

Rockin' Scavenger Hunt Virginia Tech Museum of Geosciences

This scavenger hunt is designed for you to discover some things about minerals and fossils and to find some of the treasures in the Museum!

Your mission: Working with your team, find the answers to as many of the following questions as possible, without copying answers from any other teams. You may begin at the top of any page. Your teacher will advise you on which page to start, and you should complete a page before moving on to another page.

Tip: Follow the directions given to each location. "Right," "left," "front" and "back" refer to those locations from the door of the museum where you came in.

(Answers are in blue. S numbers are case numbers.)

Minerals

I. Take a look at some of our “*show*” *minerals* at these locations:

- *Don Dalton* collection at center right wall
- *MVT Deposit Minerals* at front left corner wall
- case at museum center with “Emerald” label at front

1. Choose two favorites. Write down the name of each mineral, and describe what it looks like (for example: shiny, dull, blocky, rounded, flat, bumpy, how many sides, what color, etc.) See if you can describe each sample well enough that a classmate could find the exact thing you are looking at!

a. example - emerald – green with parallel lines, huge crystal

b.

2. Look at the *Minerals of Virginia* displays at the right wall toward the back.

a. Name a mineral mined in Virginia and the location or quarry where it was found.

example - tourmaline, Powhatan County

b. What is the well-known pegmatite in Virginia, which was once used for furnace windows?

mica

c. Name one famous Virginia mineral and the locality in which it was found.

example - quartz – Ellett Valley

III. In the front half of the museum, find: (choose at least 4 questions of “a” through “h”)[SOL ES.4]

- a. in the gem exhibit on the front wall (S14), one type of mineral that can be cut into a gem (look at the cut gem and the natural stone) topaz, opal, aquamarine, garnet, etc.
- b. a sample of gold (in the Gemstone exhibit) (S14) and a sample of fool's gold: pyrite (in upright case closest to the hallway and the flat case across from it). (S2). What differences do you observe between the gold and the pyrite?
pyrite is cube-shaped; gold is platy, like flakes, and more yellow-gold than pyrite.
- c. at the Gemstone exhibit, find diamond, What is its chemical formula (the letter or letters right below the name on the label) C What element is this?
carbon
What is diamond used for? jewelry, drilling, cutting
- d. in one of the wall cases on the front wall (C. A. Michael Collection), find graphite. What is its chemical formula (the letter or letters right below the name on the label)? C What element is this?
carbon
What is graphite used for?
lubrication for locks and wheels of model cars; pencils
Bonus: How are diamond and graphite so different if they have the same chemical composition? the atoms of the 2 elements are bonded together in a different manner, making a different crystalline structure. In diamond the carbon atoms are bonded together in a tetrahedral (3-sided pyramid) lattice arrangement; in graphite the carbon atoms are bonded together in sheets of hexagonal lattice
- e. in the Mineral Habits case (far side of OmniGlobe) (S15), find a mineral that shows twinning. What is the mineral and what type of twin?
ex. - cerussite – sixling twin
and a geode. What mineral? purple quartz - amethyst
- f. in the table-top cases, in the case at the corner farthest from the hallway (S4), find halite. What is its chemical formula? NaCl
What are these two chemicals? sodium chloride
What is its common name? (It is not written on the label. If you don't remember, ask somebody.) salt
What colors of halite are here? clear, white, blue, brown/gray
- g. One mineral collected in Australia (look at the labels! Australia has its own upright case)
miersite, iodargyrite, etc.
- h. One mineral collected in Mexico (Mexico has its own upright case)
halite, gypsum, etc.

Fossils

- III. *Fossils of Virginia* display. [SOL 5.7a, 5.7b] Find it on the left-hand wall toward the back of the museum.
1. a. Look for the map of Virginia in the center of the display that shows the locations of rocks of different ages in the state. If you are from Virginia, find your home area on the map. What color do you see there? [for SW VA - green](#)
 - b. (For VA residents) Look at the nearby "geologic time" chart (the simple yellow/blue/green/red chart to the right of the VA map) and the geologic time strip at the bottom of the front of the glass. Using this and the colors on the map you have already observed, how old are the rocks in your area? (note that "m.y.a." stands for million years ago) What time period or periods are the rocks in your area from? (Give a range of millions of years)
[Paleozoic – 252-541 million years ago, Mesozoic – 66-252 mya, Cenozoic – up to 66 mya](#)
 - c. Look for the fossils that are labeled with cards of the same color as your area (or pick an area) on the map. Name 2 fossils found in that area. Approximately how old are they (give a time range or time period)?
[SW VA: Stromatoliths, Cambrian; Graptolites, Cambrian; Brachiopods, Cambrian; Crinoids, Ordovician; Trilobites/Phacops, Devonian; amphibian Hylopus, Carboniferous; Coal/Lepidodendron, Carboniferous](#)
2. a. Where were the trilobite fossils found? [Gore, VA](#)
 - b. What animals are they related to?
[horseshoe crabs, lobsters, spiders](#)
3. a. From what geologic era and time period is the jawbone from the ground sloth? (marked by a red arrow - look back at the "geologic time" chart)
[Cenozoic, Miocene](#)
 - b. What famous Virginian is this species of ground sloth named after? Why?
[Thomas Jefferson; he was a famous and skilled paleontologist](#)
4. Name at least one Virginia fossil from each time era (fossils you haven't listed for #1, #2, or #3 above). Name a fact about each.
 - a. Paleozoic (western VA) – ex. [see #1c](#)
 - b. Mesozoic (central VA) – [possible answers - flowering plant, insects, fish](#)
 - c. Cenozoic (eastern VA) – [possible answers - Gastropods/mollusks, bivalves, sabertooth cat, Chesapeake jeffersonius, baleen whale, giant ground sloth, monster shark, mastodon](#)
 5. Which set of fossils (a. b. or c. above) are most like animals that live today? Circle the letter,
In what part of Virginia are these more modern-looking fossils found? [eastern VA](#)
- Are these more modern-looking fossils older or younger than fossils in other parts of the state? [younger](#)

IV. Find the cases with more *fossils* (at the back left corner of the museum, around the corner from each other) [SOL 5.7b]

1. Look at the crinoid fossils (3 samples). What is a “nickname” given to crinoids?
sea lily
2. Find the fossils of many small fish. Why do you think they were all buried together?

They died at the same time, and were covered up very quickly.

3. Look at the model of the giant beaver fossil. By observing the size of the skull compared to a modern beaver, how many times bigger than a modern beaver do you guess it was?
3 or 4 times?

VI. Find the large slab of rock by the front door with the *dinosaur tracks* in it. [SOL 5.7b]

1. a. How many tracks can you actually see? *look at the “map” to the upper left*
b. Do you think the tracks were made by the same kind of dinosaur as the one on exhibit here in the museum? *???* Why or why not?
similar size, same number of toes, but maybe not the right shape

c. Bonus: Look at the map above the footprints which shows where these footprints were found. Why is this one of the few places in Virginia where dinosaur fossil remains can be found? It is the only part of Virginia where rocks of same age as the dinosaurs are found.

Hint: Look at the geologic map and the geologic time chart in the Fossils of Virginia display that you looked at in section IV #, as well as the label on the Allosaurus that tells how long ago it lived.

2. Related memory question from class: Of the three main rock types which you have been studying, which rock type are fossils found in?

sedimentary
Why? [SOL 5.7a]

Igneous rocks would melt fossils. Metamorphic rocks would destroy fossils with heat and/or pressure.