Density

How do we calculate density?
Density - physical property of matter that can be used to characterize a pure substance

- The ratio between mass and volume
- Units: g/ml or g/cm³
- Formula: density = \( \frac{\text{mass}}{\text{volume}} \)
Density

Earth Science Reference Tables [ESRT]

- Eccentricity = distance between foci / length of major axis
- Gradient = change in field value / distance
- Rate of change = change in value / time
- Density = mass / 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

Volume = 15.0 ml

Mass = 289.5 g
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 than liquid water?
Density

- Every substance can be identified using density
- Example: Gold = 19.3 g/cm³
Density

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