

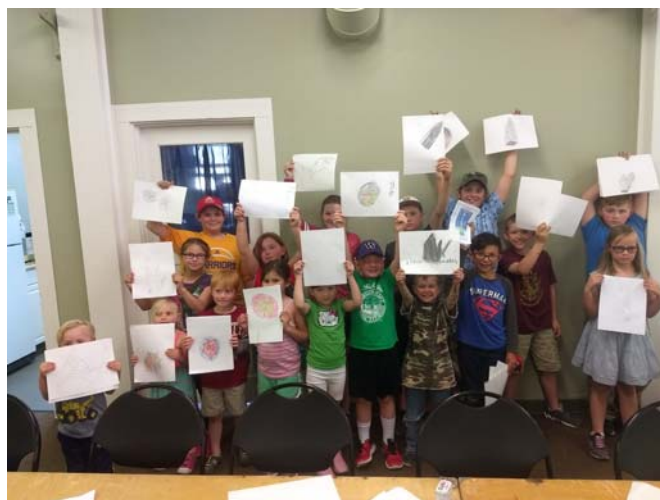
MINI MINERS MONTHLY

A MONTHLY PUBLICATION FOR YOUNG MINERAL COLLECTORS
VOL. 10 NO. 5

MAY 2018

Diamond Dan hereby orders you to go to a mineral show in your area this summer! One of the best ways to see a lot of great mineral specimens and meet a lot of great mineral collectors is to attend a mineral show.

Diamond Dan had the wonderful opportunity to attend the Northwest Federation of Mineralogical Societies' annual meeting and mineral show in April. It was in Yakima, Washington. When he was there, he met a whole bunch of wonderful Mini Miners who were busy setting up display cases for the show and learning how to draw mineral specimens.



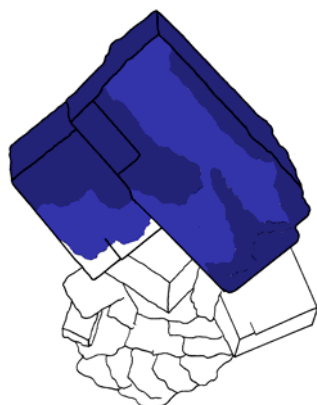
Here is a picture of the Mini Miners with their pictures. They learned how to draw

quartz and agate specimens.

In this issue you will have a chance to draw three different minerals: Quartz, Tourmaline and Wulfenite.



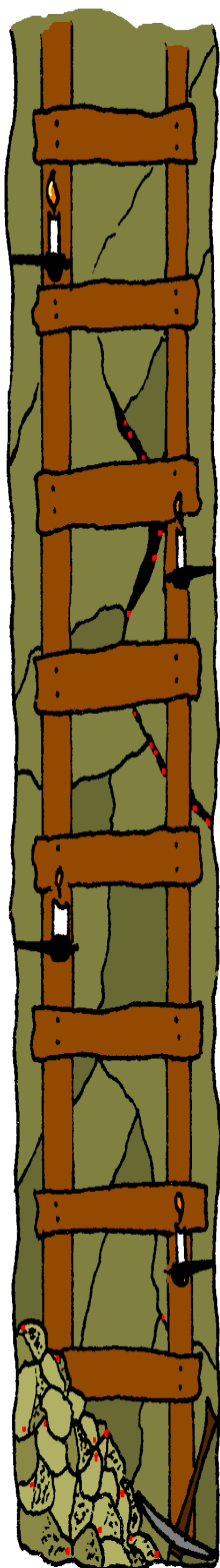
What Mineral Am I?



I am colorless when pure, but I can also be pink, blue, purple or green. If you put me in water, I will dissolve. I have perfect cubic cleavage which means I break into perfect small cubes when hit with a hammer. You probably know me as "Salt."

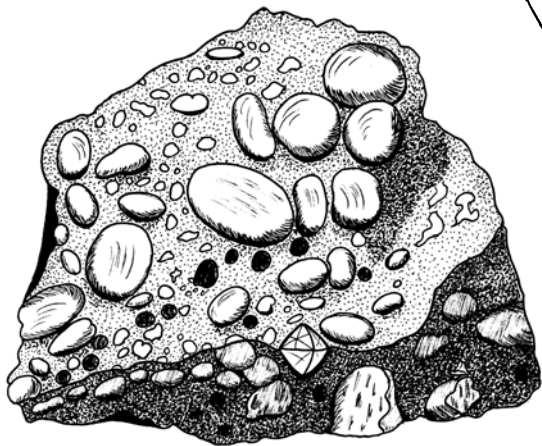
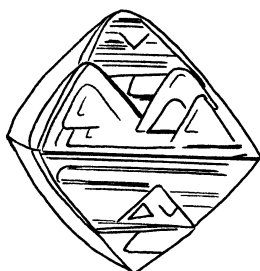
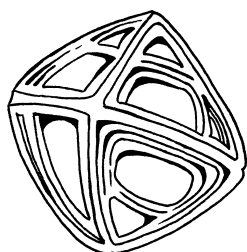
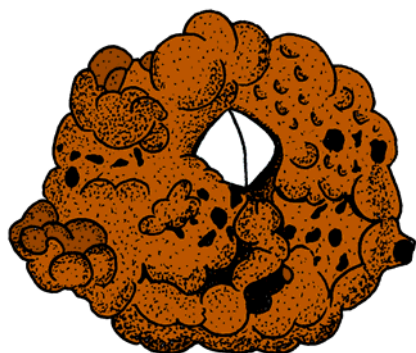
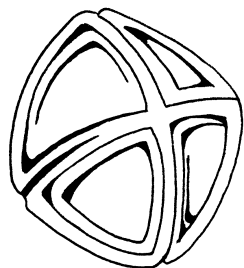
My mineral name is _____.

Check your answer on the next page.



Mineral of the Month

Diamond



Diamond is the hardest mineral species in the mineral world. It is number 10 on Mohs' Scale of Hardness. The only thing hard enough to scratch a diamond is another diamond!

Diamond is pure carbon. Another mineral that is pure carbon is graphite. But, graphite is number 1 on the mineral hardness scale.

Ancient Romans and Greeks believed that diamonds were splinters that came from falling stars.

Diamonds form when carbon is exposed to intense heat and pressure. The heat and pressure needed to turn carbon into diamond is found 100 miles below the surface of the Earth!

The name "diamond" comes from the Greek word "adamas" which means "indestructible."

The largest diamond ever discovered was found in 1905 in South Africa. It is called the Cullinan diamond. It weighed 1.33 pounds! It was so big it was cut into 9 large diamond gemstones and 100 smaller ones.

Turn these diamonds into "fancy diamonds" and color them any color you wish.

What mineral am I? Answer: Halite

Chemical Formula: C; **Crystal System:** Isometric

Color: Pure diamond is colorless. Colorful diamonds are called "Fancy Diamonds." They can be yellow, blue or red.

Mohs scale of Hardness: 10; **Luster:** Adamantine



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MINI MINERS MONTHLY

Introducing . . .

Brenna Baker Artist, Mineral Collector

At the Northwest Federation of Mineralogical Societies annual meeting Diamond Dan met a talented, smart and artistic young lady named Brenna Baker. Brenna is 12 years old and is in 7th grade. She lives in Washington State.

One of the opportunities the young collectors had at the show was to be able to set up a display case. They could

choose any theme they liked. Brenna's display case was about crystals and crystallography. Here is Brenna setting up her specimens, labels and some signs to teach visitors about crystallography.



At a mineral show, display cases are often judged, and the best cases are awarded prizes. Brenna competed in the Juniors' category. She won first place! Her display case was so good that she also won three other important prizes. In the picture below, you can see the blue ribbon just behind Brenna's head.

You will be seeing Brenna and her work in future issues of Mini Miners Monthly. We look forward to sharing her artistic talents and her love for minerals in the months to come. Mini Miners Monthly is proud to welcome Brenna as a Contributing Editor to our monthly publication!

Congratulations to Brenna for all of your success! May you have many years of happiness enjoying the beauty and wonder of minerals and crystals.



MINI MINERS MONTHLY

Yes, if you are a Mini Miner, you really should join a local mineral club or society.

But how can I find one that is close to where I live?

Check out the listing on the American Federation of Mineralogical Societies' Website

<http://www.amfed.org/region.htm>

Let's Get Digging!

School will be out for the summer soon and you will have time to get out into the field to dig for specimens. If you belong to a local mineral club, the leaders usually make arrangements for a few chances to dig for specimens in your area.

To prepare for a day out in the field, you will need the following items...



Rock Hammer and Cold Chisels

A steel hammer made specifically for hammering rocks, like the Estwing hammer pictured here, will be necessary. You will also need hard steel chisels, called "Cold Chisels" for splitting rocks.



Safety Goggles

Your safety is most important when digging for minerals. ALWAYS PROTECT YOUR EYES, HANDS, ARMS LEGS AND FEET. Be sure you wear safety goggles to protect your eyes. It can be very easy for a chip of rock to fly into your eye and damage it.



Heavy Gloves

Protect your hands and fingers with heavy gloves.



Jeans, long-sleeved shirt, steel-toed shoes and a hat

Protect your body, arms and legs by covering yourself with durable clothing. When digging, it is always possible that rocks will roll loose around you. When you are hammering rocks, pieces can fly loose. If your skin is not properly covered, you can end up with bruises and cuts.

MINI MINERS MONTHLY

Boxes, bags and newspaper

When you find specimens that you want to keep, you will have to keep them safe from damage on the trip home. When you remove a specimen, wrap it well in newspaper and place it in a cardboard box. This will protect it from chips and dings.



Water, lots and lots of water

You will be digging outside in the hot, hot sun. It will be easy to get dehydrated. And then you will feel very sick, dizzy, and may even throw up. Keep yourself strong by drinking lots and lots of water on your field trip.



Food

Have enough food to get you through the day. Keep up your energy with sandwiches, fruit, trail mix, granola bars, energy bars and any other good food that you enjoy. Swinging a hammer and digging in the ground for mineral specimens will take a lot of energy. Get energy from your good food.



First Aid Kit

Sometimes injuries happen. You might get a small cut. Collectors sometimes trip on loose rocks and twist an ankle. Lots of sun can cause sun burn. Have a small kit with items you might need in case of injury. A First Aid Kit usually includes band aids, antibiotic ointment, bandages to wrap cuts, Ace Bandages to wrap a twisted ankle, and other helpful items. You can purchase complete first aid kits or you can put together your own. Use these suggestions as a guide. Please do more research to learn what others recommend for a complete first aid kit.



You will need different tools and materials at different dig sites. If you are digging for quartz crystals in Herkimer, New York, you will need heavy hammers and big cold chisels. If you are digging for halite crystals in California, you will need a geologists hammer, a shovel, and small to medium cold chisels. Always do a lot of research before you go into the field. It will be best to talk with someone who has been there. That person could give you hints on how to be successful. Mineral clubs often have field trips to dig for specimens. You will learn a lot about digging, and get a lot of great opportunities to dig, when you are a member of a mineral club!

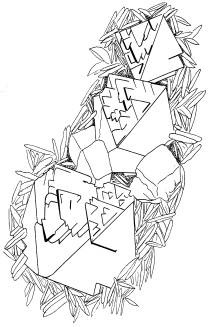
Mineral Collector's Code of Ethics

Everyone who is a member of a mineral club or society that is part of the American Federation of Mineralogical Societies (AFMS) promises to follow the Federation's "Code of Ethics." These are the rules we follow whenever we go out in the field to collect minerals (and fossils, too). Read, learn, and practice these items and you will have successful and rewarding digs year after year. Whether you are a member of an AFMS club or not, these rules are important to follow.

- *I will respect both private and public property and will do no collecting on privately owned land without permission from the owner.**
- *I will keep informed on all laws, regulations or rules governing collecting on public lands and will observe them .**
- *I will, to the best of my ability, ascertain the boundary lines of property on which *I plan to collect.**
- *I will use no firearms or blasting material in collecting areas.**
- *I will cause no willful damage to property of any kind such as fences, signs, buildings, etc.**
- *I will leave all gates as found.**
- *I will build fires only in designated or safe places and will be certain they are completely extinguished before leaving the area.**
- *I will discard no burning material - matches, cigarettes, etc.**
- *I will fill all excavation holes which may be dangerous to livestock.**
- *I will not contaminate wells, creeks, or other water supplies.**
- *I will cause no willful damage to collecting material and will take home only what I can reasonably use.**
- *I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.**
- *I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.**
- *I will cooperate with field-trip leaders and those in designated authority in all collecting areas.**
- *I will report to my club or federation officers, Bureau of Land Management or other authorities, any deposit of petrified wood or other materials on public lands which should be protected for the enjoyment of future generations for public, educational and scientific purposes.**
- *I will appreciate and protect our heritage of natural resources.**
- *I will observe the "Golden Rule", will use Good Outdoor Manners and will at all times conduct myself in a manner which will add to the stature and Public Image of Rockhounds everywhere.**

Minerals & Elements Trivia

On the left you will find the names of minerals. On the right you will find a list of elements that come from these minerals. Can you match the mineral name with its element? Draw a line from one to the other. Use a good mineral handbook or the internet if you need help.



Celestite

An ore of the element *lithium*.

Bauxite

An important ore of the element *uranium*.

Lepidolite

An ore of the element *tungsten*.

Molybdenite

The main ore of the element *strontium*.

Scheelite

The element *zinc* is extracted from this mineral.

Smithsonite

When found in large enough masses, this mineral is a source of the element *manganese*.

Hematite

The main ore of *aluminum* which is used to make pop cans.

Rutile

Autunite

An important ore of the element *titanium*.

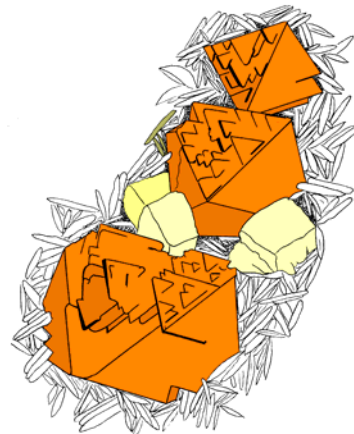
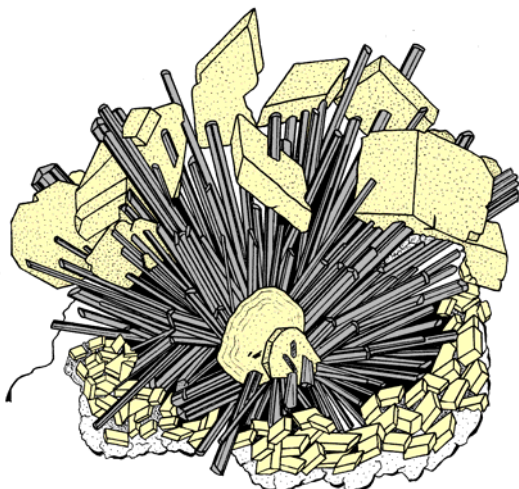
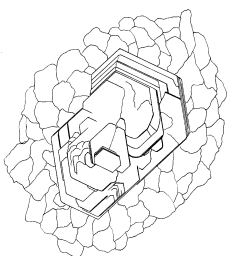
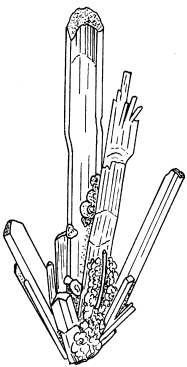
Stibnite

The most important *iron* ore.

Manganite

The main ore of the metal *molybdenum*.

The main ore of the element *antimony*.



How To Draw Minerals

At the end of April, Diamond Dan was in Yakima, Washington for the annual meeting of the Northwest Federation of Mineralogical Societies. We had a fun afternoon with the Yakima Club's kids learning how to draw mineral specimens. Meanwhile, Lizzie from New York State asked us, "We need more instructions on how to draw minerals." So, on the next few pages we'll show you how to draw mineral specimens.

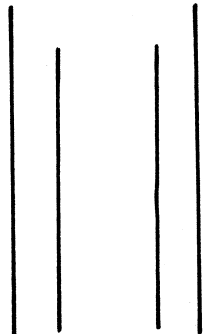
The first step to drawing mineral pictures is to look carefully at mineral specimens. Let's start with quartz. Look at a quartz crystal. There are six long, flat faces around the quartz **prism**. The group of faces on the top of the crystal that come to a point make up what is called the **termination** of the crystal.

Remember this when you are drawing minerals: start with the basic shape and the most important features, and then add more and more detail as you go along. Let's get started.

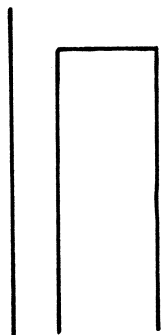
Start by drawing three of the quartz crystals six faces. It's easiest to start this way: draw two lines like this:



Then, draw a line on each side of the first two lines. Make these new lines longer at the top than the first two lines.

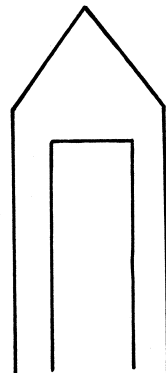


Now put a top on the two center lines.

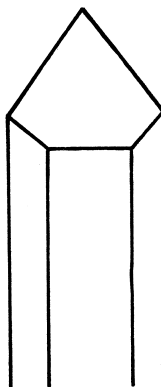


It still doesn't look like a quartz crystal yet. It takes time to draw all its parts.

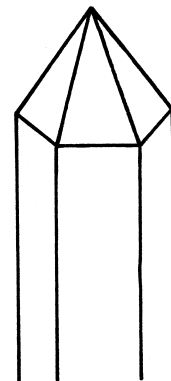
Now, draw the outside of the termination on the crystal, like this. It looks like a house!



The next step is to connect the corners, like this:

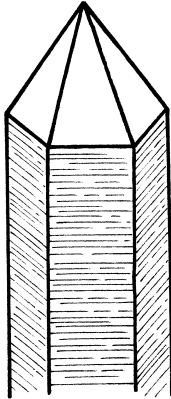


And then connect the corners to the point (the termination).

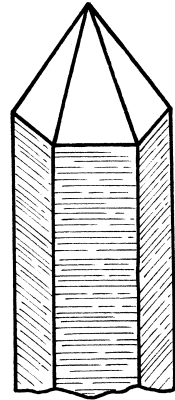


MINI MINERS MONTHLY

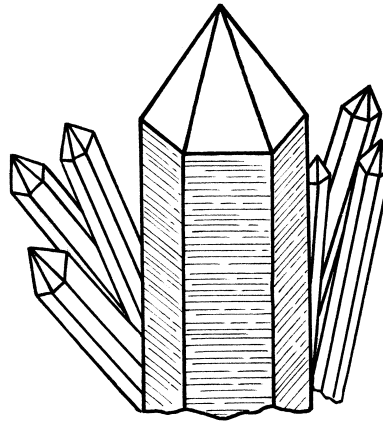
To draw good mineral drawings, you have to look carefully at the crystals. Look carefully at a quartz crystal and you will see lines going across the faces of the prism part of the crystal. Add them to your drawing.



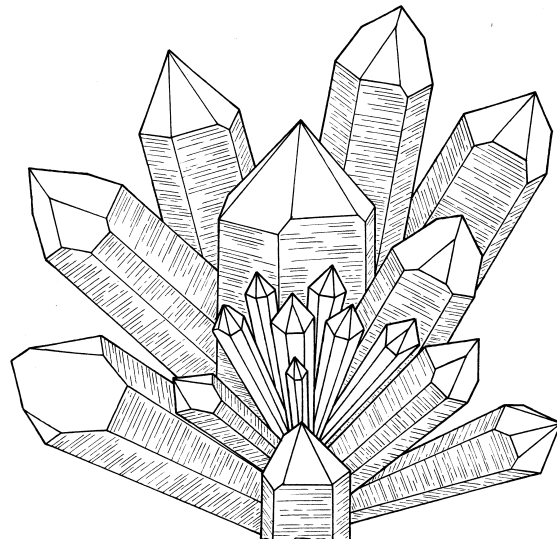
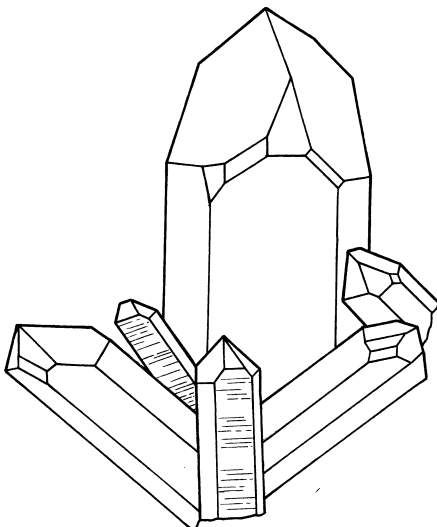
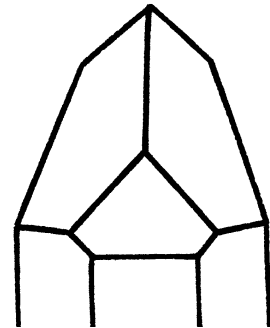
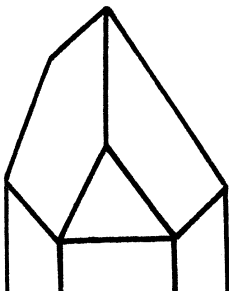
And finish your drawing by adding the bottom of the crystal, like this.



Once you have drawn a single crystal, you can go a step further and turn a single crystal into a cluster of crystals. Repeat all these steps to make it look like smaller crystals are growing out of the big crystal, like this.



When you study a lot of different quartz crystals, you will see different faces that form terminations. Here are a couple options you can try.

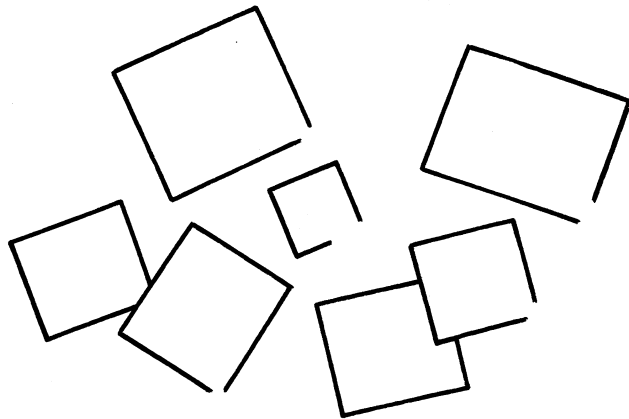


Drawing Wulfenite

Wulfenite crystals from the San Francisco mine, Sonora, Mexico are easy to draw. Start with squares and add the details from there. Remember, when you draw mineral specimens, start with the basic shape and slowly add the details, one at a time.

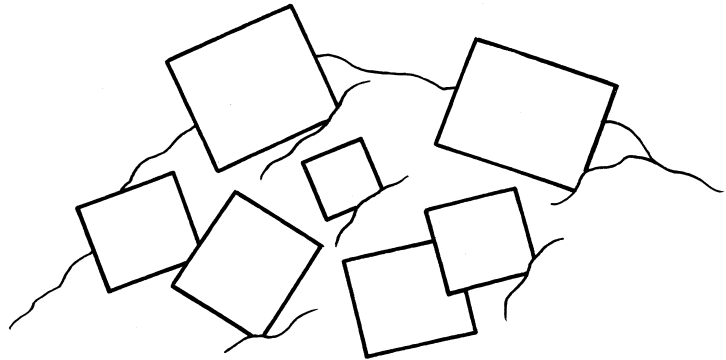
Start by drawing squares all around your paper. Leave one corner where the lines don't touch each other.

This will be where the crystal attaches to the matrix. "Matrix" is the mineral or rock a crystal is attached to.

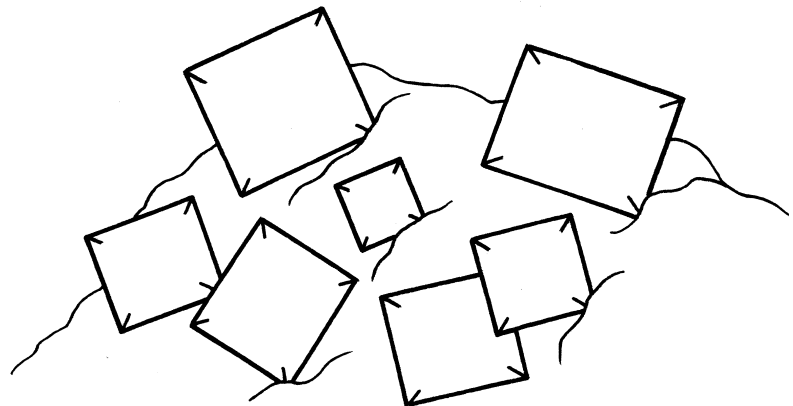


Next, draw the lines that make up the matrix. Now you can see why you left one corner of the crystals open.

The squiggly line you draw shows where the crystal is attached.



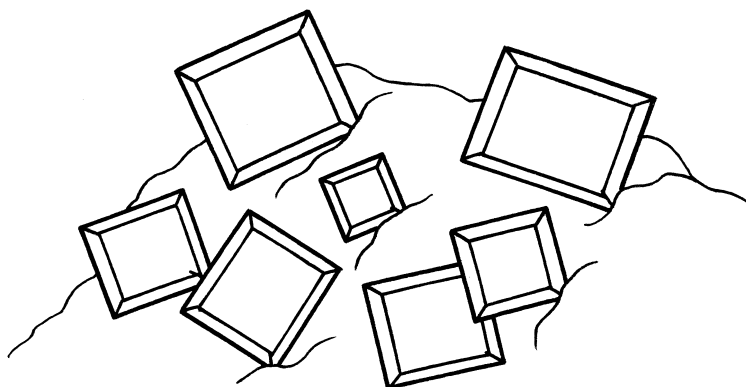
You will now begin to add some details to the wulfenite crystals. There are thin crystal faces around the edge of these crystals. Begin by drawing a short line from the corners toward the center of each crystal.



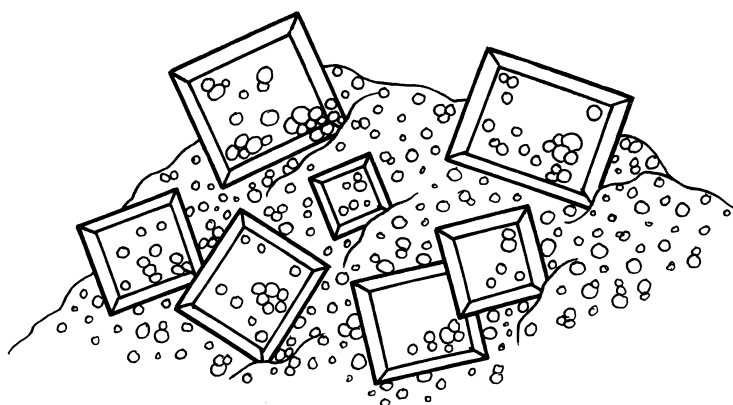
MINI MINERS MONTHLY

Now, connect the short lines you drew in the last step.

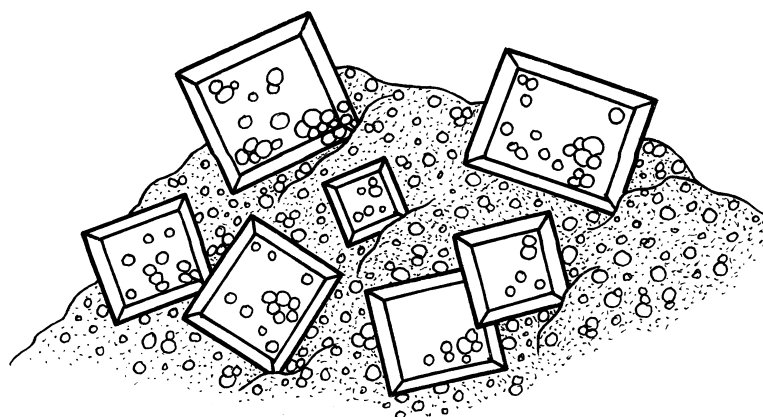
Can you see now how the details are starting to come together to show completed crystals? The next step will be to add some more detail to the picture.



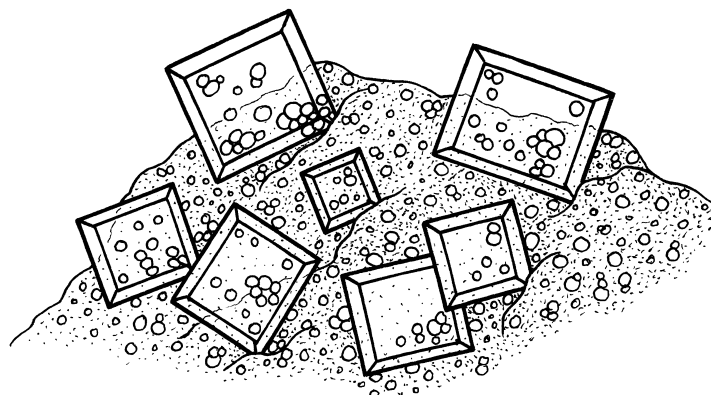
The orange wulfenite crystals from this location often have tiny, orange mimetite balls on them. Add as many small circles as you wish to your specimen. You can put them anywhere you would like to put them. They even grow on the wulfenite.



The next detail you can add are little dots all over the matrix. This makes the matrix look like it has a different texture (that is, a rough surface).



When you look very closely at specimens from this locality, you will see that they are so thin you can see right through them. You can make your drawing show this by adding some light detail behind the wulfenite crystals, as if you were looking right through them.



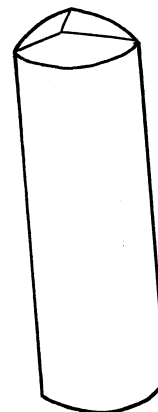
Drawing Tourmaline

Tourmaline crystals are often long and thin. When you look down on the top (the termination) of a tourmaline crystal, you will see that it is triangular, with the sides of the triangle slightly rounded.

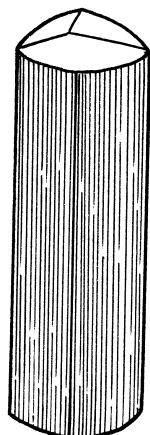
Start your tourmaline drawing by with the termination. Give it three slightly rounded sides. And then draw three lines toward the center of the crystal. This will form the termination.



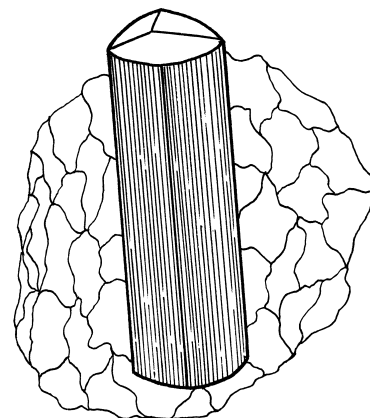
The next step is to draw two long lines to form the prism of the tourmaline crystal. A rounded line connecting the two lines at the bottom will complete the outline.



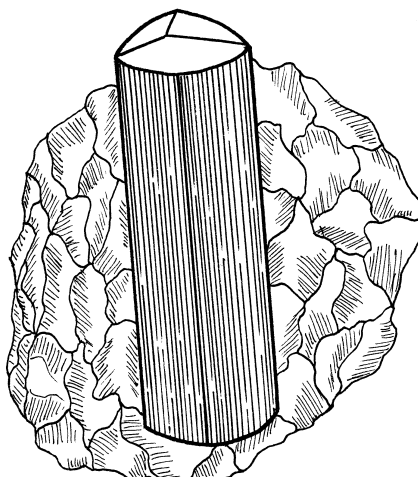
Tourmaline crystals usually have lines that go up and down the length of the crystal. These are called striations. Draw striations on your tourmaline drawing, like this:



Now you may want to add a matrix for your tourmaline crystal to sit in. Here this tourmaline is sitting in intergrown quartz grains.

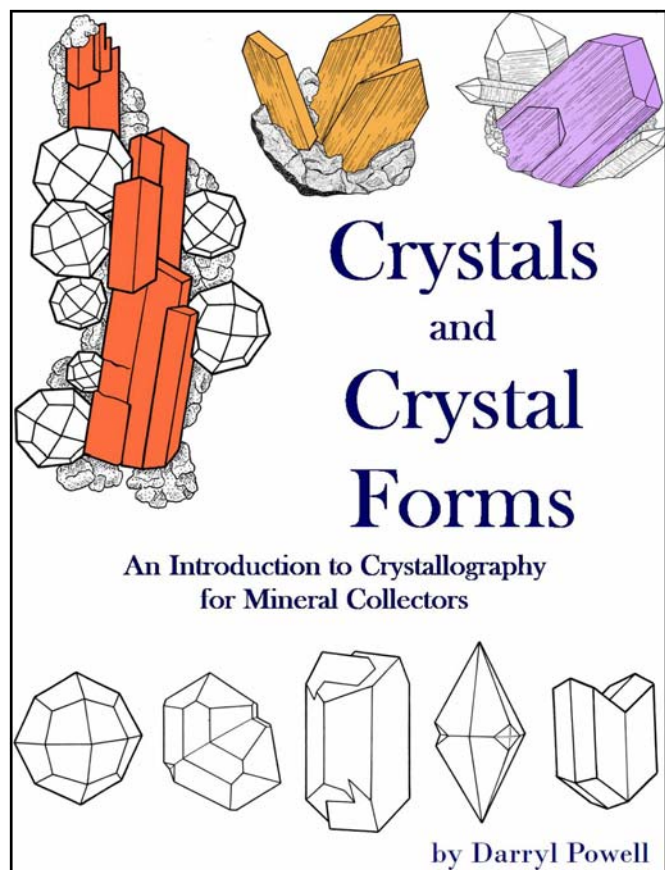


In this last step, some detail is added to the quartz grains to make them look a little bit like they have high and low spots.



The last step is to color your specimen drawing. Tourmaline is a very colorful mineral. It can be dark or light green, yellow, red, pink, blue, or a combination of these colors!

**Announcing a brand new book from
Diamond Dan Publications**



Crystals and Crystal Forms

This fun book will teach you about crystallography in a way that makes it easy to understand. As you learn about

each crystal system, you can use the cut-and-fold crystal models in the book to hold and see each unique crystal form. It is packed with great crystal drawings for each crystal system as well as other fun information about crystals and crystallography.

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