



ROCK DETECTIVES CRYSTAL EXPERIMENTS

www.MinimeGeology.com

Hey there Mini Me Geologists!

Today we are on a mission to learn about crystal experiments. To complete your mission, you must follow the clues and complete the activities on this printable disk.

First, read about each of the samples in your kit in our 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 Experiment 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.



Crystal Experiment Samples

	<p>BLUE CALCITE Color: Blue. Calcite can also be other colors. Hardness: 3 on Mohs Hardness Scale Streak: White Luster: Glassy to Pearly</p>		<p>HALITE - ROCK SALT Color: Red, brown, colorless to white and many others Hardness: 2.5 on Mohs Hardness Scale Streak: White</p>
<p>Locations: Worldwide Uses: Microscopes, building materials and fertilizers Features: Will dissolve in acid.</p>	<p>Luster: Glassy Locations: United States, Russia, France, Canada, India Uses: Salt for food preparation and soap Features: Halite rock salt is formed when seas dry and can be found in wide, thick layers. Rock salt can also be formed in underground salt domes and are often found with oil deposits.</p>		
	<p>MAGNETITE Color: Black Hardness: 5.5 to 6.5 on Mohs Hardness Scale Streak: Black</p>		<p>JASPER Color: Red. Jasper can also be yellow, brown, black, gray or white. Hardness: 7 on Mohs Hardness Scale Streak: White</p>
<p>Luster: Metallic Locations: Sweden, Austria, United States, Italy, Switzerland, South Africa, Russia Uses: Used mainly for its iron content. Features: Heavy. Can be picked up by a magnet.</p>	<p>Luster: Glassy Locations: United States Uses: Home decorations, jewelry Features: Microcrystalline form of quartz that forms inside the cracks of other rocks.</p>		
	<p>HEMATITE Color: Gray to black Hardness: 5 - 6 on Mohs Hardness Scale Streak: Red-brown to dark cherry red Luster: Metallic to earthy</p>		<p>SULFUR Color: Yellow to Yellowish-brown Hardness: 1.5 - 2.5 on Mohs Hardness Scale Streak: White</p>
<p>Locations: Worldwide Uses: Jewelry, plate-glass, mined for iron content, red pigments Features: If present in rock, will cause the rock to be colored reddish.</p>	<p>Luster: Greasy</p>		
	<p>ICELAND SPAR CALCITE Color: Colorless. Calcite can also be many other colors. Hardness: 3 on Mohs Hardness Scale Streak: White</p>	<p>Locations: United States, Italy, Sicily, Switzerland, France, Mexico Uses: Explosives, dyes, sulfuric acids, insecticides Features: Will dissolve in warm water. Will crack when exposed to heat. Has mild smell of rotten-eggs and the smell gets stronger as the mineral gets warmer.</p>	
<p>Luster: Glassy to Pearly Locations: Worldwide Uses: Microscopes, building materials and fertilizers Features: Objects viewed through a clear piece will appear doubled. Will dissolve in acid.</p>	<p>! SAFETY FIRST! Never expose sulfur to high heat or flame.</p>		



Who am I?

Name	Color	Hardness	Streak	Luster
Blue Calcite	Blue	3	White	Glassy to Pearly
Iceland Spar Calcite	Colorless / Clear	3	White	Glassy to Pearly
Magnetite	Black	5 1/2 - 6 1/2	Black	Metallic
Sulfur	Yellow	1 1/2 - 2 1/2	White	Greasy
Halite / Rock Salt	Reddish-Brown	2 1/2	White	Glassy
Hematite	Gray	5 - 6	Red	Metallic to Earthy
Jasper	Red	7	White	Glassy



Draw a line from
the rock description to the photo.

(Use the chart above to help you!)

I am blue and fizz when acid is dropped on me.

I double images if you look through me.

I am magnetic and look metallic.

I am soft and salty.

I am gray but my streak is red.

I am a form of quartz but you can not
see any crystals.

I am soft and yellow.





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Crystal Experiments

Every mineral has unique properties that make it special. Let's test several of the samples in your kits to see what makes them unique!

#1 Magnetite

Magnetite's unique property is that it is magnetic. For this experiment, gather the magnetite sample from your kit and a paper clip.

Lay the paper clip on a table. Slowly touch the magnetite to the paper clip and see if you can lift it off of the table. It may take several tries but be patient and it will work!

#2 Iceland Spar Calcite

Iceland Spar Calcite is special because it can make images look doubled when you look through the crystal.

Place the crystal on top of the lines, words and pictures below. What do you see?



Geology is Awesome!



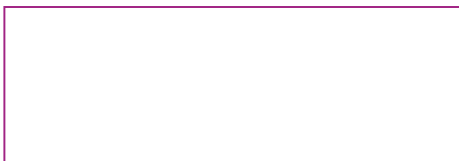
#3 Sulfur

If you have ever been to a sulfur spring you know that sulfur smells like rotten eggs. Smell the sample from your kit and see if you can smell the odor. Scratch your fingernail or a paperclip on the sample and see if the odor is stronger. The rotten eggs smell gets stronger when the sample is heated. Try holding the sample in your hands for a few minutes. Does the rotten eggs smell get stronger as the sample warms? Did you also notice how soft sulfur is?

! SAFETY FIRST! Never heat sulfur with a stove, microwave, flame or other heat source.

#4 Hematite

Hematite is a great mineral for testing the streak. Most minerals will either streak a white color or the same color as the mineral itself. But hematite will streak a totally different color which is an important clue to its identity. To test the streak, take your hematite and scratch it in the rectangle below. Scratching the mineral will turn some of it into a powder on the paper. This powder color is the streak.



What color is the hematite mineral? _____

What color is the hematite streak? _____

The unique streak color is in important clue for geologists.



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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 adult's 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!

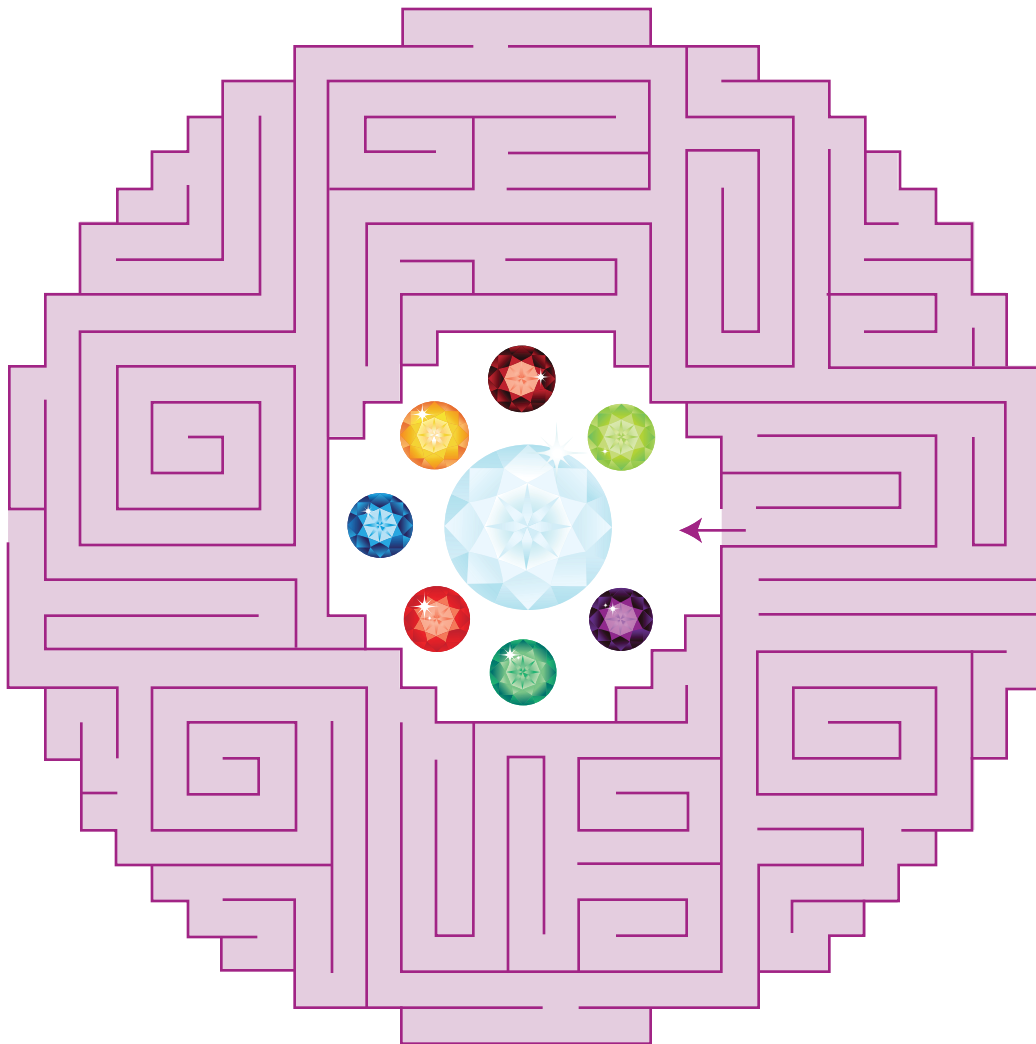


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Crystal Mine Maze

Help the Mini Me Geologist find her way to the center of the mine to find the gemstones!





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Create a Crystal Experiment Story

Imagine that you and your friends are geologists and are about to perform an experiment. Write your own geology experiment adventure story using as many of the words below as possible. Illustrate your story with a drawing too.

- | | | | | |
|------------|-----------|----------------|----------------|------------|
| Mineral | Sulfur | Hand Lens | Field Notebook | Calcite |
| Hematite | Observe | Safety Goggles | Iceland Spar | Jasper |
| Hypothesis | Results | Magnetite | Geologist | Hardness |
| Test | Rock Salt | Geology | Luster | Experiment |
