MiniMe Geology™

ROCK DETECTIVES
CRYSTAL GEOMETRY

www.MiniMeGeology.com

Hey there Mini Me Geologists!

Today we are on an expedition into crystal geometry. To complete your expedition, you must follow the clues and complete the activities on this printable disk.

First, read about each of the samples in your kit in the Mineral Information section.

Then, print out and follow each of the Identification "ID" Activities.

Mineral Information

Identification Activities

Once you know what your samples are, move on to games, puzzles and experiments in any order you wish. Don't forget to take the "What I Learned" quiz at the end and print your Crystal Geometry geologist's certificate to show everyone what a smart geologist you have become!

Experiments & Fun

Games and Puzzles

Parents Note: The information on this disk is designed to be read on-screen and/or printed using adobe Adobe® Acrobat Reader 9.0 which is a free program available at www.adobe.com.

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Luster

Luster is the appearance of a mineral when the light shines on the sample. Minerals can have different lusters which is why it is another clue to a minerals identity. There are many different mineral lusters. Some of the most common are:


RHODONITE

Glassy: A mineral with a glassy luster shines and reflects light just like real glass. Examples of minerals with a glassy luster include quartz, rhodonite, tourmaline, and epidote. Glassy is the most common luster of all minerals.


LEPIDOLITE

Pearly: A pearly luster was actually named from the appearance of a real pearl. Examples of minerals with a pearly luster include talc, lepidolite, and gypsum.


LIMONITE

Earthy: A mineral with an earthy luster is not shiny and does not reflect light. The minerals appear dull, like soil. Examples of minerals with an earthy luster include limonite and azurite.


PYRITE

Metallic: A mineral with a metallic luster looks like metal (think quarter, pennies, aluminum foil). Examples of minerals with a metallic luster include pyrite, graphite, and magnetite.


MALACHITE

Silky: A mineral with a silky luster looks like it was made of fine silk material. The minerals are often made of many small, thin fibers. Examples of minerals with a silky luster include malachite and ulexite.


SULFUR

Greasy: A mineral with a greasy luster looks as though it were covered with grease. Examples of minerals with a greasy luster include sulfur, halite, and sodalite.


TURQUOISE

Waxy: A mineral with a waxy luster looks as though it were covered with wax. Examples of minerals with a waxy luster include turquoise and agate.

Take a look at the samples in your kit. Can you tell what the luster is for each sample? Use the guide above to help you.

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Identify My Minerals

To identify your new minerals, follow the clues on this page to find the name of each one!

CLUE #1 **COLOR** — Minerals come in many colors and color families. Here, we have divided them into three categories. Place your samples in the correct circles.

Whites	Greens and Silvers	Golds and Browns

CLUE #2 **UNIQUE PROPERTIES** — Each mineral has special properties that make it different from every other mineral in the world! Use these unique properties to tell the difference in the minerals in each circle above. Place your samples in the correct circle to indentify their names.

Calcite
Soft mineral with rhombic shape.

Fluorite
Octahedron (8-sided) shape.

Pyrite
Crystal faces have lines that look like scratches. Fools Gold.

Agate Geode
Quartz crystals formed inside a hole in a rock.

Muscovite
Very thin layers stuck together like a book.

Citrine
Forms crystals with 6-sides that grow to a point.

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How to Identify Minerals

Geologists perform many tests to identify minerals. Each test gives you a clue about the mineral. Then, you use all of the clues to identify your sample. Let's perform some of these tests on the calcite sample from your kit. Refer to the pages in the Information section for help.

SAFETY FIRST! A good geologist is always safe. Wear goggles to protect your eyes when scratching samples and be careful because minerals and rocks can have sharp edges.

You will need:
- 1 piece of white paper
- Paper clip
- Calcite Mineral sample from your kit
- Penny
- Vinegar or Lemon Juice
- Pencil

Some tests are simple and some are more complex. After you finish each test, record your result.

TEST Color What is the color of your sample? **Result** _____

TEST Shape What is the shape of your sample? **Result** _____

TEST Luster What is the luster of your sample? **Result:** _____

TEST Streak What is the streak color of your sample? **Result:** _____
To determine the streak, scratch the sample on the white paper.

TEST Hardness What is the approximate hardness of your sample? **Result:** <2.5 3.5 >4.5

Use your fingernail, a penny and a paperclip to perform these tests. If the item can not scratch the mineral, then the sample is HARDER (higher number on the Mohs scale) than the item.

- Is your sample harder than your fingernail? _____ If yes, your sample is harder than 2.5
- Is you sample harder than a penny? _____ If yes, your sample is harder than 3.5
- Is your sample harder than a paperclip? _____ If yes, your sample is harder than 4.

TEST Fizz Test Does your sample bubble when you put acid on it? **Result:** _____
Drop a few drops of vinegar or lemon juice on your sample. Use your hand magnifier to see if it bubbles.

TEST Cleavage Does your sample have good cleavage? **Result:** _____
Do this test with an adult. Test the cleavage by gently breaking the sample with an adults help.
Wear your safety equipment and cover the sample with a towel.
If you see a flat, smooth surface, the sample likely has nice cleavage.

TEST Magnetic Is your sample magnetic? **Result:** _____
See if you can get the sample to pick up a paperclip.
If the sample has magnetic properties, you should be able to pick up the paper clip.

Try these tests on some of the other samples in your kit. **We do not recommend hitting the pyrite sample with a hammer as it may create a spark.**

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Make a Geologists Field Notebook

Geologists use a field notebook to record information about their rocks, minerals, and maps. Create your own notebook with our Field Notebook Pages.

You will need:

- 1 copy of the Notebook Cover
- Several copies of the Notebook Inside Pages
- Hole punch (have an adult help you)
- String
- Markers, crayons or colored pencils

Optional:

- Construction paper and glue
- 3-ring binder

To Make Your Geologists Field Notebook:

- Decorate the cover of your Field Notebook with colors or pictures
- Write your name on the bottom of the cover (where it says "Property of") so everyone knows that the field notebook belongs to you
- Stack your cover and inside pages together.
- With an adults help, punch 2 or 3 holes along the left edge of the pages
- Tie string through the holes to hold your field notebook together

Other ideas:

To make your notebook stronger, glue your cover page to a piece of construction paper and put a second piece of construction paper at the back of the notebook.

OR Instead of using string to tie your notebook, you can place the pages in a 3-ring binder.

To Use Your Geologist Field Notebook:

Each time you use your notebook, write the date, page number, and weather on the lines at the top. Give each page a title such as "Salt Growing Experiment," or "Nature Walk." Use the lined area to write notes about your nature walks, samples, or experiments. Use the space at the bottom of each page to draw pictures of your samples, locations and activities.

! For safety, always take an adult with you on a nature walk or if you are rock hunting outdoors.

Have fun! The information you record in your book is up to you because you are the geologist!

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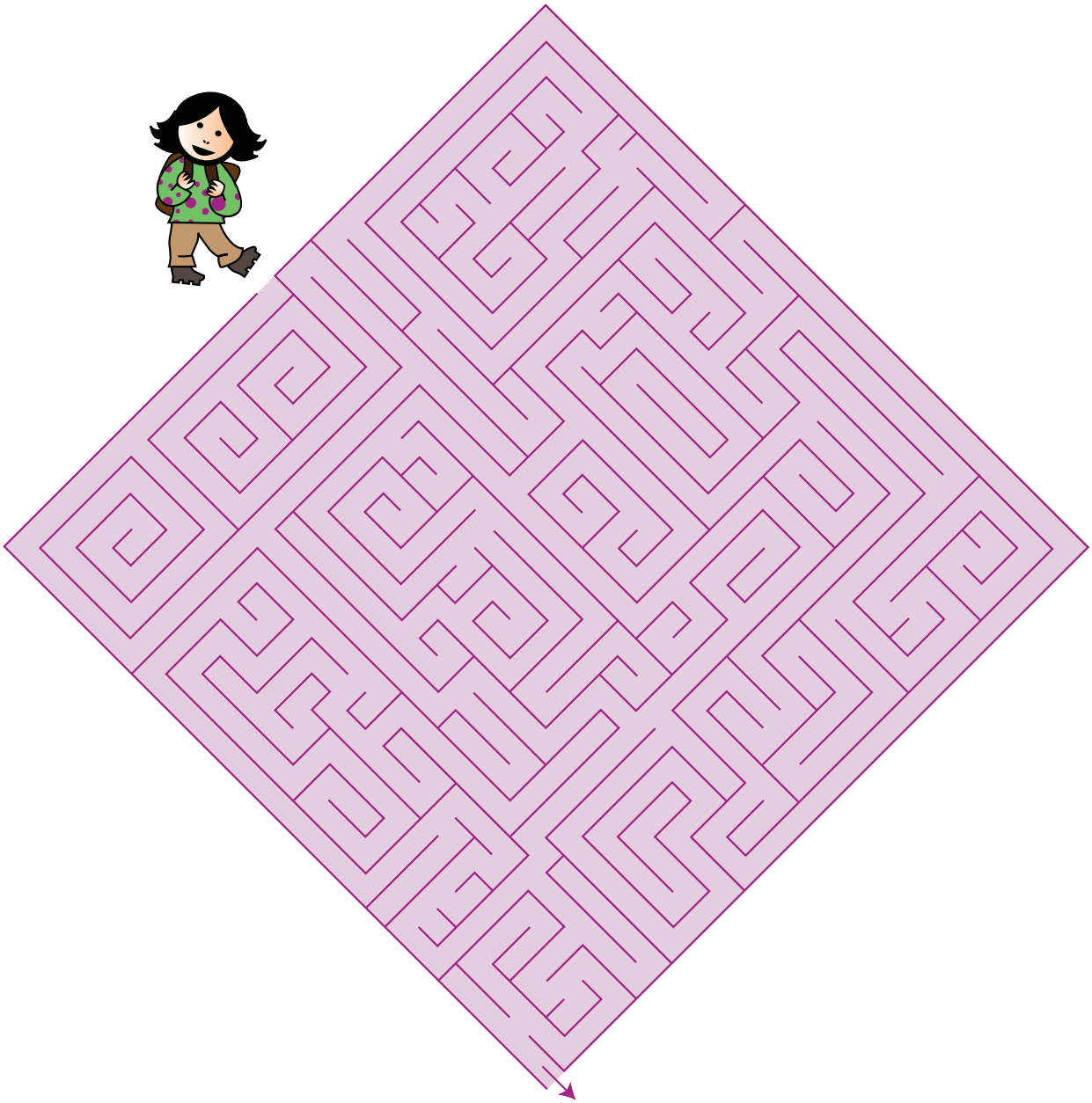
Fluorite Octahedron Maze

Help our geologist climb through the fluorite octahedron.



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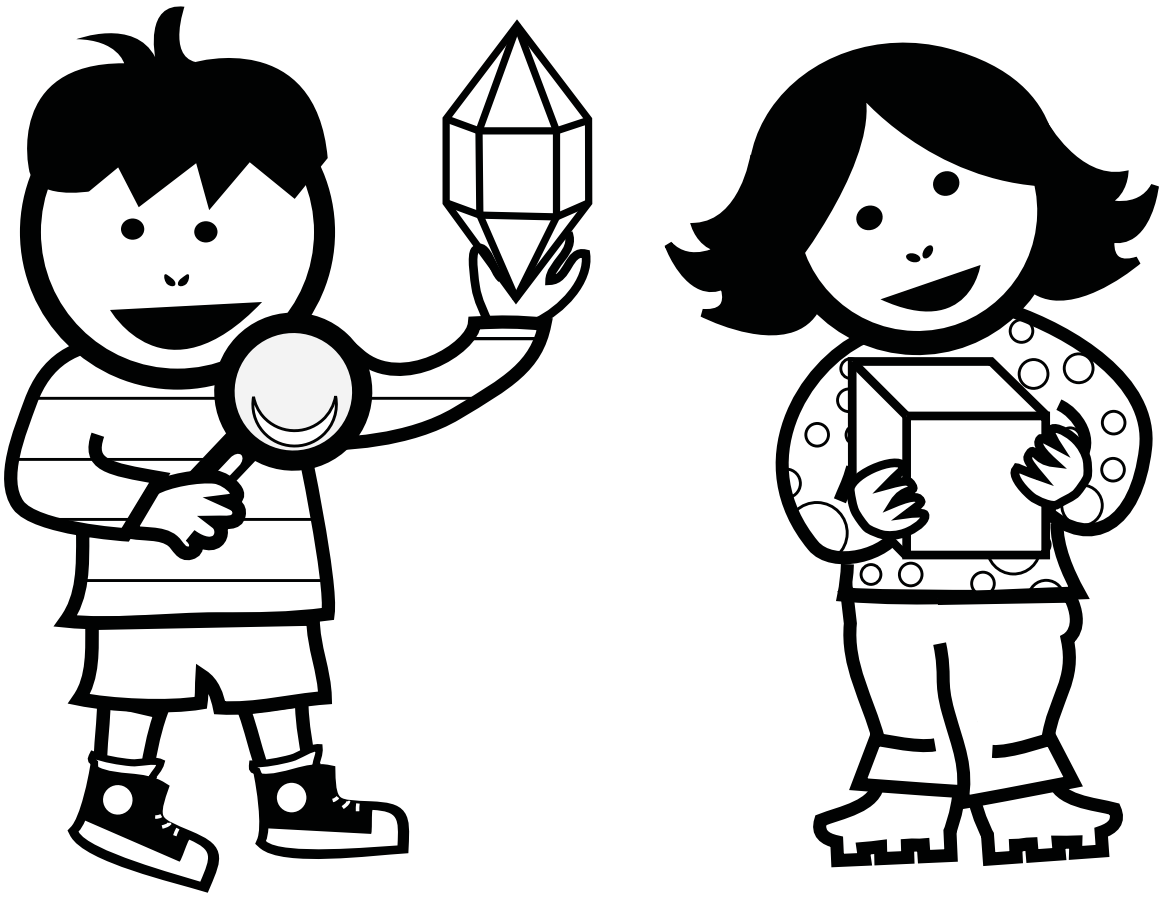
Crystals Coloring Page

Color the Mini Me Geologists and their crystals.



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