

# Geo Science Challenge



Activity instructions and a list of resources are available on the Provincial Website.

## INTRODUCTION

The Geo Science challenge is designed to allow the girls to explore more about Geo/Earth and other sciences. The activities are meant to be fun for the girls and the Guiders!

Thanks to the Tirian Eynon and Therese Lynch who developed the challenge. Have fun!

## REQUIREMENTS:

*Sparks* – complete 1 or more challenges from each section



### Section 1 – Earth Processes

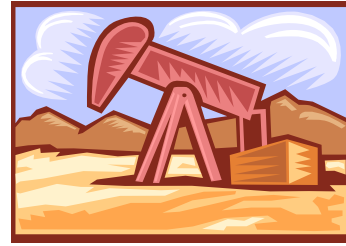
- Plate Tectonics, earthquakes/seismology, Layers of the Earth, Geological Time, Landforms & Natural formations (mountains, caves, folds, faults, volcanoes,...), rock cycle.
  1. Make and play a Plate Tectonics Jigsaw puzzle game.
  2. Create a seismograph.
  3. Make a Geological timeline out of a long piece of construction paper and paper towel rolls. Draw and write the earth events on to it.
  4. Use plasticine or modeling clay to represent Folds in the earth.
  5. On a Globe, identify where the following occur; Earthquakes, Tsunamis, Mountain building, Volcanic eruptions, Geysers. What are the effects of these activities on the people that live in these regions?
  6. Layers of the earth game or Femo craft.
  7. Read "The Magic School Bus inside the earth" by Joanna Cole. This explains the layers of the earth and the composition of each layer.
  8. Make metamorphic "rock" cookies. Discuss the geological process while you put it together from the deposit of layers to the addition of heat & pressure.
  9. Make a volcano.
  10. Using construction paper have each student model the layers of the earth.

### Section 2 – Paleontology

- Fossils, Dinosaurs, Bone beds.
  1. Make Fossil Casts.
  2. Visit a museum or park where they have dinosaur displays.
  3. Read a story about what the earth was like when the dinosaurs roamed.
  4. Create a poster, story, or skit about what you think your province looked like 100 million years ago.
  5. Create a paleontological field kit. What would you need if you were hunting for dinosaur bones. (hammer, goggles, compass, map, pick, brushes, plaster of paris, paper, gauze, pencil; & pad, camera, water, first aid kit, reference books, clothes, backpack...). Make a skit about hunting for bones in the field!

### Section 3 – Energy & Mining

- Oil & Gas , energy sources, Mining, Rocks and Minerals.



drop

1. Create a comic book or skit about life of an oil from the time it is taken from the ground (transported, where were you taken, what changes did you go through, where are you now?).
2. Keep a log for one week about which petroleum products you use and why you use them. At the end of the week, look at your list and discuss what you wrote down.
3. Make a Sandstone or conglomerate.
4. Grow your own crystals.
5. Describe 5 energy sources, how they occur and how they are used today. (Solar, coal, oil, water, wind etc.).
6. Visit a quarry, mine oil & gas field, gravel pit or other area of similar interest and investigate the geology of that area.
7. Test rocks to see if they contain calcite. (Scratch rock with a nail and put lemon juice on it. Sandstone vs. Limestone. What about granite, shale & other rock types).
8. Start a rock collection using books, people and other resources and try and identify what typed of rocks they are. Go on a rock gathering expedition. Sort the rocks by size, color, markings, etc.
  - Look Close -Have children wash the rocks they have gathered and examine them with magnifying glasses.
  - Hard or Soft - Have children scrap their rocks with nails to see if the rocks are hard or soft.
9. Rock Sorter - Make a rock sorter by cutting four or five holes form large to small in the top of a shoe box. Place a number of different size rocks next to the box. Let the children sort the rocks in the rock sorter by placing each rock in the hole closest to its size.
10. Rock Sculptures -Set out a variety of small rocks, glue, and squares of cardboard. Have the children glue the rocks on the cardboard squares to create rock sculptures. The children can also paint designs on their rocks.

### Section 4 - Geomorphology

- Mapping/geological surveys, Ice Ages & Glaciers, water, Erosion, Tsunamis, rivers.
1. Geohunt – look for signs in your community or visit a place where you can see evidence of one or more of the following: where a glacier used to be, erosion has occurred, volcano has erupted, water once covered an area, where the earth has shifted.
  2. Find out why rocks break apart (Freeze a bottle that you filled with water & put a lid on. Water expands, cracks the bottle).
  3. Make a 3D topographic map out of Plasticine or modeling clay.
  4. Design and try an erosion experiments. (for example: paint roller pan, sandy soil, pebbles, hill on one end, rain from holes in bottom of a styrofoam cup).
  5. Limestone cave in a bottle (in a glass jar two layers of soil separated by a layer of sugar or sugar cubes. Have water flow through the soil & watch the sugar or “limestone” dissolve away.)
  6. Make a topographic map of your friends face.