

# HOW IS SOIL MADE? BREAKIN' IT DOWN

Volume 21 | Gr. 9-12

Time: 3 Days

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### CRP.04.02:

Produce clear, reasoned and coherent written and visual communication in formal and informal settings.

### AG-NR 2.1:

Examine natural resource topics using science concepts, processes, and research techniques.

### AG-NR 2.2:

Examine biological and physical characteristics to identify and classify natural resources.

### Materials List

- How Soils are Formed Collection (1 per 2-3 students) — C30192
- Post-It® Notes Cube — 9727211
- Heritage Arts™ Easy-Peel Plastic Tray, Small, White — 9742535
- Roll of Wax Paper — K01046(Z)
- Graham crackers
- Cookies
- Chips
- Salsa
- Frosting
- Whipped cream

## Days 1-2



### Introductory Questions for the Class

1. This might seem like a weird question, but why are there rocks in soil? Have you ever thought about this before?
2. How is soil formed?
3. Why are soils different in different parts of the world?

cont. on next page

## Activity

1. Pair up or group students.
2. Give each of the groups a copy of “The Composition of Soils” handout, included in collection kit.
3. As a group, have students read through the handout and underline any key terms and highlight any words or sentences that describe how soils are formed.
4. After the students have read through and marked-up the reading, check to see any key items they may have missed and ask them to give you a verbal walk-through of what happens. Point out anything they may have missed.

### Re-check for comprehension as needed.

5. Have students then write the key terms on Post-It® notes. **(In 45–50 minutes classes, this is a great stopping point.)**
6. Once the teacher approves the Post-It® notes, pass out the How Soils are Formed Collection.
7. They will then use these key terms and the processes highlighted in their text to make a diagram with the rocks and soil in the kit to show and describe how rocks are broken down into soil. (In the end, this should be a visual showing how soils are made using the key terms to show what is happening, see page 3.)
8. Once done, students should compare with another group and do a “student teach student” to refine and edit their diagrams.
9. Once the students are happy with their diagram, they should take a picture and upload to the class learning platform (if possible) or the teacher should take a picture for grading purposes. Students might also want a picture for the next day of class.
10. Deconstruct and collect the box and copy of the handout, but be sure to save the notes.

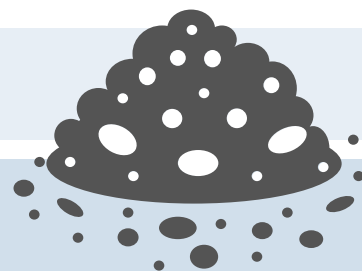
## Closure: Fill in the Step

1. Teacher gives the first step verbally.
2. Have one student fill in the second step by sharing aloud with the class.
3. A second student fill in the third step.
4. Continue until all the steps are completed, providing feedback as needed.

### Example:

1. Quartz disintegrates into sand.
2. Sand disintegrates into sandstone.
3. Sandstone breaks down into sand.
4. Sand is a component of soil.
5. Peat is decomposed into organic matter as a component of soil.
6. The silt and clay come from shale, limestone, or arkose.

## Day 3



## Introduction

1. Why are there rocks in soil?
2. How is soil formed?
3. Why are soils different in different parts of the world?

**Note:** These are the same questions from Day 1. They are repeated here as an informal assessment to see how much your students were able to learn and what gaps might need to be retaught before moving on to the next day’s activity.

## Activity: Hands-On Test

Students will work in the same group as the previous days. They will use the same Post-It® notes from the previous two days to recreate the diagram they previously made. However, today they will be using food (crackers, cookies, chips, etc.) and breaking them apart to demonstrate how rocks break down into soil.

1. Ask students to again lay out their diagram using the Post-It® notes from above, showing step by step how rocks break down in the soil.
2. Have them break down the “rocks” or graham crackers, etc.
3. They will then use the salsa, frosting, or whipped cream as the organic matter and demonstrate how living material is broken down to contribute to soil.
4. When they are done, they can again take a picture or the teacher can take a picture for grading purposes.
5. Once photographed, they can enjoy the food (as long as this is done on a sanitary surface).
6. Depending on level of class and students, you can have them pick which type of parent material/rock they are starting with and determine what type of soil will be created.

## Closure

- Clean up.
- If time allows, have peer-to-peer feedback after pictures are taken for grading purposes.

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*Lesson Plans are developed with teachers with no claim of original authorship.*

Note that it always doesn't decrease in size, there are times the stone will re-clump.

