

## Density Notes

Which is heavier: 1 kg of cotton candy, or 1 kg of gold?

Which one takes up more space?

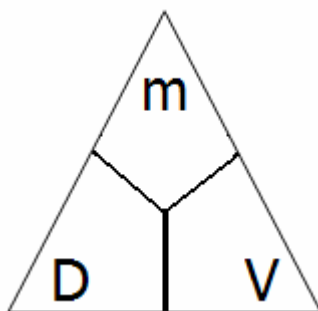
Which one is more dense?

**Density** is the relationship between how much mass something has and how much space it takes up: density is equal to the mass divided by the volume of an object:

$$D = \frac{m}{V}$$

$$m = D \times V$$

$$V = \frac{m}{D}$$



All pure substances have a unique density at a given temperature. Density is an intensive physical property, meaning that it does not change with sample size. Usually the solid form of a pure substance is denser than the liquid form of the same substance. This makes sense because in most solids, the particles are much closer together than in their liquid counterparts.

## ***Density problems***

- What's the density of a  $10.36 \text{ cm}^3$  chunk of gold that weighs  $200.0 \text{ g}$ ?
  
- What's the density of a  $51.81 \text{ cm}^3$  chunk of gold that weighs  $1000 \text{ g}$ ?
  
- What's the volume of a gold bar with the following dimensions:  $L = 18 \text{ cm}$ ,  $W = 6 \text{ cm}$ ,  $H = 6 \text{ cm}$
  
- What's the mass of that bar of gold?