

## Minerals Questions Activity

Minerals List							
Mineral	Formula/name	Hardness	Specific gravity	Information	Found in	Color(s)	Streak color
amazonite	KAlSi <sub>3</sub> O <sub>8</sub>	5 - 6	2.6 – 2.8	variety of microline feldspar	Russia, Madagascar, Brazil, Colorado, Virginia		
amethyst	SiO <sub>2</sub> silicon dioxide	7	2.7	variety of quartz	Siberia, Sri Lanka, Brazil, the far East		
azurite	Cu <sub>3</sub> (CO <sub>3</sub> ) <sub>2</sub> (OH) <sub>2</sub>	3.5 - 4	3.8 – 3.9	frequently found with malachite	Slovakia, Morocco, Namibia, Australia, Arizona		
beryl	Be <sub>3</sub> Al <sub>2</sub> (Si <sub>6</sub> O <sub>18</sub> )	7.5 - 8	2.8	the gem quality form is called aquamarine	Russia, Columbia, Norway, Austria, Germany, Sweden, Ireland, Brazil, Africa, Madagascar, California, Colorado, Connecticut, Georgia, Idaho, Maine, New Hampshire, North Carolina, South Dakota, Utah		
calcite	CaCO <sub>3</sub> calcium carbonate	3	2.7	the largest single calcite crystal originated from Iceland, weighed about 250 tons	Iceland and many other locations; common in sedimentary rocks, particularly limestone		
celestine	SrSO <sub>4</sub> strontium sulfate	3 – 3.5	4.0	world's largest geode, 10.7 m diameter, located near the village of Put-in-Bay, Ohio, on South Bass Island in Lake Erie	Madagascar, Colorado, Pennsylvania; in sedimentary rock		
chrysocolla	(Cu,Al) <sub>2</sub> H <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub> ·H <sub>2</sub> O	2.5 – 3.5	1.9 – 2.4	frequently confused with turquoise	Indonesia, Israel, Congo, Chile, England, Arizona, Utah, Idaho, New Mexico, Michigan, Pennsylvania		
fluorite	CaF <sub>2</sub> calcium fluoride	4	3.2 – 3.6	can also be blue, teal, and yellow	South Africa, Mexico, China, Mongolia, Russia, Spain, Canada		

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hemimorphite	Zn <sub>4</sub> (Si <sub>2</sub> O <sub>7</sub> )(OH) <sub>2</sub> ·H <sub>2</sub> O	4.5 - 5	3.5	commonly forms crystalline crusts and layers on other minerals or rocks	Belgium, Poland, Africa, Thailand, Siberia, Italy, Austria, England, Pennsylvania, Montana, Colorado, New Mexico		
gypsum	CaSO <sub>4</sub> ·2H <sub>2</sub> O	1.5 – 2	2.3	can be clear; come in many different forms and colors; primarily used as a finish for walls and ceilings as drywall, sheetrock or plasterboard	England, Mexico, Texas, Arizona, and many other locations		
labradorite	((Ca, Na)(Al, Si)₄O <sub>8</sub> )	6 – 6.5	2.6 – 2.8	displays an iridescent optical effect known as labraorescence	Labrador, Canada, Norway; found in igneous rocks		
malachite	Cu <sub>2</sub> (CO <sub>3</sub> )(OH) <sub>2</sub>	3.5 - 4	3.6 – 4.0	frequently found with azurite	Slovakia, Morocco, Namibia, Northern Territory, Australia, Arizona		
pyrite	FeS <sub>2</sub> iron sulfide	6 - 6.5	5.0 – 5.1	also called fool's gold	sedimentary rock, metamorphic rock, coal beds		
rhodochrosite	MnCO <sub>3</sub> manganese carbonate	3.5 - 4	3.7	main use is as an ore of manganese	Argentina, Romania, Colorado, in hydrothermal veins		
sodalite	Na <sub>8</sub> (Al <sub>6</sub> Si <sub>6</sub> O <sub>24</sub> )Cl <sub>2</sub>	5.5 - 6	2.3	may also be grey, yellow, green, or pink	Canada, Brazil, Bolivia, Portugal, Romania, Burma, Russia, Maine		

## Minerals Questions Activity

More than 5,300 minerals have been identified in Earth's crust.

1. List at least one mineral that contains visible crystals.
  2. List at least one of the minerals whose streak was a different color than the mineral.
  3. Carefully observe the polished and the unpolished sides of the labradorite. What can you see on the polished side that you can't see on the unpolished side?
  4. Which mineral do you think is the most interesting? Explain why.
  5. The definition of a mineral:
    - a. naturally occurring;
    - b. stable at room temperature;
    - c. represented by a single chemical formula;
    - d. usually abiogenic (*not* resulting from the activity of living organisms, including bacteria, plants, animals, and people);
    - e. has ordered atoms.
- (Source: <https://en.wikipedia.org/wiki/Mineral>)

Stromatolites are formed in shallow water by trapping, binding and cementation of sedimentary grains by microbial mats of microorganisms, especially cyanobacteria. Observe the stromatolite. Explain why it is *not* a mineral.

6. Granite is a rock, *not* a mineral. Granite can contain the minerals feldspar, quartz, muscovite, biotite, and amphibole. Observe the granite. Can you see different minerals? What colors are they?
7. What is the softest mineral on the **Moh's Scale**?
8. What is the hardest mineral on the **Moh's Scale**?
9. Which of the minerals on the **Minerals List** is the hardest?
10. Which of the minerals on the **Minerals List** is the softest?

11. Specific gravity is the ratio of the weight of a specific volume of a substance to the weight of the same volume of water. Which mineral on the **Minerals List** has the highest specific gravity?

12. Which mineral on the **Minerals List** has the lowest specific gravity?

13. All of the minerals on the **Minerals List**, except fluorite and pyrite, have what element in common?  
Don't guess. Look carefully at their formulas.

14. What is the *only* mineral in the **Minerals List** that contains strontium?

Don't guess. Look carefully at their formulas and the following list of elements.

Elements:

Al = aluminum

F = fluorine

O = oxygen

Be = beryllium

Fe = iron

Si = silicon

C = carbon

H = hydrogen

Sr = strontium

Ca = calcium

K = potassium

Zn = zinc

Cl = chlorine

Mn = manganese

Cu = copper

Na = sodium