

## Cookie Grid Survey

### Grade Level:

- K
- 1
- 2
- 3
- 4
- 5

### Lesson Time:

40 minutes

#### Objective:

- Students will be able to explain one method that paleontologists use in finding and sorting potential fossils.

### Preparation

Before going to the classroom, you will need to:

1. Use the [basic recipe](#) to prepare a 13 X 9 X 2" pan of rice cereal bars (Paleo Bars). To the basic mixture, add ½ cup each of four non-melting ingredients such as raisins, macaroni, peanuts, or sunflower seeds still in the shell. The idea is to have a chunky cookie bar with obvious parts.
2. Collect images of paleontologists and their work. Samples from the [Earth Science World Image Bank](#) are below. Images could be printed or in a PowerPoint presentation. If images are in a PowerPoint, remember to ask the teacher if you can use a computer and projector.
3. Collect materials for the investigation and duplicate [Data Sheets](#).
4. Collect any giveaways for students, such as fossil posters or geologic time scale bookmarks.

#### Materials:

For instructional purposes:

- Large pan of no bake cookie bars (see preparations for more details)
- Posterboard-size copy of [Paleo Cookie Dig Grid](#). The template can be found below. You might want to draw this on a blackboard or chalkboard before you start your presentation. Make sure you have chalk or dry erase markers.
- [Images of Paleontology in Action](#)

Provide each group of four with the following:

- 4 toothpicks
- 1 piece of the cookie bar
- 1 paper plate
- Pencil or pen
- Paper towels
- Pad of sticky notes
- 1 [Data Sheet](#)

### Purpose

Fossils are records of past life. Many young students are fascinated by dinosaur fossils or images of dinosaurs from movies, but they don't understand how scientists find fossils. In this investigation, students will be introduced to the concept of digging for fossils through a simulated paleontology dig using a grid and a chunky cookie bar.

### Safety

There are no particular safety concerns for this activity.

### Investigation Question

How do paleontologists find fossils?

### What to do

1. **(4 minutes)** Introduce the concept of paleontology as a career by showing students images of paleontologists at work. ([See images](#)). Ask students:
  - What are the scientists doing? (*Allow all students that want to answer to answer. Students should raise their hand before you accept their answer.*)
  - Do you think scientists are using a process to remove and look at fossils? Explain that scientists are indeed using a process to remove and study the fossils and that students will be using this method to simulate a dig.
2. **(3 minutes)** Show the class the entire pan of Paleo Bars. Explain that when paleontologists remove fossils from the ground, they divide the area into squares called "quadrants." (*Cut the bars into quadrants. Make sure that you will have enough quadrants for each group of four students.*) Then explain that each group will receive one of the cookie quadrants, toothpicks, magnifiers, paper plate, [Data Sheet](#), and paper towels. Their job will be to use the toothpicks to study the quadrant. Ask students to group parts of the cookie by type on the paper plate and record on their worksheet how many materials were in their quadrants (e.g., all raisins should be grouped together, as should rice cereal bits).
3. **(20 minutes)** Students study the Paleo Bar and take it apart. Students should also be grouping like materials and recording how many of each material they found on their [Data Sheet](#). (*Walk around the classroom and help groups that are having trouble with this task. When all groups are done, have students stop what they are doing and refocus their attention back to you.*)
4. **(5 minutes)** Explain to the students that they will use the information from the [Data Sheets](#) to create a class bar graph that illustrates what was found in each quadrant. Pass out sticky notes and have students record how many rice cereal bits were in their quadrant. Have each group place the relevant sticky note on the appropriate square on the [posterboard-size grid](#). Pass out more sticky notes and repeat the procedure for each non-melting ingredient in the Paleo Bars.

5. **(5 minutes)** As a class, analyze the graph. Be sure to accept as many explanations as you can. Questions you might ask students:
- Were all quadrants the same or different?
  - Did your group have the same amount of ingredients in your quadrant as a different group?
  - Why do you think this happened?
6. **(3 minutes)** End the discussion by stating that scientists who study fossils use a similar method when they are systematically studying an area of land or a bone-bed where fossils can be found. Thank students for their time. You can leave giveaways behind for the classroom teacher to distribute.

 [RecipeforPaleoBars.pdf](#)  
 [DataSheet-paleo.pdf](#)  
 [TemplatePosterBoardGrid.pdf](#)  
 [PaleontologyImages.pdf](#)