Lesson – Minerals

THE FOLLOWING **VIDEO** HAS BEEN APPROVED FOR
ALL AUDIENCES
BY THE EARTH SCIENCE TEACHERS ASSOCIATION OF AMERICA , INC

THE VIDEO HAS BEEN RATED

I	**INTELIGENT** UNDER 15 REQUIRES TEACHER ASSISTANCE
STRONG EARTH SCIENCE LANGUAGE, DETAILED DIAGRAMS, AND SUPER AWESOMENESS	

- I can explain what a mineral is.
- I can explain why color is not a good test to identify minerals
- I can describe how to find streak
- I can describe how to fine hardness
- I can explain the difference between cleavage and fracture
- I can describe what luster is & the two main categories

DON'T WRITE

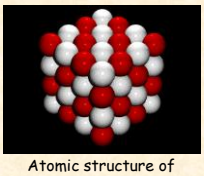
Minerals are…

* Inorganic
* Crystalline solid
* Have a definite chemical composition
* Naturally occurring

Inorganic

- never been alive
- not made from plants and animals

Atoms have a specific arrangement called a crystal structure



Atomic structure of Halite

Crystalline Solid

Are not liquids or gasses

Structure resembles real salt crystal

Definite Chemical Composition

- made by a particular mix of elements
- own recipe

Naturally Occurring

- Formed by nature
- Are NOT made by humans

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MINERALS have …

PHYSICAL & CHEMICAL Properties

-Due to their internal arrangement of atoms (atomic structure)

IDENTIFIED by …

COLOR – the color of a mineral is not the most reliable identification

-Minerals vary in color because of **IMPURITIES**

SMOKEY QUARTZ

CRYSTAL QUARTZ

ROSE QUARTZ

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STREAK – color of a powdered mineral residue

Mineral is scratched along a **porcelain plate**, the color of this residue is used to identify the mineral

HEMATITE with its REDDISH STREAK

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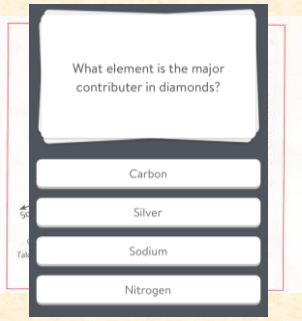
HARDNESS – identified using MOHS hardness scale



1-10 SCALE:
Softest - **TALC**
Hardest- **DIAMOND**

- Object scratches a mineral – **object is harder**

TOOLS to test Hardness:
- Fingernail – 2.0
- Penny -3.0
- Steel Nail – 5.5
- Glass Plate – 5.5

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HOW do minerals **BREAK**?

A) CLEAVAGE
-Minerals which break along a line
-Smooth breakage

MUSCOVITE MICA

HALITE

B) **FRACTURE**
-Random breakage pattern
-Uneven/Conchoidal (SHELL pattern)

CONCHOIDAL FRACTURE

PYRITE

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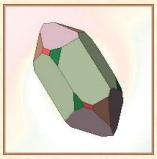
CRYSTAL SHAPE – outward GEOMETRIC SHAPE of minerals

-Crystals always arranged the same way

QUARTZ – HEXAGONAL CRYSTALS

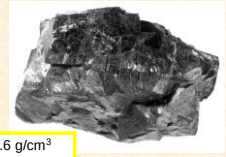


DENSITY – AKA "**Specific Gravity**"

- Density of a mineral compared to the density of WATER

-Some minerals are extremely DENSE

Ex: GALENA



DENSITY of 7.6 g/cm^3

LUSTER – way a mineral reflects LIGHT

A) **Metallic** (Looks like metal is in it)

B) **Non-metallic** (Glassy, Dull, Earthy)

WHICH IS METALLIC?

SAMPLE A

SAMPLE B

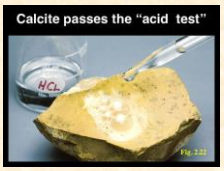
Other **MINERAL IDENTIFIERS**:

REACTION to ACID

-Some minerals will react to HCl

-Mineral bubbles

Ex: Calcite



MAGNETISM

-Some minerals have magnetic properties

MAGNETITE

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