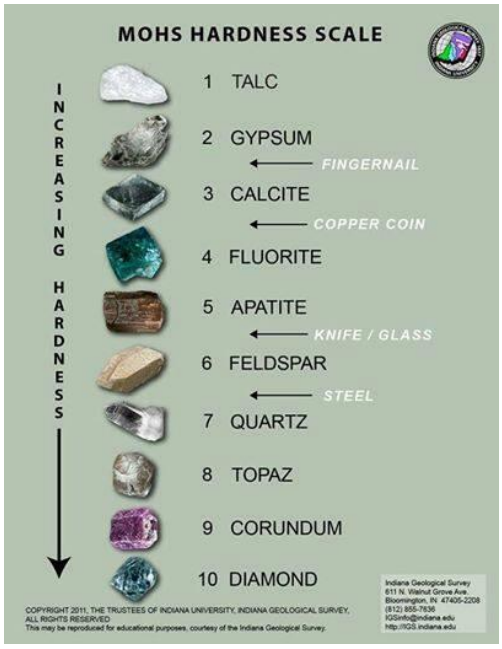
# Rocks and Minerals

## Section I: Properties of Minerals

A **mineral** is a naturally occurring, inorganic solid with a crystal structure and a definite chemical composition. These determine the physical and chemical properties characteristic of each mineral. A mineral must have distinct characteristics to be considered a mineral. First, a mineral must be formed by processes that occur in the natural world. Second, it must be inorganic, meaning it cannot come from materials once part of a living thing. Third, a mineral is a solid with a definite shape and volume. Fourth, a mineral has particles that line up in a repeating pattern, which forms a crystal. Finally, it has a definite chemical composition or range of compositions.

Each mineral has specific characteristics that help identify it. **Color** is the most eye-catching part of a mineral. Minerals that have the presence of certain elements determine their color. For example, Azurite has a deep blue color due to its Copper atomic structure. **Streak** is the color of the mineral's powder, which can be observed by rubbing it on unglazed porcelain. **Luster** is how light is reflected from a mineral's surface. Glossy, dull, and metallic words describe a mineral's luster. Each mineral has a characteristic **density**. As a general rule, non-metallic minerals have low densities, while metallic minerals have high densities.




**Hardness** is determined by the Mohs hardness scale, which ranks ten minerals from softest to hardest. Ten minerals were selected as a standard and arranged so that any mineral on the scale would only scratch those below it. The softest is talc, and the hardest is diamond.

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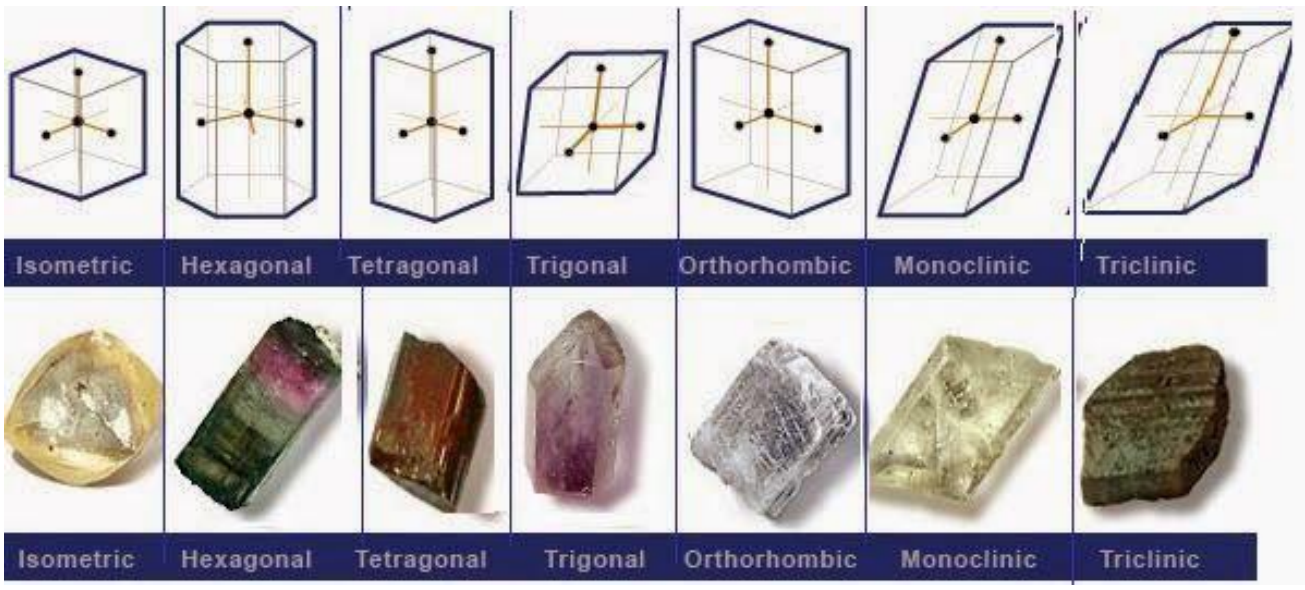
## Section I: Properties of Minerals Continued

Each mineral has a unique **crystal system** where crystals grow atom by atom to form a particular structure. These structures are grouped into six categories based on the number and angle of the crystal faces. When a crystal breaks, some break easily along flat surfaces. This ability to break is called **cleavage**. A **fracture** is when a mineral breaks apart in an irregular way. Some minerals have unique properties that can also be used to classify them, such as magnetism and the ability to grow under ultraviolet light.




Review:

1. Identify three characteristics of minerals.
2. What does Mohs hardness scale measure? What is the softest mineral?
3. What is a crystal system?

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