposes and becomes the nutrients in soil. Litter are things like fallen leaves, dead plants, animal waste.

A Horizon - Topsoil

Topsoil is dark in color. Nutrients, Bacteria, Fungi and other small animals are very common. You will find a lot of plant roots here.

B Horizon - Subsoil

Subsoil is lighter in color because there is less nutrients. There are very few roots and animals in the subsoil.



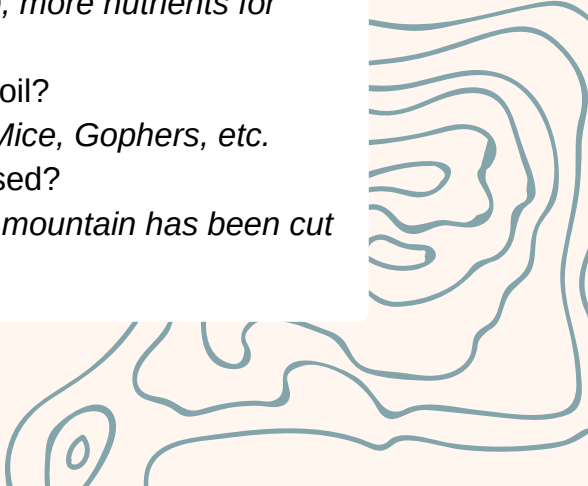
C Horizon - Parent Material

Parent material is made from weathered rock. Parent Material can influence soil texture.

R Horizon - Bedrock

Bedrock is a solid layer of rock.

Optional Discussion Questions:

- Why are soils with deeper topsoil layer more productive (better for plant growth)?
 - *More rooms for plant roots to grow and develop, more nutrients for those roots to soak up*
 - What are some organisms/animals that live in the soil?
 - *Earthworms, Grubs, Ants, Centipedes, Moles, Mice, Gophers, etc.*
 - Where might you see all the layers of the soil exposed?
 - *In a creek-bed or along the road where a hill or mountain has been cut away*
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Procedures

Prepare Ahead:

- Crush some/half of the Oreo cookies
- Set out serving bowls and spoons to best suit your classroom needs
- Label Each serving dish with the ingredient/soil layer representation

Get started:

1. Review/Complete the soil layers foldable. Answer key is provided.
2. Have the students wash their hands and tell them they will be making their own edible soil profile model.
3. Demonstrate how each layer is represented and what the finished product should look like by creating a teacher model.

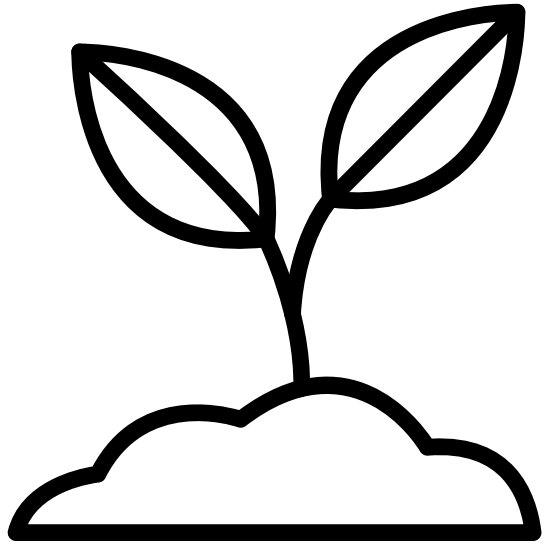
Place the ingredients in the clear plastic cup in the following order so that the lowest layer is on the bottom of the cup:

- Whole Oreo - Bedrock
- Crushed Oreo - Parent Material
- Vanilla Pudding - Subsoil
- Chocolate Pudding - Topsoil
- Gummy worm - Soil animals
- Chocolate Chips - Organic Layer

4. Allow each student to prepare their own edible soil profile model

Optional: Have students label the cup with a marker or sticky note tabs

5. Enjoy the yummy treat!



THE LAYERS OF THE SOIL

O HORIZON (ORGANIC MATTER)



A HORIZON (TOPSOIL)



B HORIZON (SUBSOIL)



C HORIZON (PARENT MATERIAL)



R HORIZON (BEDROCK)

**CHOCOLATE CHIPS & GUMMY
WORMS**

**THE ORGANIC LAYER IS USUALLY LESS THAN
INCH THICK. THIS LAYER IS WHERE
LITTER _____ AND BECOMES THE
NUTRIENTS IN SOIL. LITTER ARE THINGS
LIKE _____**



CHOCOLATE PUDDING

**TOPSOIL IS _____ IN COLOR.
NUTRIENTS, BACTERIA, FUNGI AND
OTHER SMALL _____ ARE VERY
COMMON. YOU WILL FIND A LOT OF
PLANT _____ HERE.**

VANILLA PUDDING

**SUBSOIL IS _____ IN COLOR
BECAUSE THERE IS LESS NUTRIENTS.
THERE ARE VERY FEW _____ AND
_____ IN THE SUBSOIL.**

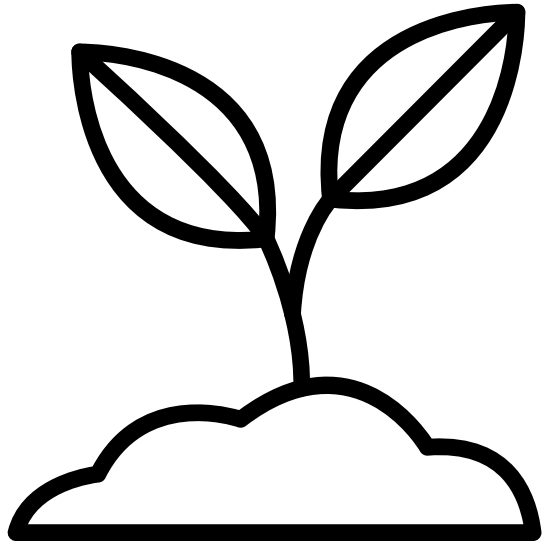
CRUSHED OREOS



**PARENT MATERIAL IS MADE FROM
ROCK. PARENT
MATERIAL CAN INFLUENCE SOIL
_____.**

WHOLE OREO(S)

**BEDROCK IS A _____ LAYER OF
_____.**



**THE
LAYERS
OF THE
SOIL**

Answer Key

O HORIZON (ORGANIC MATTER)



A HORIZON (TOPSOIL)



B HORIZON (SUBSOIL)



C HORIZON (PARENT MATERIAL)



R HORIZON (BEDROCK)

CHOCOLATE CHIPS & GUMMY WORMS



CHOCOLATE PUDDING

THE ORGANIC LAYER IS USUALLY LESS THAN **ONE INCH THICK**. THIS LAYER IS WHERE LITTER **DECOMPOSES** AND BECOMES THE NUTRIENTS IN SOIL. LITTER ARE THINGS LIKE **FALLEN LEAVES, DEAD PLANTS, ANIMAL WASTE**

TOPSOIL IS **DARK** IN COLOR. NUTRIENTS, BACTERIA, FUNGI AND OTHER SMALL **ANIMALS** ARE VERY COMMON. YOU WILL FIND A LOT OF **PLANT ROOTS** HERE.

VANILLA PUDDING

SUBSOIL IS **LIGHTER** IN COLOR BECAUSE THERE IS LESS NUTRIENTS. THERE ARE VERY FEW **ROOTS** AND **ANIMALS** IN THE SUBSOIL.

CRUSHED OREOS



PARENT MATERIAL IS MADE FROM **WEATHERED** ROCK. PARENT MATERIAL CAN INFLUENCE SOIL **TEXTURE**.

WHOLE OREO(S)

BEDROCK IS A **SOLID** LAYER OF **ROCK**.