

# Mineral ID Lab

Using the chart on the second page to identify three mystery minerals.

Mystery Mineral #1:

- The mineral is white in color
- A soft mineral, hardness about 1
- Dull, not shiny
- Breaks along smooth edges (cleavage)

Mystery Mineral #1 is \_\_\_\_\_

Mystery Mineral #2:

- The mineral is black in color
- The hardness of the mineral is about a 5.5
- Nonmetallic luster
- Has smooth flat edges (cleavage in two directions)

Mystery Mineral #2 is \_\_\_\_\_

Mystery Mineral #3:










- The mineral is silver in color
- Shiny (metallic)
- Hardness is about 6 to a 6.5
- Has rough edges (fracture)
- Special property: it is magnetic

Mystery Mineral #3 is \_\_\_\_\_

## Reflection Questions

1. Why is it hard to identify a mineral just based on its color?
2. What is luster and how can it be useful to narrow down the possibilities of a mineral?

## Properties of Common Minerals

LUSTER	HARD-NESS	CLEAVAGE FRACTURE	COMMON COLORS	DISTINGUISHING CHARACTERISTICS	USE(S)	MINERAL NAME	COMPOSITION*
Metallic Luster	1-2	✓	silver to gray	black streak, greasy feel	pencil lead, lubricants	<b>Graphite</b>	C
	2.5	✓	metallic silver	very dense (7.6 g/cm <sup>3</sup> ), gray-black streak 	ore of lead	<b>Galena</b>	PbS
	5.5-6.5	✓	black to silver	attracted by magnet, black streak	ore of iron	<b>Magnetite</b>	Fe <sub>3</sub> O <sub>4</sub>
	6.5	✓	brassy yellow	green-black streak, cubic crystals 	ore of sulfur	<b>Pyrite</b>	FeS <sub>2</sub>
Either	1-6.5	✓	metallic silver or earthy red	red-brown streak	ore of iron	<b>Hematite</b>	Fe <sub>2</sub> O <sub>3</sub>
Nonmetallic Luster	1	✓	white to green	greasy feel	talcum powder, soapstone	<b>Talc</b>	Mg <sub>3</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub>
	2	✓	yellow to amber	easily melted, may smell	vulcanize rubber, sulfuric acid	<b>Sulfur</b>	S
	2	✓	white to pink or gray	easily scratched by fingernail	plaster of paris and drywall	<b>Gypsum</b> (Selenite)	CaSO <sub>4</sub> •2H <sub>2</sub> O
	2-2.5	✓	colorless to yellow	flexible in thin sheets 	electrical insulator	<b>Muscovite Mica</b>	KAl <sub>3</sub> Si <sub>3</sub> O <sub>10</sub> (OH) <sub>2</sub>
	2.5	✓	colorless to white	cubic cleavage, salty taste 	food additive, melts ice	<b>Halite</b>	NaCl
	2.5-3	✓	black to dark brown	flexible in thin sheets 	electrical insulator	<b>Biotite Mica</b>	K(Mg,Fe) <sub>3</sub> AlSi <sub>3</sub> O <sub>10</sub> (OH) <sub>2</sub>
	3	✓	colorless or variable	bubbles with acid 	cement, polarizing prisms	<b>Calcite</b>	CaCO <sub>3</sub>
	3.5	✓	colorless or variable	bubbles with acid when powdered	source of magnesium	<b>Dolomite</b>	CaMg(CO <sub>3</sub> ) <sub>2</sub>
	4	✓	colorless or variable	cleaves in 4 directions	hydrofluoric acid	<b>Fluorite</b>	CaF <sub>2</sub>
	5-6	✓	black to dark green	cleaves in 2 directions at 90° 	mineral collections	<b>Pyroxene</b> (commonly Augite)	(Ca,Na)(Mg,Fe,Al)(Si,Al) <sub>2</sub> O <sub>6</sub>
	5.5	✓	black to dark green	cleaves at 56° and 124° 	mineral collections	<b>Amphiboles</b> (commonly Hornblende)	CaNa(Mg,Fe) <sub>4</sub> (Al,Fe,Ti) <sub>3</sub> Si <sub>6</sub> O <sub>22</sub> (O,OH) <sub>2</sub>
	6	✓	white to pink	cleaves in 2 directions at 90°	ceramics and glass	<b>Potassium Feldspar</b> (Orthoclase)	KAlSi <sub>3</sub> O <sub>8</sub>
	6	✓	white to gray	cleaves in 2 directions, striations visible	ceramics and glass	<b>Plagioclase Feldspar</b> (Na-Ca Feldspar)	(Na,Ca)AlSi <sub>3</sub> O <sub>8</sub>
	6.5	✓	green to gray or brown	commonly light green and granular	furnace bricks and jewelry	<b>Olivine</b>	(Fe,Mg) <sub>2</sub> SiO <sub>4</sub>
	7	✓	colorless or variable	glassy luster, may form hexagonal crystals 	glass, jewelry, and electronics	<b>Quartz</b>	SiO <sub>2</sub>
7	✓	dark red to green	glassy luster, often seen as red grains in NYS metamorphic rocks	jewelry and abrasives	<b>Garnet</b> (commonly Almandine)	Fe <sub>3</sub> Al <sub>2</sub> Si <sub>3</sub> O <sub>12</sub>	