



# Make Your Own Fossil

## ***Grade Level***

Grade 4

## ***Engage***

This activity is designed to start your students in recognizing themselves as scientists and thinking critically about problem-solving. The goal is to teach concepts through discovery and to encourage using scientific thought processes. As with all lessons provided, please feel free to adapt them according to your students' abilities. Some of your students may be early readers, in which case you may find it more successful to lead activities and discussions as a whole group rather than using individual Research Plan sheets. Certain scientific vocabulary may or may not be appropriate for your students' level of understanding. Take these ideas, make them your own and your students will have a greater chance at success.

### **How do scientists determine what an extinct animal looked like?**

1. Begin by asking your students what they know about fossils. Can they name the different types of fossils and describe how they are different from each other? Do they know how scientists use fossils?
2. Explain the different types of fossils and describe how each is formed.
3. Show them pictures of fossils (see the end of this lesson plan) and ask them to identify what type of fossil it is. Have them describe what they observe that leads them to their conclusion. If your students are familiar with brainstorming and recording their observations/ideas, break them up into four groups. Assign each group one of the pictures and have them write their observations that lead to their conclusion of what type of fossil it is.
4. Tell your students that you will be doing an activity to help them understand how mold fossils are created and how scientists use the fossil to make determinations about what it is. A mold fossil is created when a whole or piece of an organism is buried in sediment and dissolves over time, leaving an imprint in the harden sediment that surrounded it. Mold fossils are different from cast, trace, and true-form fossils.

## ***Explore***

5. Prepare for the activity by creating individual bags of "dirt" for each of your students. The "dirt" should be comprised of  $\frac{1}{3}$  cup salt and  $\frac{2}{3}$  cup flour. Additionally, gather a bowl, spoon, and small, plastic toy for each of your students. Ideally, half of your students should receive a dinosaur/extinct animal toy and the other half should receive a modern day animal toy. If gloves are available, issue each student a pair to aid in easy clean-up. Lastly, fill a large pitcher or container of water. You will need to measure  $\frac{1}{4}$  cup for each student.
6. Give each student a bag of "dirt," a mixing bowl, a spoon, and one animal toy.

7. Have your students dump the bag of “dirt” into their mixing bowl. Explain that this represents the ground in which the fossil will be formed. Ask them if they think this “dirt” would make a good fossil. What should be added to the “dirt” to make the fossil?
8. Add 1/4 cup water to each student’s mixing bowl. Have them mix it with the spoon until it becomes hard enough to knead it with their hands. As they knead, it should feel more and more like clay.
9. Explain that over the years, with exposure to rain and pressure, this is what happens to the Earth. This is what makes the conditions right for fossils to form.
10. Once their clay is complete, have each student roll it into a ball and flatten it a little so it looks like a disk.
11. Explain that fossils are not perfectly formed from animals simply laying down and dying. Fossils take many shapes. Knowing this, they should press their toy animal into the clay in any way they would like to. Have them press it far enough down that it leaves a good imprint in the clay, but not so far that they cannot pull it back out easily. Once they are satisfied with their imprint, they should gently pull the toy out of the clay.
12. Using a pencil, have your students also carve their initials in the clay for ease in identifying later.
13. Place each fossil on a shelf or window sill to dry overnight. Use a wire rack if available. This will ensure the fossil dries completely. Keep the toy with the fossil or student. Each student will need to remember which toy went with which fossil.

### ***Explain***

14. Explain that what your students made was a mold fossil. These types of fossils get buried in sediment and eventually dissolve over time. Long before they dissolve, however, the sediment dries and hardens into rock. Once the organism or piece of an organism dissolves, it leaves an imprint in the sediment that scientists dig up, preserve, and study.
15. As a group, discuss what it must be like to be a scientist digging up a fossil. Do scientists find the entire piece right away or do they uncover just a little bit at first? How do they know in what direction to dig and how deep? How are they careful so as not to damage the fossil?
16. Discuss what they think a scientists’ first, initial impressions of a fossil might be. Have them think about the toy they just created a fossil with. What would be their first impressions?

### ***Expand***

17. The next day (or whenever the fossils are dry), divide your students into pairs and have them exchange fossils for the next part of the activity, keeping the toy a secret until it is revealed later on in the activity.
18. Using the worksheet below, have each student make observations of their new fossil and fill out the questions asked.
19. Once all students have completed their worksheet, have them discuss their initial findings with their partner. Explain that scientists, often times, discuss new findings with other scientists. They ask questions and share information to help them determine what their new fossil is, what it belonged to, how old it was, etc.
20. Have each pair of students present their findings to the class. Each partner should present on the other partner’s fossil, sharing information from their observations captured on their worksheet.
21. At the end of each pair’s presentation, each student should reveal their toy animal to the other and the class.

## **Assess**

22. As a group, discuss your findings. Did any students make correct guesses? What things did they think about that brought them to the right answer? Did they think about any modern animals and what they already knew about them? Did they think about what they already knew about some dinosaurs/fossils? Did any students make incorrect guesses? What things did they think about that ended up being incorrect?
23. Discuss some examples of things fossils cannot tell us. Do we really know what color they were or what they sounded like?

## **Optional Extension**

24. Create a cast fossil by filling in the mold fossil with glue. Allow it to dry overnight. Once dry, remove it from the clay. Playdough or a similar material can also be used to create a cast fossil. A cast fossil is formed when minerals fill in the imprint of a mold fossil and harden.

## **Standards**

Ohio Academic Content Standards
Grade 4 Life Science Topic: Earth's Living History Fossils can be compared to one another and to present-day organisms according to their similarities and differences.

# Make Your Own Fossil Worksheet

1. What are your initial observations of the fossil?

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2. Is it a whole animal, just a part of an animal, or are you not sure? (*circle one*)

Whole

Part

Not sure

3. If you think it is a whole animal, does it look like any animals you are already familiar with? If so, which one(s)? Is that animal extinct or still alive today?

It kind of looks like...

Extinct or still alive?

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4. If you think it is part of an animal, what part do you think it might be?

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5. What type of animal do you think it is? *Circle one, or multiple if you are not sure.*

Mammal

Reptile

Bird

Amphibian

Insect

Fish

6. What makes you think it is the type of animal you circled in #5? Have you observed similarities between the fossil and what you know of that type of animal? If so, what are they?

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7. Have you observed any differences between the fossil and what you think the type of animal is? If so, what are they?

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Based on my observations and discussions with my fellow scientist, I think the fossil I

uncovered is \_\_\_\_\_ .



# Make Your Own Fossil

## My Research Plan

How do scientists determine what an extinct animal looked like?

### 1. Questioning

State the problem.  
Make a hypothesis.



### 2. Planning

Make a plan by asking  
these questions  
(think, talk, write)



### 3. Implementing

Gather the materials.  
Follow the  
procedures.  
Observe and  
record the results.



### 4. Concluding

Draw a conclusion.



### 5. Reporting

Share my results  
(informal)  
Produce a report  
(formal)

