



OFFICIAL MID-HUDSON VALLEY GEM & MINERAL SOCIETY (MHVG&MS)

2013 EARTH SCIENCE SCAVENGER HUNT QUESTIONNAIRE (KEY)

SHOW THEME - **The World of Agates & Jaspers**

**Please sign in at the Earth Science Table before you start answering the questionnaire**

Name \_\_\_\_\_ School District \_\_\_\_\_

Teacher \_\_\_\_\_ Grade \_\_\_\_\_

*Instructions:* This scavenger hunt is designed so that you can find the answers easily. Each exhibit cube has the mineral's properties listed above it. Question numbers correspond to the number on each mineral exhibit cube. If you are unable to find a specific mineral cube, check the locator map at the Earth Science table.

The goal is to find the answers to earn extra school credit and to enjoy the gem & mineral show. At least 20 questions are to be completed for extra credit. In addition, if you complete the questionnaire, you will be given a raffle ticket for a student-only prize!

### Part 1 – Show Theme

Go to the **Special Exhibits** on the Show Theme, “**AGATES & JASPERS**”

Agates and Jaspers are formed differently. Agates form in a roundish void or open seam in the rock.

Jaspers are formed when sedimentary rock is colored by oxides and minerals. The binder is quartz in the form of microscopic silica fibers, which is called chalcedony. Without color, chalcedony is translucent blue-gray with a waxy luster and is hard enough (Mohs 7) to take a high polish, glass-like – vitreous.

1. Find a specimen that is roundish and layered - this specimen is: Please circle answer.

Agate      Chalcedony      Jasper      Carnelian

2. Find a specimen in the display that has very fine banding. Please circle answer.

Quartz Crystals in Center    Botswana agate    Opaque Jasper    Fairburn Agate

3. What are some of the visual properties of Agate? Circle all that apply.

Translucent    Fortification Pattern    Mossy    Thin Bands    Sagenite    Tubes

4. What are some of the visual properties of Jasper? Circle all that apply.

Asymmetrical Patterns    Opaque    Brecciated    Fine Particle Content    Oxide Coloration

5. Go to the Lapidary Demonstration Area- What tools are used to work with Agate & Jasper? Circle all that apply.

Pliers    Trim Saw    Geologist Hammer    Tumbler    Grinding & Polishing Wheels    Ruler

## Part 2 – Cubed Minerals

*Find the exhibit cubes (numbered) mentioned below. Read the properties and information about the mineral, and answer the questions below that correspond to that cube number.*

### **Cube 1:** Pyrite

Pyrite is known as Fool's Gold. The metallic mineral pyrite, when struck with steel, will spark and emit a sulfurous odor. This mineral is used in the manufacture of \_\_\_\_Sulfuric Acid\_\_\_\_.

### **Cube 2:** Calcite

Calcite, whose chemical name is Calcium Carbonate, reacts with acid in what way? \_\_\_\_Effervesces vigorously with bubbles of carbon dioxide\_\_\_\_.

### **Cube 3:** Talc

The Mohs scale measures the hardness of a mineral to being scratched. The scale ranges from 1 to 10. What number is Talc on the Mohs Scale? \_\_One\_\_\_\_.

### **Cube 4:** Apatite

What is the chemical name of Apatite? \_\_Calcium Fluorine-Chlorine-Hydroxyl Phosphate\_\_\_\_. (Saying that ten times fast will surely work up an "appetite"! ) What fossil animal parts are frequently found in phosphate deposits? \_\_Shark's teeth, ribs, back bones\_\_\_\_.

### **Cube 5:** Kyanite

Is Kyanite a sedimentary, metamorphic, or igneous mineral? \_\_Metamorphic\_\_\_\_.

### **Cube 6:** Gypsum

Gypsum, which can be colored \_\_\_\_\_white, colorless, gray, yellow, red, or brown\_\_\_\_\_, has a streak that is white. This is part of what defines and identifies this mineral.

### **Cube 7:** Hematite

Hematite crystals come in a variety of forms—including thick to thin tabular, roses, botryoidal (resembling a bunch of grapes), micaceous (resembling mica), and earthy—but its crystal system is \_\_\_\_Hexagonal\_\_\_\_.

### **Cube 8:** Gold

Gold, whose chemical name is Native Gold because it is an element on the periodic table (like Sulfur—Cube 10), rarely combines with other elements. It is used for \_\_\_\_Jewelry and Coin\_\_\_\_.

### **Cube 9:** Orthoclase

Orthoclase, potassium feldspar, is one of the major rock forming minerals in granite. Under short wave UV light, the mineral can fluoresce the following colors: \_\_Red, pink, brilliant light blue, blue-violet\_\_\_\_. (You can see fluorescent and phosphorescent minerals at the Fluorescent Booth.)

### **Cube 10:** Sulphur/Sulfur

During volcanic activity, bright yellow Sulfur precipitates directly from sulfur-rich gases. What type of acid can be made from sulfur? \_\_\_\_Sulfuric Acid\_\_\_\_.

**Cube 11: Ulexite**

Ulexite is nicknamed \_\_\_"TV Stone"\_\_\_ because its fibrous structure allows images and light to be transmitted through it.

**Cube 12: Halite**

Halite has a \_\_\_Salty\_\_\_ taste. It is used for \_\_\_Table Salt\_\_\_.

**Cube 13: Tourmaline**

Tourmaline and window glass fracture with the same pattern which is called \_\_\_Conchoidal\_\_\_.

**Cube 14: Sphalerite**

Sphalerite has an interesting property whereby it flashes orange when scratched or struck. What is this property called? \_\_\_Triboluminescence\_\_\_.

**Cube 15: Beryl**

Specific gravity is a measurement of how heavy an object is relative to the weight of water. What is the specific gravity of Beryl? \_\_\_2.66-2.92\_\_\_.

**Cube 16: Quartz**

The tip of Quartz crystals are terminated by hexagonal pyramids. The crystal structure is \_\_\_Hexagonal\_\_\_.

**Cube 17: Copper**

Copper's crystal system is isometric. Its crystals can be various shapes, including \_\_\_cubic, dodecahedral, flattened, elongated, distorted, scales, plates, lumps, branching aggregates, wire\_\_\_.

**Cube 18: Hornblende**

The cleavage angles of Hornblende are \_\_\_56\_\_\_ and \_\_\_124\_\_\_ degrees.

**Cube 19: Galena**

The chemical name of Galena is \_\_\_Lead Sulfide\_\_\_ . Galena is the most important ore of Lead.

**Cube 20: Willemite**

Willemite, a zinc ore, is strongly fluorescent and phosphorescent. What color is created by using short-wave UV light? \_\_\_Green\_\_\_ . (You can see fluorescent and phosphorescent minerals at the Fluorescent Booth.)

**Cube 21: Corundum**

Corundum's gem varieties are \_\_\_Ruby (Red) and Sapphire (Blue)\_\_\_.

**Cube 22: Sodalite**

The chemical name of Sodalite is \_\_\_Sodium Aluminum Silicate with Chlorine\_\_\_ . Its crystal system is \_\_\_Isometric (Cubic); crystals rare\_\_\_.

**Cube 23-A: Chalcopyrite**

Chalcopyrite has a \_\_\_Greenish-black\_\_\_ streak.

**Cube 23-B:** Bornite

Bornite, known as Peacock Ore, has a \_\_\_Metallic\_\_\_ luster.

**Cube 24:** Siderite

In acid (HCl), Siderite \_\_\_effervesces slightly\_\_\_.

**Cube 25:** Malachite

Malachite is a semi-precious gemstone. Is the gemstone opaque or transparent? \_\_\_Opaque\_\_\_.

**Cube 26:** Stibnite

Stibnite crystals are striated lengthwise and slightly flexible. The crystal system is \_\_\_Orthorhombic\_\_\_.

**Cube 27:** Kaolinite

Kaolinite has a luster that is \_\_\_Dull, pearly on cleavage\_\_\_.

**Cube 28:** Cinnabar

The chemical name of Cinnabar is \_\_\_Mercury Sulfide\_\_\_.

**Cube 29-A:** Cordierite

Cordierite has a property known as dichroic, which means \_\_\_the hue appears to change from violet-blue to gray when rotated\_\_\_.

**Cube 29-B:** Topaz

The specific gravity of Topaz is \_\_\_3.4-3.6\_\_\_.

**Cube 30:** Barite

Barite is the most common barium minerals. It is used for \_\_\_Oil well drilling muds, manufacture of glass and paints\_\_\_.

**Cube 31:** Muscovite

Muscovite is a light-colored mica. Its chemical name is \_\_\_Potassium Aluminum Silicate\_\_\_.

**Cube 32:** Almandine Garnet

Almandine Garnet is the New York State Gemstone. Its color is \_\_\_Deep red to brown, brownish black\_\_\_.

**Cube 33:** Diopside

Diopside has short prismatic crystals with good terminations. Its crystal system is \_\_\_Monoclinic\_\_\_.

**Cube 34:** Fluorite

Fluorite can be the following colors: \_\_\_Violet, blue, green, yellow, brown, pink, colorless, white\_\_\_.

**Cube 35-A:** Diamond

Diamond and Graphite (Cube 35-B) are both formed from pure carbon. Diamond is at the top of the Mohs hardness scale at \_\_\_10\_\_\_.

**Cube 35-B:** Graphite

Graphite has a streak that is \_\_\_grayish to black, shiny\_\_\_ . It is mixed with clay and fired to be pencil "lead."

**Cube 36:** Wollastonite

The crystal system of Wollastonite is Triclinic.

**Cube 37:** Magnetite/Lodestone

Magnetite crystals are usually octahedrons, sometimes dodecahedrons with striations, cubic (rare), and also massive. Its crystal system is Isometric (Cubic).

**Part 3 – Additional Questions**

A) What is your favorite mineral at the show? Why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

B) What is one fact about a mineral or rock you find very interesting? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**CONGRATULATIONS!**

YOU HAVE COMPLETED THE EARTH SCIENCE SCAVENGER HUNT. GO TO THE EARTH SCIENCE TABLE AND HAVE YOUR QUESTIONNAIRE STAMPED WITH THE MID-HUDSON VALLEY GEM & MINERAL STAMP.

**PLEASE FILL OUT A FORM FOR A CHANCE TO WIN A MINERAL SPECIMEN.**

**PLEASE TAKE TIME TO ENJOY THE GEM & MINERAL SHOW!**

*Place MHVG&MS stamp here:*

