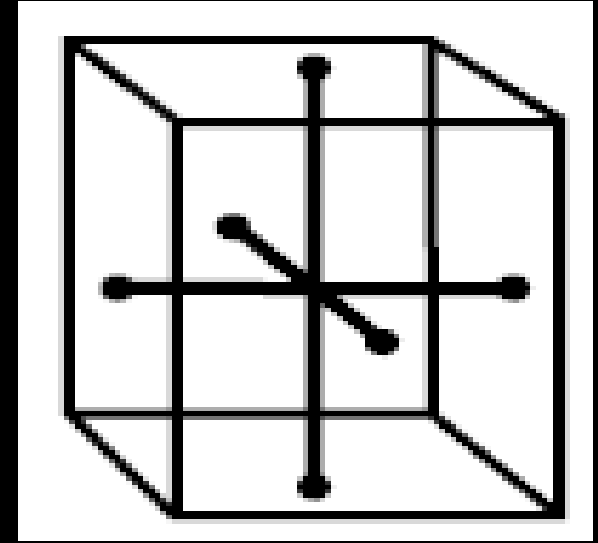


# Warm-up Week 5 Day 2

1. How many axes does this 3-D object have?

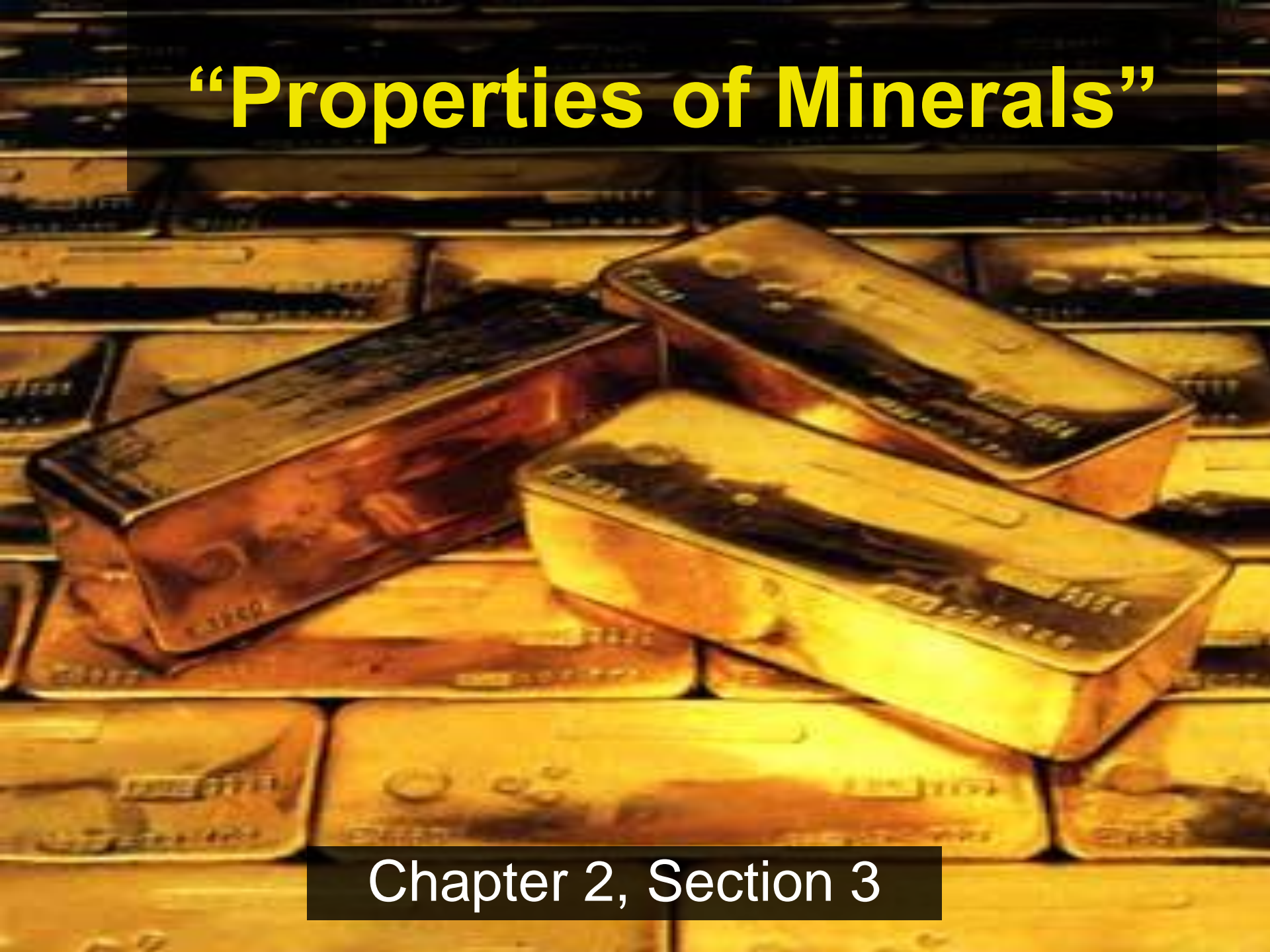


2. What does it mean to “classify” something?

3. How do we classify Earth’s 3800+ minerals?

4. What are the six crystal systems?

# “Properties of Minerals”



Chapter 2, Section 3

# Color

- Small amounts of different elements give the same mineral different colors
- This property is not often used to identify minerals

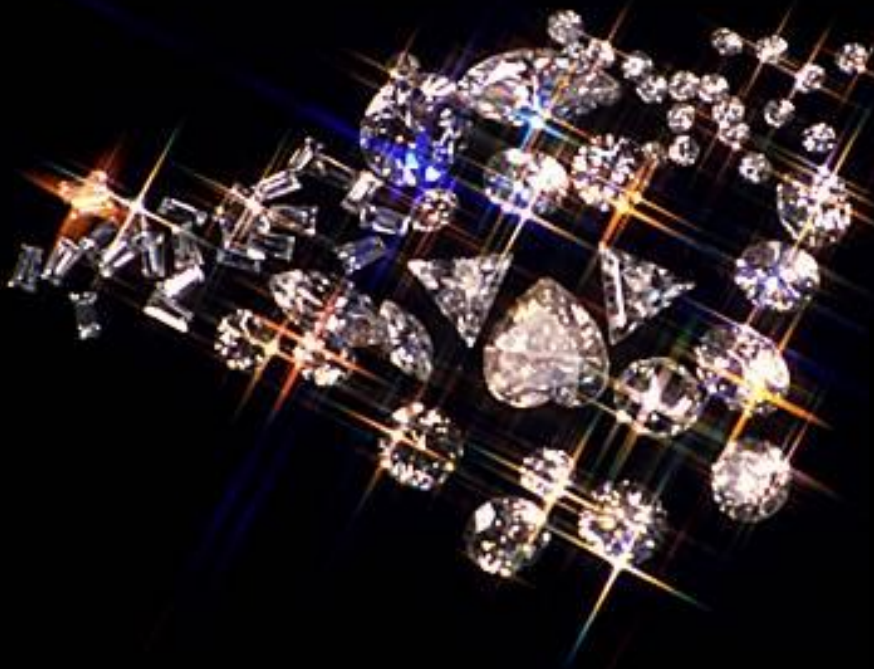


# Luster

- Describes how light is reflected from the **surface** of a mineral
- *metallic* lusters
  - Like metal!
- *nonmetallic* lusters
  - (glassy, pearly, silky, earthy, brilliant)



# Luster



Encarta Encyclopedia, Photo Researchers, Inc./Spencer Grant

# Streak

- **Color** of a mineral in its powdered form
- Obtained by rubbing a mineral across a rough “streak plate”
- **Streak-color never varies.**
- Can tell the differences between metallic and nonmetallic lusters
  - (no streak is produced)



# Crystal Form

- **The visible expression of a mineral's internal arrangement of atoms.**
- When a mineral develops slowly, it will form a well-defined crystal
  - **Created Slow = Defined Crystal!**



# Crystal Form



ta Encyclopedia, Corbis/Lester V. Bergman



# Hardness

- **Resistance of a mineral to being scratched.**
- **The Mohs scale consists of 10 minerals arranged from 10 (hardest) to 1 (softest)**
- **Diamond, the hardest mineral on Earth, can scratch anything**



Diamond — 10

Corundum — 9

Topaz — 8

Quartz — 7

Orthoclase — 6

Apatite — 5

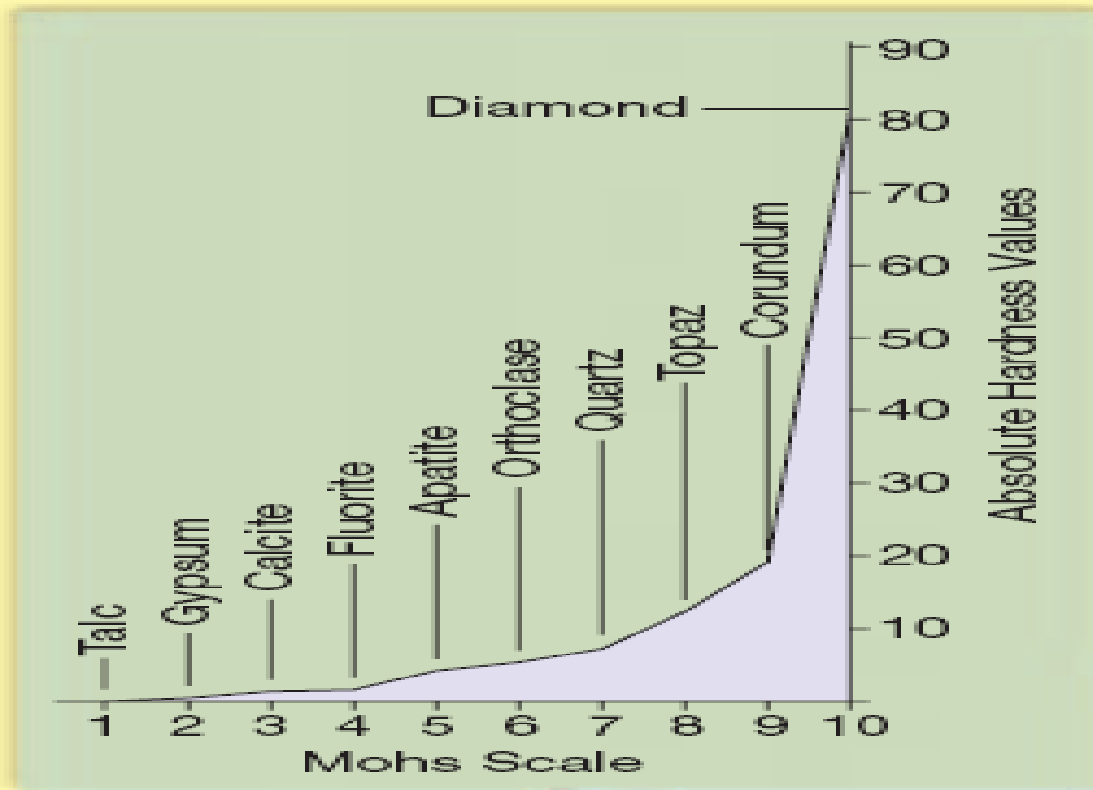
Fluorite — 4

Calcite — 3

Gypsum — 2

Talc — 1

INDEX  
MINERALS



Streak plate (6.5)

Glass (5.5)

Knife blade (5.1)

Wire nail (4.5)

Copper penny (3.5)

Fingernail (2.5)

COMMON  
OBJECTS



# Cleavage

- “Cleave” = Split
- Tendency of a mineral to “cleave,” or break, along flat, even surfaces.
- Weak atomic bonds = Cleavage
  - Ex: Mica



# Cleavage



Encarta Encyclopedia, Photo  
Researchers, Inc./George Whiteley

# Fracture

- Uneven breakage.
- Strong atomic bonds = Fracture



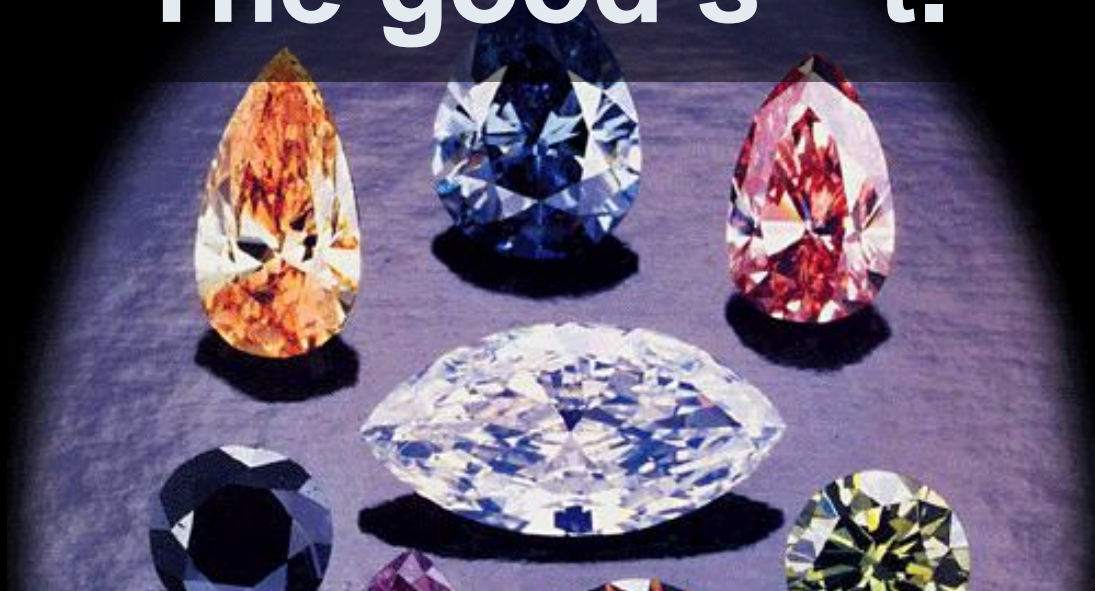
# Density

- Property of **all matter**
- Ratio of an object's mass to its volume:

$$\text{Density (d)} = \text{mass (m)} / \text{Volume (V)}$$

- g/cm<sup>3</sup> in Geology
- Many common minerals have densities between 2 and 5 g/cm<sup>3</sup>

# The good s—t.



- The density of a pure mineral is a constant value.
  - Ex:  $5 \text{ g/cm}^3$
- Can be used to determine the **purity** or **identity** of some minerals

# Distinctive Properties

- Some minerals can be **recognized** by other distinctive properties.
  - Magnetic
  - Transparent (you can see through)
  - Smell? (rotten eggs!)
  - Bubbles! (with acid)
- A mineral's properties depend on:
  1. **Composition** (what its made of)
  2. **Structure** (how the atoms are arranged)



Figure 21 Calcite shows the property of double refraction.

# Assignment

- Read Chapter 2, Section 3 (pg. 50-55)
- Do Section 2.3 Assessment #1-6 (pg. 55)