

Minerals

Hints for Teachers (Upper Elementary/Middle School)



MUSEUM INFORMATION:

The "Minerals" activity sheet is designed for students to practice scientific inquiry to be used in the Beneski Museum of Natural History in conjunction with the classroom curriculum; however, it can also be used independently.

- The Beneski Museum of Natural History displays minerals from around the world.
- While exploring the museum, encourage your students look at the materials used to make the building.
- The Beneski Museum of Natural History can accommodate up to 45 children and chaperones at a time. Please consider splitting into smaller sub-groups when completing the "Minerals" activity.
- When your students arrive at the museum, they will be given a brief greeting by a museum staff member. After this greeting is a good time for you to talk to your students and chaperones about the "Minerals" activity.

PREPARING AN ACTIVITY:

- The museum does NOT provide copies of "Minerals" Please prepare copies for your students.
- "Minerals" asks students to look critically at specimens and use their skills in scientific inquiry learn about the history and origin of different mineral. They will understand what help differentiate one mineral from another.
- The museum asks that students refrain from leaning on any of the glass cases while working. We recommend providing students with clipboards or notebooks to lean on.
- "Minerals" has a brief set of directions printed at the top for chaperones to use.

IN THE CLASSROOM:

Extend the learning fun!

- In the mineral hall several minerals have QR codes that allow the visitor to take a deep dive into the history and used of some earth materials. These videos are available on the Beneski Museum YouTube channel and can be viewed anywhere.



“Mineral Hall”

Information for Chaperones

Complete this activity in the Beneski Museum of Natural History.

- Please allow your students a few minutes to explore the main and bottom floor before beginning the “*Minerals*” activity.
- Divide into groups and have each group begin with a different question so that not all the students are looking at the same specimen at the same time.
- The part of the question stating “What is the chemical formula of this mineral? is a good time for students to discuss what the letters and numbers mean in the chemical formula.
- All specimens can be found on the main floor mineral hall. Please have students refrain from wandering. As this area abuts classroom spaces group must be quiet while doing working in the area.
- Remind your students to look all around them, even above their heads and under their feet.
- Remember: While in reach of students, remind them that the exhibits in the museum are fragile. Please do not allow them to touch any of the exhibits.

Acknowledgements

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- Amherst Public Schools
- Brown University
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- Mount Holyoke College
- Northampton Montessori School
- Northampton Public Schools
- Smith College
- University of Massachusetts
- Williamsburg Schools

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Mineral Hall*

NAME _____ Date _____

How to use this sheet:

- Here are some minerals you may have studied in class, or are just interested in. *This sheet will help you find the minerals in the classroom hall and answer the questions that go along with each mineral.* Be careful! Some samples show one mineral growing on top of another mineral.
- **Note about case numbers:** The cases are numbered looking left to right. Like reading a book, you should look at the specimens from left to right. Case one would be all the way to the left and case four is all the way to the right.

Thinking Question.... What is the Chemical Formula for water? The answer is H₂O. This means there are two atoms of **H**ydrogen and one atom of **O**xygen in each molecule of Water. You will see similar formulas near the minerals.

Calcite (Case 1)

- Calcite comes in many colors, but is often clear or white.
- Calcite often grows in the shape of a rhombus (a parallelogram with all sides equal).
- Calcite often forms when calcium separates from a water mixture. This is how stalactites and stalagmites form.

What is the chemical formula for Calcite?

Copper (Cases 3)

- Copper is an element.
- Copper found in large chunks, such as the samples here, is called Native Copper.
- Copper is soft and malleable.
- Copper may turn green like an old penny or the Statue of Liberty.

Where did geologists find this specimen?

Fluorite (Cases 1, 2)

- Fluorite comes in many colors.
- Fluorite often grows in a cube shape.
- Very clear fluorite can act as a prism.

Where did geologists find the specimen in case #2?



Galena (Cases 1, 3)

- Galena often grows in the shape of a cube and if you break it, the pieces will also be shaped like cubes.
- Galena is usually dark gray & shiny.
- Galena is very heavy because it contains lead, which is very dense.

What is the chemical formula of Galena?

Gold (Case 3)

- Gold has a bright, yellow color.
- Gold is very soft. If you hit gold with a hammer, you will flatten it.
- Gold is very rare, but is most often found as flakes or nuggets.

Where did geologists find the specimen on top?

Gypsum (Case 1)

- Gypsum forms when water evaporates and leaves behind calcium and sulfur.
- Gypsum can grow in the shape of a flower. This kind of gypsum is often red and is called a desert rose.
- Gypsum can sometimes grow in the shape of an "X."

Where did geologists find this specimen?

Halite (Case 1)

- Halite is often colorless, but not always! What other colors do you see?
- Halite often grows in the shape of a cube.
- Halite is the mineral name for rock salt (this is the kind of salt we often use on food).

What is the chemical formula of Halite?

Pyrite (Case 2)

- Pyrite is called fool's gold for its yellow color and metallic luster.
- Pyrite, unlike gold, often grows in a cube shape.
- Look for the pyrite that is shaped like a circle.

What is the chemical formula of Pyrite?

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Quartz (Case 1)

- Quartz comes in many colors. Purple quartz is called amethyst; yellow quartz is called citrine.
- Quartz often grows in a six-sided shape.
- Opal is quartz that formed with extra water mixed in with its crystals. This makes opal look milky.

What is the chemical formula of Quartz?

Hematite (Cases 1, 4)

- Hematite can be black or red.
- Sparkly hematite is called specular hematite.
- A cluster of hematite crystals can grow in the shape of petals on a rose.

What is the chemical formula for Hematite?

Hornblende (Case 2)

- Hornblende is one mineral in the group of amphibole minerals.
- Hornblende is usually dark green or black.
- Hornblende is a common mineral in metamorphic rocks.

Where did geologists find this specimen?

Magnetite (Cases 2, 4)

- Magnetite often grows in a cube or diamond shape.
- All magnetite is attracted to magnet.
- Some magnetite will act like a magnet and attract metal. This type of magnetite is called lodestone.

Where in New York was the specimen in case #4 found (Shepard Collection)?

Phlogotite & Muscovite Mica (Cases 1, 2)

- Mica is the name for a group of minerals including biotite and muscovite.
- Mica grows in very thin sheets.
- Mica is often found in New England. You may see mica in rocks if you go for a hike in Massachusetts.

Where did geologists find the specimen in case 2?

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Now go back to a couple of your favorite minerals. You will notice that some have very specific shapes and/or patterns. Please take some time and briefly sketch several of your favorite minerals on the following pages.

Sketch one of your favorite Mineral below

Mineral Name _____

Sketch one of your favorite Mineral below

Mineral Name _____

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Sketch one of your favorite Mineral below

Mineral Name _____

A large, empty rectangular box with a thin black border, intended for a student to draw a sketch of their favorite mineral.

Sketch one of your favorite Mineral below

Mineral Name _____

A large, empty rectangular box with a thin black border, identical to the one above, intended for a student to draw a sketch of their favorite mineral.



Sketch one of your favorite Mineral below

Mineral Name _____

Sketch one of your favorite Mineral below

Mineral Name _____