# CHAPTER 9 DAY 2 SECTION 1

**SPI 0707.7.1** Use a table of physical properties to classify minerals.

# What You Will Learn

- The properties used to identify minerals

# Essential Questions

- How are minerals identified?
- What types of properties are used to identify minerals?
- What are the different properties used?

# What Mastery Looks Like

- Explain why streak often is more useful for mineral identification than color.

# Foldable

- Divide your paper into 8 sections.
- Label each section with the properties on the next page.

# Properties of Minerals

1. Crystal Patterns
2. Cleavage and Fracture
3. Color
4. Streak and Luster
5. Hardness
6. Specific Gravity
7. Special Properties

On the 8th section, label your foldable, "Properties of Minerals."

# Crystal Structure

- All minerals are made of orderly patterns.
- Some minerals form crystals if there is time and room for the crystals to form.
- The crystal pattern of a mineral is controlled by the internal arrangement of the atoms that make up the mineral.
- Some examples of these crystal structures are quartz which has a hexagonal (six-sided) crystal and halite which has a cubic crystal.
- Sometimes crystals have smooth growth surfaces called crystal faces. EX. Pyrite Figure 3 pg. 270

Halite

Quartz

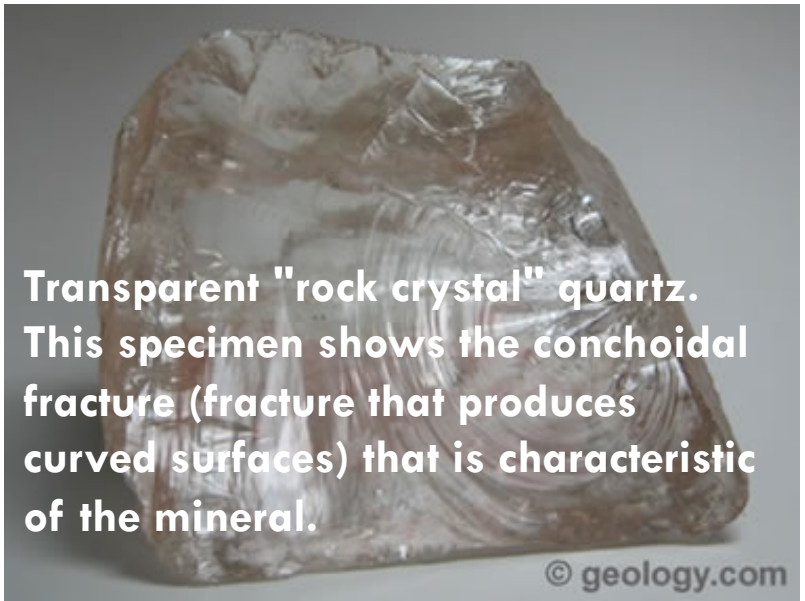
# Cleavage and Fracture

- **Cleavage**
  - If a mineral breaks along flat, smooth surfaces it shows *cleavage*. Cleavage can be in one, two or three directions. (Examples are on the next slide.)


Cleavage in Mica

Which shows cleavage? Which shows fracture?

- **Fracture**
  - If a mineral breaks along irregular rough surfaces it shows *fracture*. Quartz shows a special type of fracture called concoidal (shell-like) fracture.

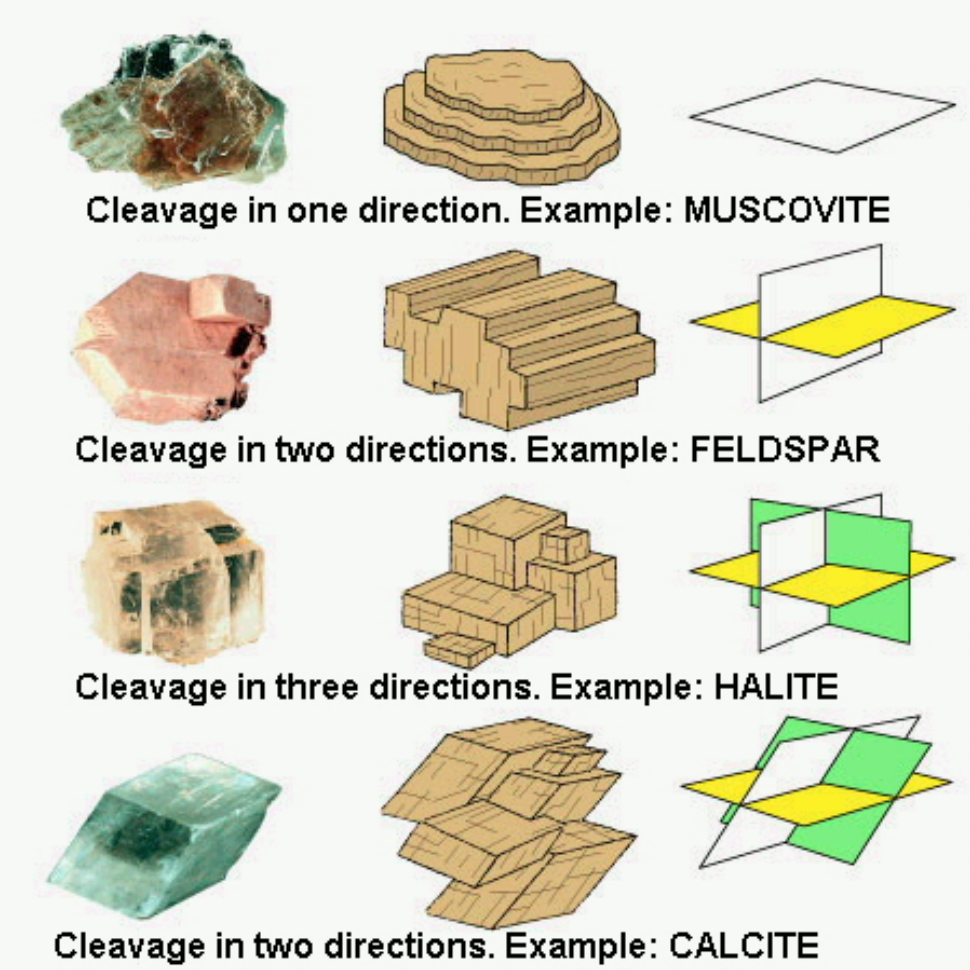

Transparent "rock crystal" quartz. This specimen shows the conchoidal fracture (fracture that produces curved surfaces) that is characteristic of the mineral.

# Cleavage and Fracture

- Cleavage is the tendency of a mineral to break along flat surfaces.
  - (Sliced Cheese)

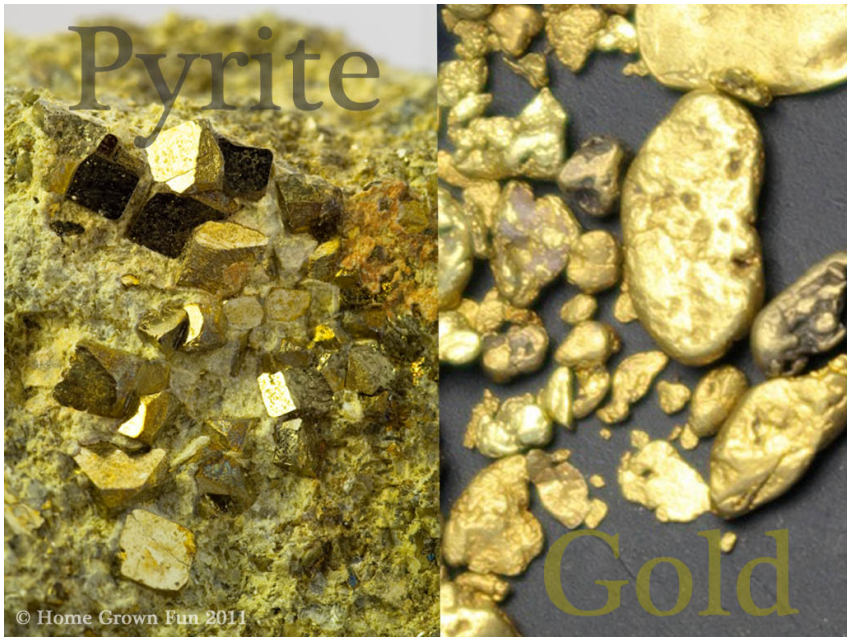
- Fracture is the tendency of a mineral to break into irregular pieces.
  - (Chunks of Cheese)

# Cleavage and Fracture



# Color

- Color is the first thing noticed when viewing a mineral.
- People are attracted to mineral colors.
- Is it always the best way to identify? Why or Why not?
  - Think about Pyrite aka "Fool's Gold."
  - Some minerals share colors.



# Streak

- Streak is closely related to color, but is a different property because the color of the mineral may be different than the color of the streak.
- Streak is actually *the color of the powder of a mineral*. It is called streak because the proper way to test for streak is to rub a mineral across a tile of white unglazed porcelain and to examine the color of the "streak" left behind.
- Streak Test

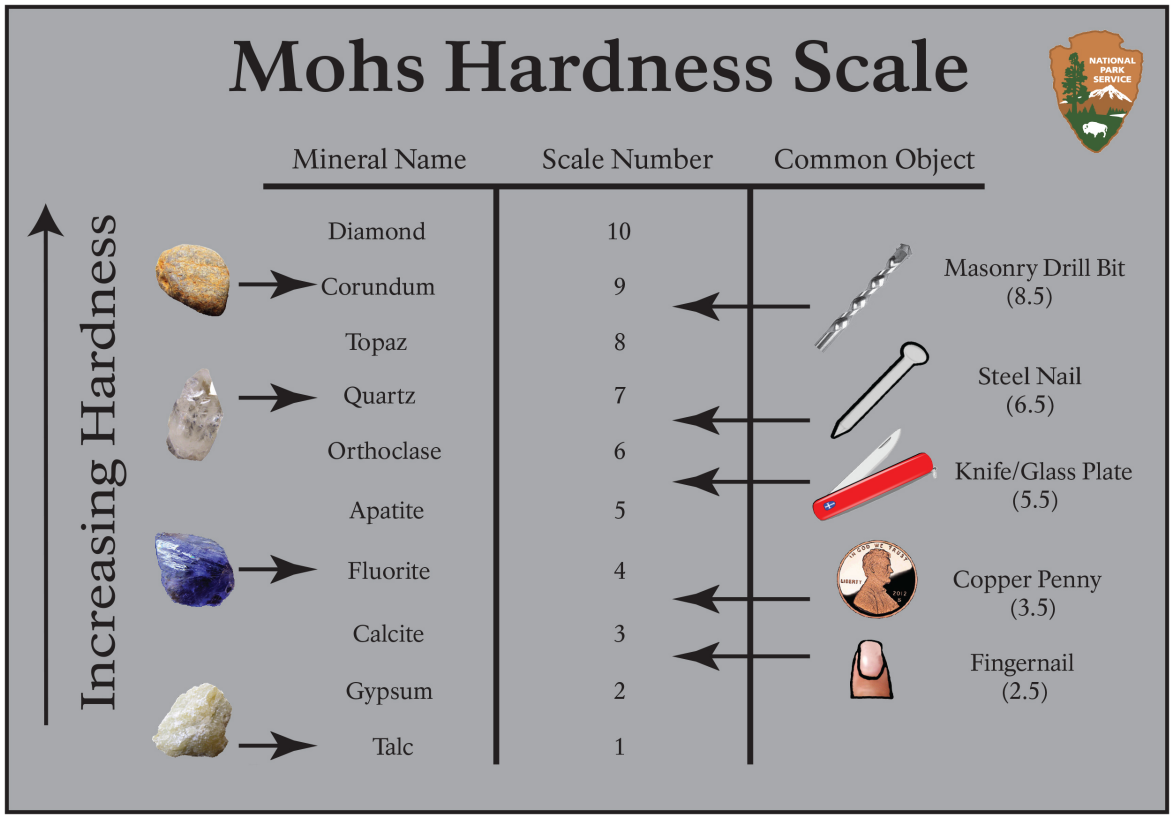
# Luster

- This is the way a mineral reflects light.
- Two major types
  - Metallic
    - Shines like metal
  - Nonmetallic
    - Pearly, glassy, dull, or earthy


**What other things (not minerals) are identified this way?**

# Hardness

- Resistance to being scratched (more tomorrow)



# Special Properties

- What kind of special properties might a mineral have?
  - magnetism
  - chatoyancy
  - fluorescence
  - odor
  - burn test
  - conductivity

# Exit Ticket

- Explain why streak often is more useful for mineral identification than color.