

# Activity—Making a Geological Timeline

**Standard IV**

Students will understand how fossils are formed, where they are found in Utah, and how they can be used to make inferences.

**Objective 2**

Explain how fossils can be used to make inferences about past life, climate, geology, and environments.

**Intended Learning Outcomes**

1. Use process and thinking skills

**Standard  
IV**
**Objective  
2**
**Connections**

## Background Information

Many kinds of fossils appear in various parts of Utah. By creating a geological timeline, we can infer what the environmental history different parts of the state could have been. Because some fossils come from sea animals, we can infer that at one time, a shallow sea once covered the area where those fossils were found. Because other types of fossils are associated with tropical swampy areas, we may infer that those areas were once warm and wet. By knowing the time period that representative animals lived on the earth, we can infer when a sea or tropical swamp existed in a particular area.

As we look at the timeline, scientists have determined when certain animals lived. For example, trilobites first appeared 600,000,000 years ago and lived for a period of about 100,000,000 years. Trilobites lived in shallow seas. Fossil trilobites are found in Millard County, Utah. It is therefore possible to infer that at sometime between 600,000,000 years ago and 500,000,000 years ago, a shallow ocean covered that area of Utah.

By constructing a timeline of when various plants and animals lived and then comparing it to sites in Utah where those fossils are found, we can learn how inferences are made about the geological past of areas of the state.

## Invitation to Learn

What can you learn about the history of Utah by examining the fossils that are found in those areas?

### **Materials**

- meter stick for each team
- Rolls of adding machine tape
- Masking tape
- metric ruler for each team
- Geological Timeline information sheet for each student
- set of fine line markers for each team
- Utah map with fossil dig sites marked

### **Instructional Procedures**

1. Have each team select a person to get the materials.
2. Give each team a five-meter-long piece of adding machine tape, a meter stick, a metric ruler, a set of fine line markers, and a roll of masking tape.
3. Give each student a Geologic Timeline information sheet and a map of Utah with fossil dig sites.
4. Pull the adding machine tape out so that it lays flat on a surface (across tables set end-to-end, the floor, or a counter top).
5. Using masking tape, tape the ends of the adding machine tape to the surface so that it doesn't roll up. Use a meter stick to measure distances on the adding machine tape.
6. Using the metric ruler, draw a line across the adding machine tape near one end. Label the line "Present Day." Using this as the baseline, measure the distances on the tape to the important dates listed on the Geological Timeline information sheet. (One meter equals one billion years; a millimeter equals one million years.)
7. Once the distances have been marked, draw lines across the tape at the measured distances and label them. (See the attached sheet for an example). Small pictures may be glued to the tape corresponding to the important dates.

### **Curriculum Integration**

*Math/Science*—Metric measurement, drawing to scale.

### **Possible Extensions/Adaptations**

Associate the fossils on the geologic timeline with fossil sites on the Utah map. From the dates and types of fossils, infer what the area where the fossils were found might have looked like when the organism was living there (i.e., Jungle, forest, ocean, marsh, etc.).

### **Assessment Suggestion**

Give the students the name of a type of fossil and the part of the state in which it was found. Have them write a one-paragraph description of what that area of the state might have looked like when that organism lived there.

## ***Additional Resources***

See the attached Additional Resources list.

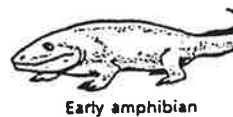
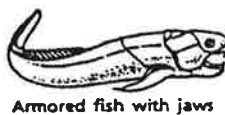
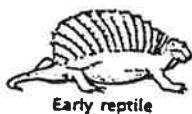
## ***Homework & Family Connections***

Parents can help students add to the fossil sites on the Utah map. A good family excursion would be to go to the “U-DIG” fossil quarry site west of Delta Utah and spend some time digging for fossil trilobites. (See the additional resources list for a web site where information about this opportunity can be found.) Visit any of the fossil sites that are open to the public.

## Geologic Timeline Information Sheet

Using adding machine tape and meter sticks, make a timeline to demonstrate how life developed on Earth. Let one meter equal one billion years. Draw a line across one end of the tape and label it "present day." Every measurement made on the timeline should begin at the line marked "present day"! Measure from this line and mark the following distances by drawing a line across the tape.

|         |                         |                         |
|---------|-------------------------|-------------------------|
| 3mm     | first humans            | 3,000,000 years ago     |
| 4cm     | first elephants         | 40,000,000 years ago    |
| 6.5 cm  | dinosaurs die out       | 65,000,000 years ago    |
| 13.5 cm | flowering plants appear | 135,000,000 years ago   |
| 16 cm   | first birds appear      | 160,000,000 years ago   |
| 22.5 cm | first dinosaurs appear  | 225,000,000 years ago   |
| 27 cm   | first coniferous plants | 270,000,000 years ago   |
| 30.5 cm | first reptiles appear   | 305,000,000 years ago   |
| 40 cm   | first amphibians        | 400,000,000 years ago   |
| 44 cm   | first land plants       | 440,000,000 years ago   |
| 50 cm   | first fish appear       | 500,000,000 years ago   |
| 60 cm   | first trilobites appear | 600,000,000 years ago   |
| 1.2 M   | first animals           | 1,200,000,000 years ago |
| 3.2 M   | first plants (algae)    | 3,200,000,000 years ago |
| 4.5 M   | oldest Earth rocks      | 4,500,000,000 years ago |



## Sample of a Geologic Timeline

