

# GEOLOGY

This project introduces youth to the fascinating hobby of "rock hunting." Geology involves studying the earth's crust, its layers, and their history. Youth learn to identify Indiana rocks, minerals, and fossils.

Create an exhibit to show the public some of the geology specimens you have collected. Exhibits must be displayed horizontally, sized 22" x 28," mounted on a firm backing (foam-core board or other), and covered in clear plastic or other transparent material. Or, you may display your specimens in an insect display box (18 x 24 inches), orientated horizontally. Include actual specimens in your exhibit, whenever possible. You can make your own labels for your specimens. See the suggested label format found in the Indiana 4-H geology manuals. Boxes make your specimens more secure. Do not put valuable specimens on posters where they can be removed quickly. Be sure to include a label with your name, grade, and county. Choose one of the topics listed below, appropriate for your grade in school, and use that name for your title.

**Titles must be in the front of the poster or box.**

It is **required** that all posters, notebooks, and display boards include a reference list indicating where information was obtained, giving credit to the original author, to complete the 4-H member's exhibit. This reference list should/might include web site links, people and professionals interviewed, books, magazines, etc. It is recommended this reference list be attached to the back of a poster or display board, be the last page of a notebook, or included as part of the display visible to the public. A judge is not to discredit an exhibit for the manner in which references are listed.

## Notes:

- You may purchase your specimens and may display rocks, fossils, and minerals. If you purchase a specimen, indicate when and where you purchased it and the location where you would expect to find the specimen. If you collect a specimen, indicate the county and township where you found it.
- Posters (**SEE POSTER DIAGRAM PAGE 247**) and display boxes will be exhibited standing up at the Indiana State Fair. Therefore, you need to mount your specimens securely. Project leaders suggest the following methods: soaking ½ cotton ball in Elmer's glue, hot glue, or clear tub sealant. Place the cotton ball in your box and put your rock (or fossil or mineral) on the cotton ball and let sit. It will take 1-2 weeks for Elmer's glue to fully harden. Specimens mounted with Elmer's glue can be removed by soaking the cotton ball in water. Glue remaining on the rock may be brushed off with an old, damp toothbrush.
- When exhibiting rocks show a fresh surface to help judges identify the rock.
- Labels - Include the specific geographical location where you would expect to find any specimens as well as where you actually acquired it (found, purchased, etc.).
- Do not identify your specimens any further than phylum and class. There is one exception to this for fossils which are identified to phylum OR class. Class should only be used for fossils of mollusks, backboned animals, and arthropods.

## Level 1: Grade 3-5

### EXHIBIT

Display a poster (or use an exhibit box) based on one of the following activities:

- **The Rock Cycle.** (Activity 2). Explain the rock cycle using both words and pictures.
- **Rock Types** (Activities 2-4). **Display rocks from the three major types:** igneous, sedimentary, and metamorphic. Examples of each include: Igneous - granite, basalt, gabbro; Sedimentary - limestone, dolomite, shale, chert, gypsum; and Metamorphic - quartzite, schist, marble, slate.
- **How Rocks Change.** (Activity 4). Color and display the picture in your book or draw and color your own on your poster. Briefly describe the earth processes that are shown.
- **Rock Artwork** (Activity 12). Display your rock artwork and the story that you created.
- **Collections.** (Activity 11). Display and identify 8 rocks.
- **Making Crystal Models.** (Activities 14 & 15). Display the crystal forms characteristic of most minerals (cubic, tetragonal, hexagonal, orthorhombic, monoclinic, triclinic) in a display box with their name and mineral with this form. You may color, paint, or use markers on your crystal models.
- **Molds and Casts.** (Activities 16 & 17). Display three molds and/or casts in a display box. Describe the steps that you followed to create a mold or cast.

## Level 2: Grades 6 - 8

### EXHIBIT

Display a poster (or use an exhibit box) based on one of the following activities:

- **Rocks with Different Textures.** Identify and display six rocks with three very different textures (two rocks of each general type). Include three grades of sandpaper and show how the differences in sandpaper is similar to the differences in rock texture.
- **Indiana Limestone.** Show and label pictures or photographs of ten buildings, sculptures, or monuments made from Indiana limestone.
- **Mineral properties and tests.** Explain the characteristics: crystal form, cleavage, hardness, appearance, and streak. Explain tests used in identifying specimens. Examples you might include are streak, acid, hardness, chemical analysis, and specific gravity.
- **How We Use Minerals.** Show 10 common products that contain minerals. Explain the minerals that are contained in these products and the characteristic that makes them useful.
- **Geologic Time.** Create a display to show the major geologic eras. Indicate the names, specific features, and approximate length of each.
- **Indiana's Glaciers.** Show the extent of Indiana's three main glaciers.
- **Indiana Geology.** Exhibit a map or sketch of Indiana showing at least ten sites with interesting geological formations. Describe the formation and sketch or show a picture of the formation.
- **Field Trip.** Describe a geology field trip that you took. Describe where you went and what you learned. Include photographs (if possible) or sketch what you saw.
- **Collections.** Display and identify one of the following: 8-16 minerals, fossils, or 4-8 of each (half minerals and half fossils). You may exhibit a new collection in subsequent years but not one you have already exhibited.

### **Level 3: Grades 9 - 12**

#### **EXHIBIT**

Display a poster (or use an exhibit box) based on one of the following activities:

- **Geology Research.** Prepare a display to teach others about the topic you studied. Include an appropriate title, abstract (brief description of your topic), and photographs, drawings, charts, or graphs that help explain your topic. This activity may be repeated if a new topic is chosen in subsequent years.
  - **Lapidary and Jewelry.** Show how stones and minerals are turned into polished stones and jewelry. Show and explain the steps involved.
  - **Miniatures.** Display five miniatures in a display box and explain the benefits of collecting miniatures and how they are prepared.
- Indiana's State Parks or Forests.** Create a matching game of Indiana's State Parks or Forests and a brief description. This exhibit option should include geological features of the park or forest.
- **Indiana, U.S, or World Geology.** Teach others about one Indiana, U.S., or World Geology topic.
  - **Career Exploration.** Prepare a display that explains your interview with someone who needs an understanding of geology to do their job.

### **Level: Independent Study: Grades 9 - 12**

#### **Exhibit**

- **Advanced topic** - Learn all you can about a geology topic and present it on a poster. Include a short manuscript, pictures, graphs, and list the works cited to describe what you did and what you learned. Title your poster, "Advanced Geology – Independent Study"
- **Mentoring** - Exhibit a poster that shows how you mentored a younger 4-H member. Include your planning, the time you spent, the challenges and advantages of mentoring, and how the experience might be useful in your life. Photographs and other documentation are encouraged. Resources must be from educational or government entities. Title your poster, "Advanced Geology - Mentor."

10/24/16