

REVIEW FOR TEST ON MATTER AND MEASUREMENT

MATTER Volume, mass, inertia

ENERGY CAPACITY TO DO WORK

types { PE ENERGY OF POSITION
KE ENERGY OF MOTION

KINDS

~~WAYS~~ OF ENERGY: ELECTRICAL
HEAT, LIGHT

CLASSIFICATION OF MATTER

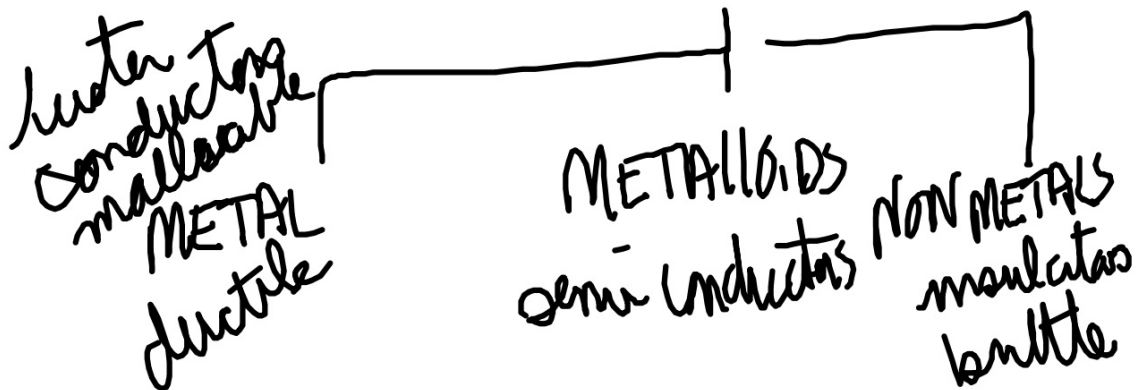
SALT WATER → MIXTURE
EVAPORATION
FILTER
HOMOGENEOUS
(SOLUTIONS)

OIL AND WATER → MIXTURE
HETEROGENEOUS



WATER $\longrightarrow$ PURE SUBSTANCE
 H_2O $\longrightarrow$ COMPOUND
heat, LIGHT, ELECTRICITY

HYDROGEN $\longrightarrow$ PURE SUBSTANCE
ELEMENT



STATES OR PHASES

Solids Shape + Volume

Liquids Volume, SHAPE OF CONTAINER

GASES SHAPE AND VOLUME OF CONTAINER

$S \rightarrow l$ melting $l \rightarrow S$ freeze

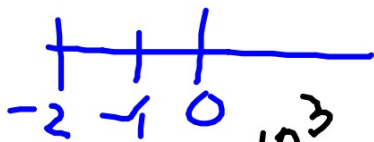
$l \rightarrow g$ boiling $g \rightarrow l$ Condensation

$S \rightarrow g$ SUBLIMATION

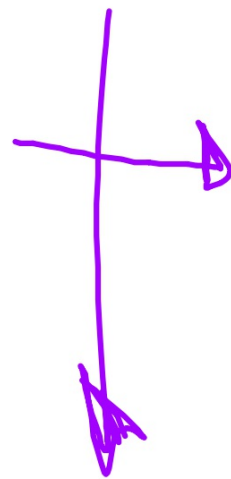
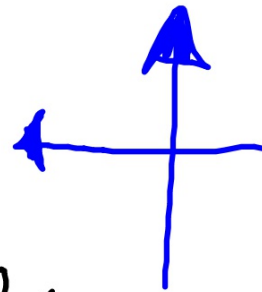
CONVERSIONS

SI to SI

$$35 \text{ cm} = 0.35 \text{ m}$$



$$120 \text{ kg} = 120,000,000 \text{ mg}$$



TEMPERATURE CONVERSION

$$K = ^\circ C + 273 \quad ^\circ C = K - 273$$

$$45^\circ C = \underline{318} K$$
$$\begin{array}{r} +273 \\ \hline 318 \end{array}$$

$$473 K = \underline{200} ^\circ C$$
$$\begin{array}{r} -273 \\ \hline \end{array}$$

DENSITY - mass divide by volume

$$d = \frac{m}{V}, \quad m = d \times V, \quad V = \frac{m}{d}$$

$$2. \quad d = \frac{m}{V} = \frac{26.8g}{14.5cm^3} = 1.84g/cm^3$$

$$m = 26.8g$$

$$V = 14.5cm^3$$

$$\text{Ex. 4. } V = \frac{m}{d} = \frac{50\text{g}}{10.5\text{g/mL}} = 4.9 \text{ mL}$$

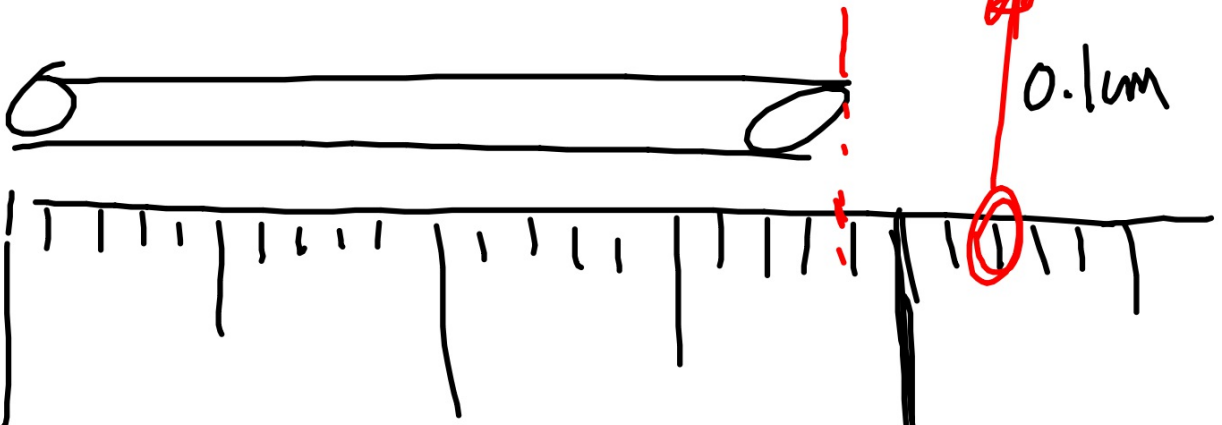
$$m = \text{~~35g~~ } 50\text{g}$$

$$\text{~~d = 10.5g/mL~~ } d = 10.5\text{g/mL}$$

$$m = d \times V$$

$$\% \text{ error} = \left| \frac{\delta b - \text{acc}}{\text{acc}} \right| \times 100$$

$$\frac{1 \text{ cm}}{10} = 0.1 \text{ cm}$$



$$1.88 \pm 0.01 \text{ cm} \quad 1 \text{ cm}$$

$$a.e. = 0.1 \text{ cm} \times 0.1 = 0.01 \text{ cm}$$

a student found the density
of gold to be 19.6 g/mL *observed*
Accepted $d_{\text{gold}} = 19.3 \text{ g/mL}$. *Accepted*
% error = ?

$$\% \text{ error} = \frac{|19.6 \text{ g/mL} - 19.3 \text{ g/mL}|}{19.3 \text{ g/mL}} \times 100$$

$$= \frac{0.3}{19.3} \times 100 =$$