Mineral: a naturally occurring, inorganic solid with a definite structure and composition.

Four Characteristics of a Mineral:
1. Forms in NATURE “Naturally occurring inorganic substance”
2. Is a SOLID “It is a hard or soft solid”
3. Has a definite CHEMICAL COMPOSITION “It is made of elements”
4. Has a CRYSTAL STRUCTURE “Pretty crystal shapes”

Mineral Properties
Physical Properties of Minerals: are used by Geologists to identify minerals.

The Physical Properties Are:

1. **Hardness:** a measure of how easily a mineral can be scratched.
   Friedrich Mohs: German scientist who developed the Mohs Hardness Scale.

   (Softest)   (Hardest)
   1  2  3  4  5  6  7  8  9  10
   Talc  Quartz  Diamond

2. **Luster:** how light is reflected from a mineral’s surface.
   **Metallic**- Shines like metal
   **Non Metallic**- Does not shine like metal. Dull, Pearly, Silky, Waxey

3. **Color:**
   Is used to identify certain minerals (sulfur: bright yellow) but does not always help with other minerals.

4. **Streak:** color of a mineral’s powder left when scratched across an unglazed, porcelain tile.

5. **Cleavage and Fracture**
   **Cleavage:** when some minerals break along smooth, flat surfaces
   **Fracture:** when minerals break with rough, jagged edges.

6. **Density:** Mass per unit volume
   **Specific Gravity:** Ratio of the mass of a mineral to the mass of an equal volume of water.
7. Other Properties
• Magnetism: magnetite, Hematite.
• Odor: Sulfur
• Bending light: clear sample of calcite

Minerals have many uses in industry:
- Metals for cars and airplanes
- Quartz and feldspar for glass

Minerals form in several different ways.
1. Water evaporates- salt water evaporators into halite (table salt)
2. Hot water cools- Gold through the surface cooling and becoming solid
3. Molten rock cools- Quartz is crystallized from magma and lava.
4. Heat and Pressure cause changes- high temperatures carbon forms graphite (pencils)
5. Organisms produce minerals- ocean animals produce calcite and humans produce apatite (teeth).

Nonrenewable Resource: is a natural resource that cannot be re-made or re-grown at a scale comparable to its consumption.
- Coal
- Petroleum
- Minerals
- Nuclear energy
- Natural Gas

Renewable Resource: are natural resources that can be replenished in a short period of time.
- Solar
- Geothermal
- Wind
- Biomass
- Water