

## Introduction

This section contains a set of sample Earth science investigations that are suitable for various age levels. Each investigation comes with a materials list, directions, tips on preparation, safety information and handouts for students. There are additional investigations on the AAPG YEA web site, as well as the AGI Education and Outreach web sites at Earth Science Week investigations and K-5 GeoSource investigations. AGI will continue to develop activities for this handbook, which you can download from the AGI's professional development web site and add to this web site.

Here is a table of the current Investigations that we have on sample. Check back for more updates!

### Dinosaur Footprints

Investigate how scientific knowledge changes due to differing viewpoints and additional data by making observations and developing scientific explanations on a set of footprints.

Grade Level: 3, 4, 5, 6, 7, 8, 9

Lesson Time: 45 minutes

### Identifying Minerals

Learn to identify minerals according to physical properties by using color, luster, Moh's hardness scale, the streak test and an identification sheet.

Grade Level: 3, 4, 5, 6

Lesson Time: 45 minutes

### Ancient Environments

Relate characteristics of individual fossils and fossil assemblages to probable living environments by investigating fossils and applying their interpretation to models of past Earth conditions that might be very different from present day at any given location.

Grade Level: 5, 6, 7, 8

Lesson Time: 45 minutes

### Earthquake Waves

Understand the significance of different seismic waves by recognizing how they travel through the earth.

Grade Level: 4, 5, 6, 7, 8

Lesson Time: 35 minutes

### Locating an Earthquake's Epicenter

Use Earthquake data to find the epicenter of an earthquake by applying their seismic knowledge and mathematical skills.

Grade Level: 7, 8, 9, 10, 11, 12

Lesson Time: 45 minutes

## Testing Soil Samples

Using indicator solutions to find the pH and concentrations of nitrates, phosphates and potassium in three soil samples.

Grade Level: 4, 5, 6, 7, 8

Lesson Time: 45 minutes

## Cookie Grid Survey

Using buried cookie bits as an analogy for one method paleontologists use in finding and sorting potential fossils.

Grade Level: K, 1, 2, 3, 4, 5

Lesson Time: 40 minutes

## How Does the Rock Cycle Work

Examine how heat and pressure affect rocks by making observations of crayon shavings that are placed under heat and pressure.

Grade Level: 3, 4, 5, 6

Lesson Time: 40 minutes

## Dinosaur Evolution

Using images and or dinosaur models to identify key features of each dinosaur and being able to explain how that attribute is an adaptation to their environment.

Grade Level: K, 1, 2, 3

Lesson Time: 40 minutes

## Soil Detective Challenge

Investigate the properties and origins of soil by making and recording observations on different soil samples.

Grade Level: 3, 4, 5, 6

Lesson Time: 75 minutes

## Thinking About Systems

Understand how systems work by examining objects that work as a system.

Grade Level: 3, 4, 5, 6

Lesson Time: 45 minutes

## Introduction to Earth Systems

Students will be able to make connections between the different spheres of the Earth system by observing their outdoors and categorizing their observations.

Grade Level: 4, 5, 6, 7, 8, 9, 10, 11, 12

Lesson Time: 60 minutes

## Building and Testing Earthquake Resistant Structures

Build models of structures and simulating earthquakes on them to examine how different magnitudes of earthquakes affect structures in different ways.

Grade Level: 4, 5, 6, 7, 8

Lesson Time: 55 minutes

## Modelling Convection

Understanding how convection moves many Earth processes by simulating the convection process with beets and water.

Grade Level: 6, 7, 8, 9, 10, 11, 12

Lesson Time: 40 minutes

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