

Measuring Fossils

Suggested Grade Levels: **K-4**

Description: **Students practice their skills at estimating and measuring lengths by measuring fossils.**

Standards Targeted:

- **Fossils provide evidence about living things that inhabited Earth long ago. [LS4.A]**
- **Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. [LS3.B]**

Skills Targeted: **Estimate and Measure**

Goals:

- 1. To provide students opportunities to practice estimating and measuring**
- 2. To illustrate how organisms of the same type can vary in size**

Objectives—By the end of this activity, students will be able to:

- 1. Estimate the size of objects**
- 2. Measure the size of objects**
- 3. Explain that organisms vary in size for many reasons, including age, diet, and habitat**

Time Needed: **15-30 minutes**

Materials:

- **Enough small fossils for each student or pair to have three fossils of the same type but of different sizes**
- **Pencils**
- **Rulers or other measuring devices**
- **Worksheet**

Step-By-Step Instructions:

- 1. Tell students that today they are going to be paleontologists—people who study fossils to learn about ancient life.**
- 2. Tell students that they are also going to practice their skills at estimating and measuring.**
- 3. Remind them that fossils are the remains of ancient life that are preserved inside rocks.**



4. Distribute fossils, measuring devices and worksheets to each student or pair.
5. Ask students to first arrange their three fossils in front of them in order from smallest to largest. These will be Fossil A, Fossil B, and Fossil C.
6. Next, have students estimate the size of each object. Very young children might use a common object (*e.g.*, paper clip, pencil eraser) as a unit of measure—how many paperclips long is the fossil? Older children can be asked to use a unit of measure—how many centimeters long is the fossil?
7. Students should write down their estimate for each fossil on the provided worksheet.
8. Next, students should actually measure their fossils, and record the lengths on the worksheet.
9. Ask the students to think about how close their estimates were to their actual measurements? Was their estimate bigger or smaller than the actual measurement? What is the difference between the estimate and measurement for each fossil. Students should record these differences on the worksheet.
10. Once all the measurements and calculations are completed, ask the students to think about why their three fossils are different sizes. Have students brainstorm reasons why living organisms might be different sizes.
11. Reinforce the idea that organisms of the same species might be different sizes for a variety of reasons, including being different ages (babies vs. juveniles vs. adults), having different diets, living in different habitats, or having different genes that might affect body size. Variation like this, if it can be passed on from parent to offspring, is the raw material on which natural selection acts to produce evolutionary change.

Resources:

The Paleontology Portal: <http://www.paleoportal.org/>

Website with vetted educational materials, including nearly 1,000 photographs of fossils

University of California Museum of Paleontology Online Exhibits:

<http://www.ucmp.berkeley.edu/exhibits/index.php>

Extensive website with many images and background information for every major fossil group; also has extensive K-12 educational resources, online activities, modules, etc.

Friends of the University of Michigan Museum of Paleontology Specimen Database:

<http://strata.geology.wisc.edu/mibasin/>

Website with lots of photographs of fossils, many of which can be found in Northwest Ohio



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