

Unit 5 Lesson 1 Notes ①

Solids, liquids, gases

Matter:

- * has mass & Volume
- * Cannot be created or destroyed → Changes Forms

Mass:

- The amount of matter in something
- Use a pan balance to measure: grams

Volume:

- the amount of space something takes up

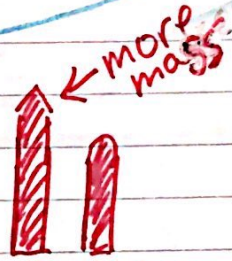
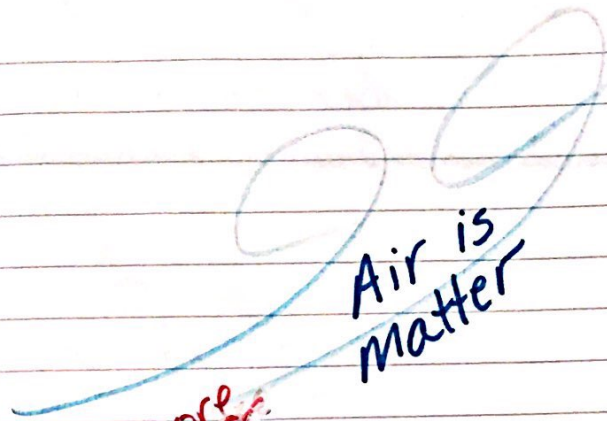
Temperature:

- measures the energy of motion of particles
- * more movement
- more heat
- * helps matter change forms

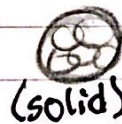
Density - (property of matter)

- * mass divided by Volume
- $$D = \frac{m}{V}$$

- * more dense than H_2O = sink
- * less dense than H_2O = float

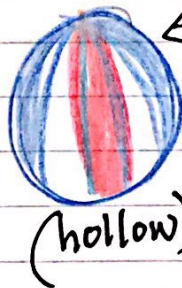


takes up more space - more volume



(solid)

Golf ball has more mass than



(hollow)

Beachball has more volume (bigger)



Basketball less dense than H_2O - floats

- Marble denser than H_2O - sinks

Properties of Matter

Physical Properties

* Use our senses to observe

Sight (Vision)

- Shape
- Square
 - Sphere
 - Oval
- Color
- Red
 - Orange
 - blue

Touch / Feel (Tactile)

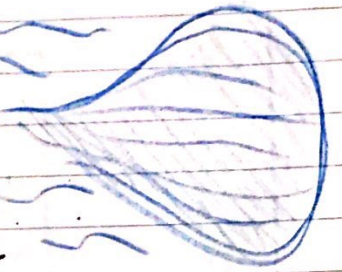
Texture

- Soft
- Rough
- Wet / humid
- Smooth

Smell (olfactory)

Aroma - Odor

- Sweet
- Flowery
- Bitter
- Pleasant
- Unpleasant



Hearing & Sound (auditory)

- Mellow
- Solid
- Metallic
- Pleasant

Taste (gustatory perception)

- Sweet
- Sour
- Bitter
- Salty

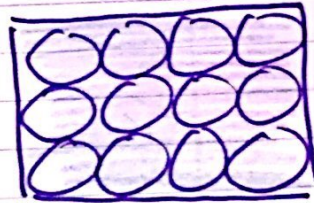


Unit 5 Lesson 1 Notes (3)

States of Matter

Solids

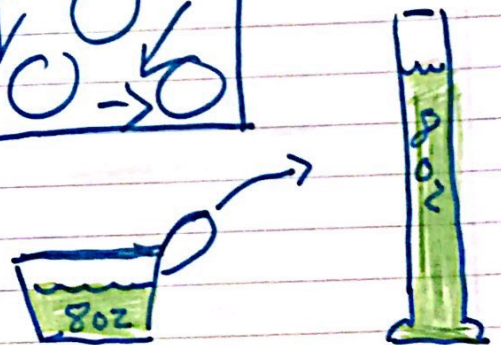
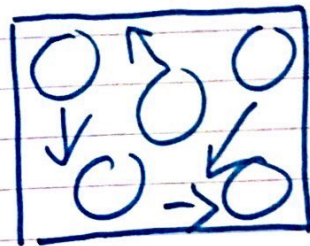
- Definite shape
- Definite volume (size)
- Particles are close together - vibrate



ON TEST

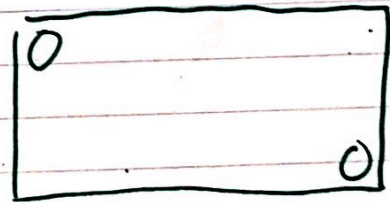
Liquid

- No definite shape (takes the shape of the container)
- Definite volume (size)
- Particles slide (faster than a solid but slower than a gas)



Gas:

- No definite shape
- No definite volume
- Particles are farthest apart - move the fastest (bounce off each other)



Expands

more heat
Expands
balloon
Rises

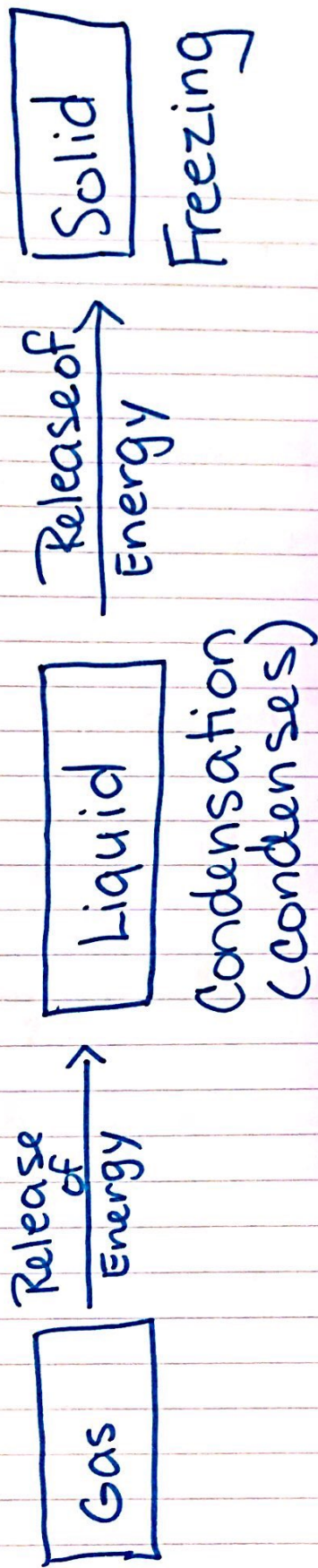


Compresses



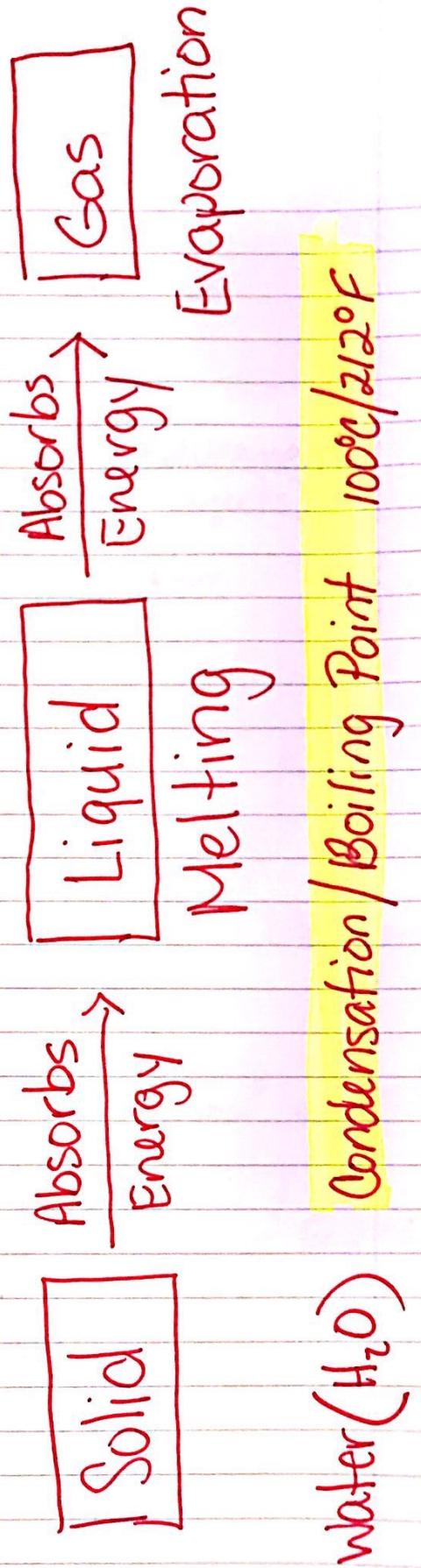
A lot of
pressure
(squeezed gas
inside)

Temperature Decreases



Water (H_2O) melting / Freezing Point $0^\circ C / 32^\circ F$

Temperature Increase



Water (H_2O) Condensation / Boiling Point $100^\circ C / 212^\circ F$

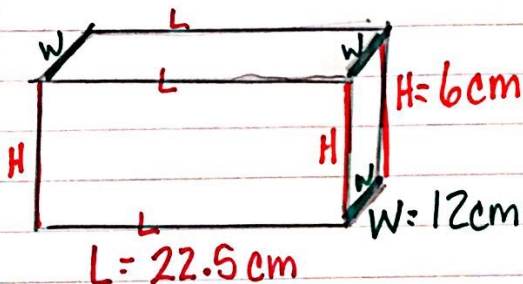
Volume
 * the amount of space an object takes up

Method 1

* Calculate volume using dimensions
 (for rectangular prisms)

$$V = L \times W \times h$$

units: metric cubed³



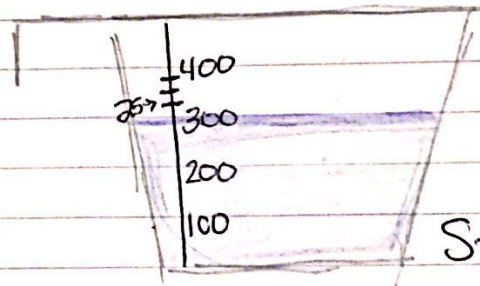
$$22.5 \times 12 \times 6$$

$\begin{array}{r} 22.5 \\ \times 12 \\ \hline 450 \\ + 2250 \\ \hline 270.0 \end{array}$	$\begin{array}{r} 270 \\ \times 6 \\ \hline 1620 \text{ cm}^3 \end{array}$
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Method 2

Volume by displacement
 (for irregular objects)

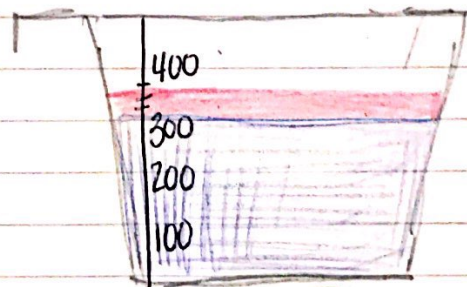
units: milliliters



Start 300 mL

$$\begin{array}{r} 350 \\ - 300 \\ \hline 50 \text{ mL}^3 \end{array}$$

Volume of Ball



End 350 mL