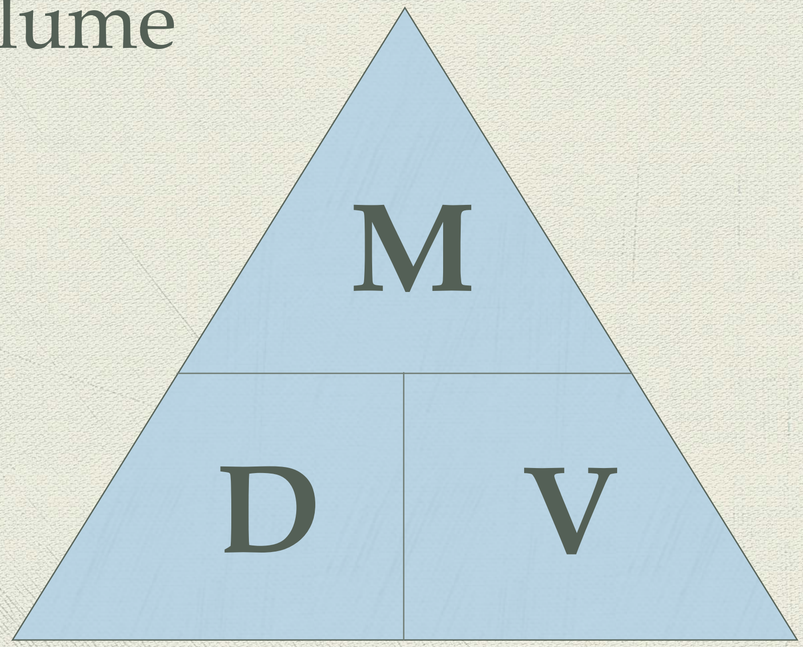
Density

How do we calculate density?

Density

- Density - physical property of matter than can be used to characterize a pure substance
  - The ratio between mass and volume
  - Units: g/ml or g/cm^3
  - Formula: $\text{density} = \frac{\text{mass}}{\text{volume}}$



Density

- Earth Science Reference Tables [ESRT]

$$\text{Eccentricity} = \frac{\text{distance between foci}}{\text{length of major axis}}$$

$$\text{Gradient} = \frac{\text{change in field value}}{\text{distance}}$$

$$\text{Rate of change} = \frac{\text{change in value}}{\text{time}}$$

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

Density

Gold or Pyrite

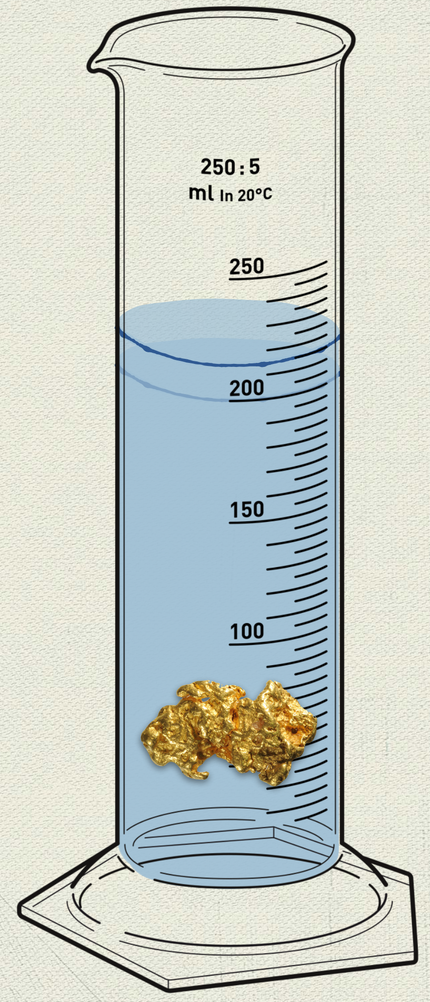
- Problem: Charlie finds a goldish rock and thinks he is a millionaire. How can he figure it out?

Density

Gold or Pyrite

Mass = 289.5 g

Volume = 15.0 ml



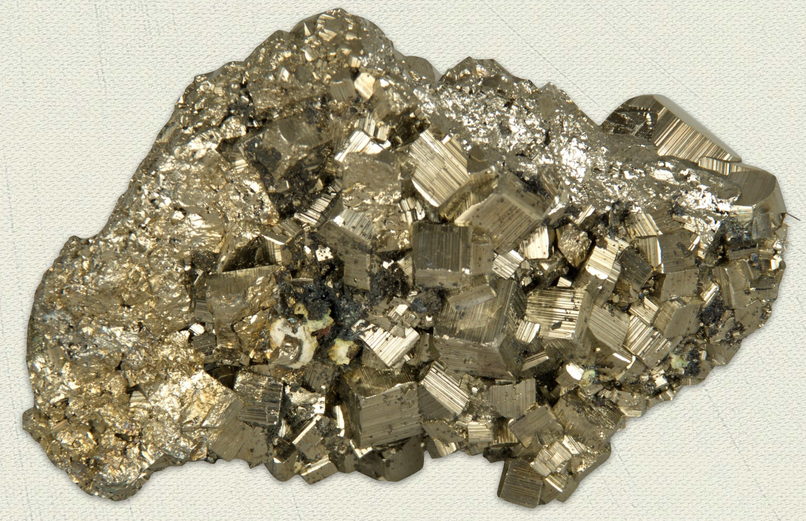
Density

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Density

Gold or Pyrite

- *So is Charlie a millionaire?*



Pyrite = 5.0 g/ml

Gold = 19.3 g/ml

Density

- All substances are most dense in the solid phase… EXCEPT water
- How can we tell that solid water [ice] is less dense that liquid water?

Density

- Every substance can be identified using density
  - Example: Gold = 19.3 g/cm^3

Density

- Density of a substance remains the same [constant] unless temperature and/or pressure change
  - If temperature increases, density will decreases
  - If pressure increases, density will increase