



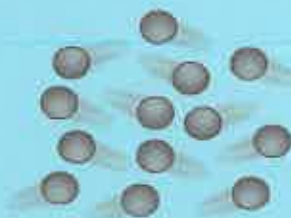
## UNIT 1

**Name:** MS. FRIESS

**Class:** Answer Key

# FLUIDS

# Vocabulary Book



PTOM is a model of matter. It describes the states of matter and what happens when matter changes state.

\* Based on observations made when investigating matter \*

### 5 Main Points:

Diagram:

## Particle Theory of Matter

1) All matter is made up of tiny particles

2) Different substances are made of different particles

3) Particles are always in motion (vibrating + moving)

4) Particles move differently in each state (solid, liquid, gas)

5) Adding Heat makes particles move faster (As a result the state of matter may change)



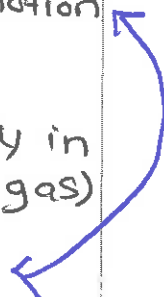
Solid



Liquid





Gas



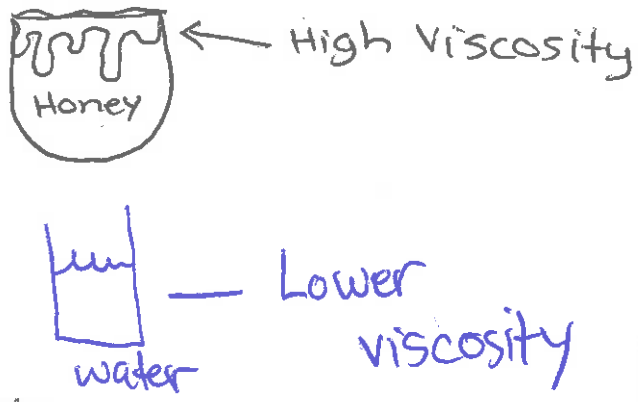
Attractive forces between particles

Fluids are all around us in life.

Fluids can be any substance in a liquid or gas state of matter.

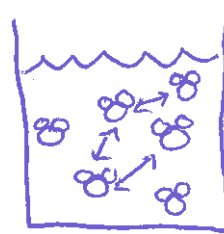
What this word reminds me of...	
Definition: Matter that contains particles that will move past one another or "Flow" • can be <u>Liquid</u> OR <u>Gas</u>	Diagram:  Liquid  Gas
Fluid	
Synonyms or similar words:	Life Examples: Air, smoke, juice, ketchup, honey (liquid), oil
4 Sentences:	

- A thick liquid has a high viscosity.
- The syrup was very viscous.
- The water had a low viscosity.

What this word reminds me of...	
<p><b>Definition:</b> A property of fluids. Viscosity describes thickness.</p> <p>It is the resistance of a fluid to change shape or move.</p> <p>Higher viscosity = lower speed movement</p>	<p><b>Diagram:</b></p>  <p>High Viscosity</p> <p>Lower viscosity</p>
<p><b>Synonyms or similar words:</b></p>	<p><b>Life Examples:</b></p> <p>* talk about Thick honey or ketchup has a high viscosity</p>
<p><b>5 Sentences:</b></p>	

What this word  
reminds me of...

**Definition:**  
Attractive forces  
between same type  
particles



**Diagram:**  
(water)  
= H<sub>2</sub>O  
molecule

ex) water attracts other  
water and creates  
surface tension

## Cohesion

**Synonyms or  
similar words:**

**Life Examples:**

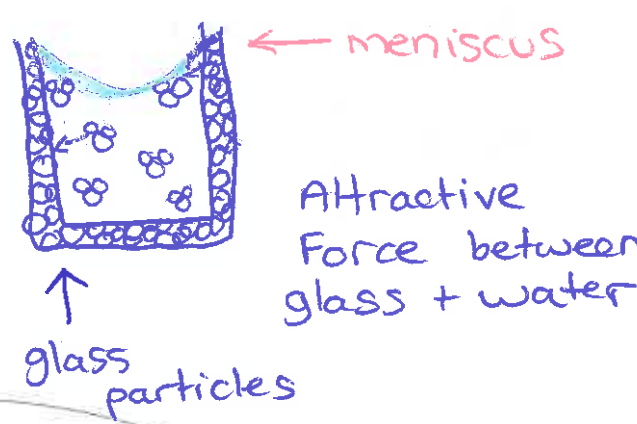
Honey attracted  
to other honey

• Higher viscosity usually  
has higher cohesive  
force

**Sentences:**



What this word reminds me of...

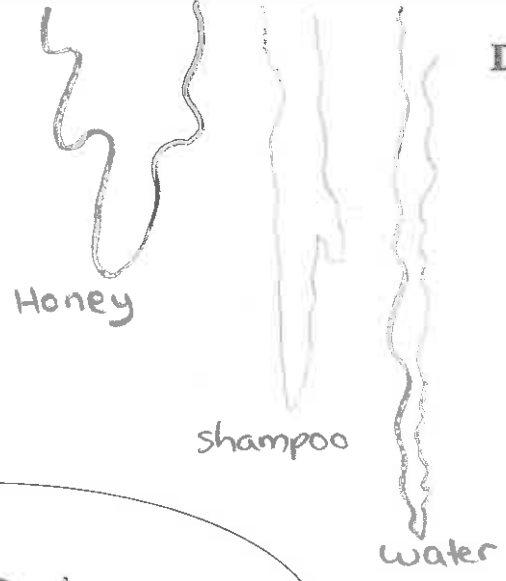
<p><b>Definition:</b>          Attractive Forces between different types of particles</p>	<p><b>Diagram:</b></p>  <p>← meniscus</p> <p>Attractive Force between glass + water</p> <p>↑ glass particles</p>
<p><b>Synonyms or similar words:</b></p>	<p><b>Life Examples:</b>          Honey attracted to a spoon</p>
<p><b>Sentences:</b></p>	

Adhesion

- A viscous liquid will have a lower (slower) flow rate
- A liquid with a low viscosity will have a higher (faster) flow rate
- Temp. + Force/Pressure can change flow rate...

What this word reminds me of...

**Definition:** The movement of particles past one another in a given time  
(distance over time)



**Diagram:**

Flow Rate

**Synonyms or similar words:**

- pouring speed
- How Fast it moves

**Life Examples:**

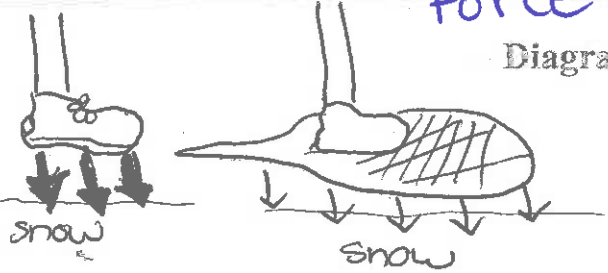
**Sentences:**



What this word reminds me of...

Definition: A force exerted over a specific surface area,

• If you can spread force out over larger area there is less pressure,



spreading force out  
it reduces pressure

## Pressure

Synonyms or similar words:

Life Examples:  
Snowshoes

- Hot air in a balloon
- air in tires
- A person floating on water  
(pressure spreads out)

Sentences:

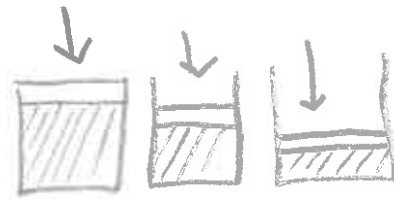
A fluid can be compressed into a smaller space if the right force is applied.

- compressed fluids will exert higher pressure on the container they are stored in.

What this word reminds me of...

**Definition:** The ability of a fluid to be squeezed into a smaller volume.

Gas is highly compressible.



**Diagram:**

air / gas

## Compressibility

**Synonyms or similar words:**

**Life Examples:**

**Sentences:**

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

$$D = M \div V$$

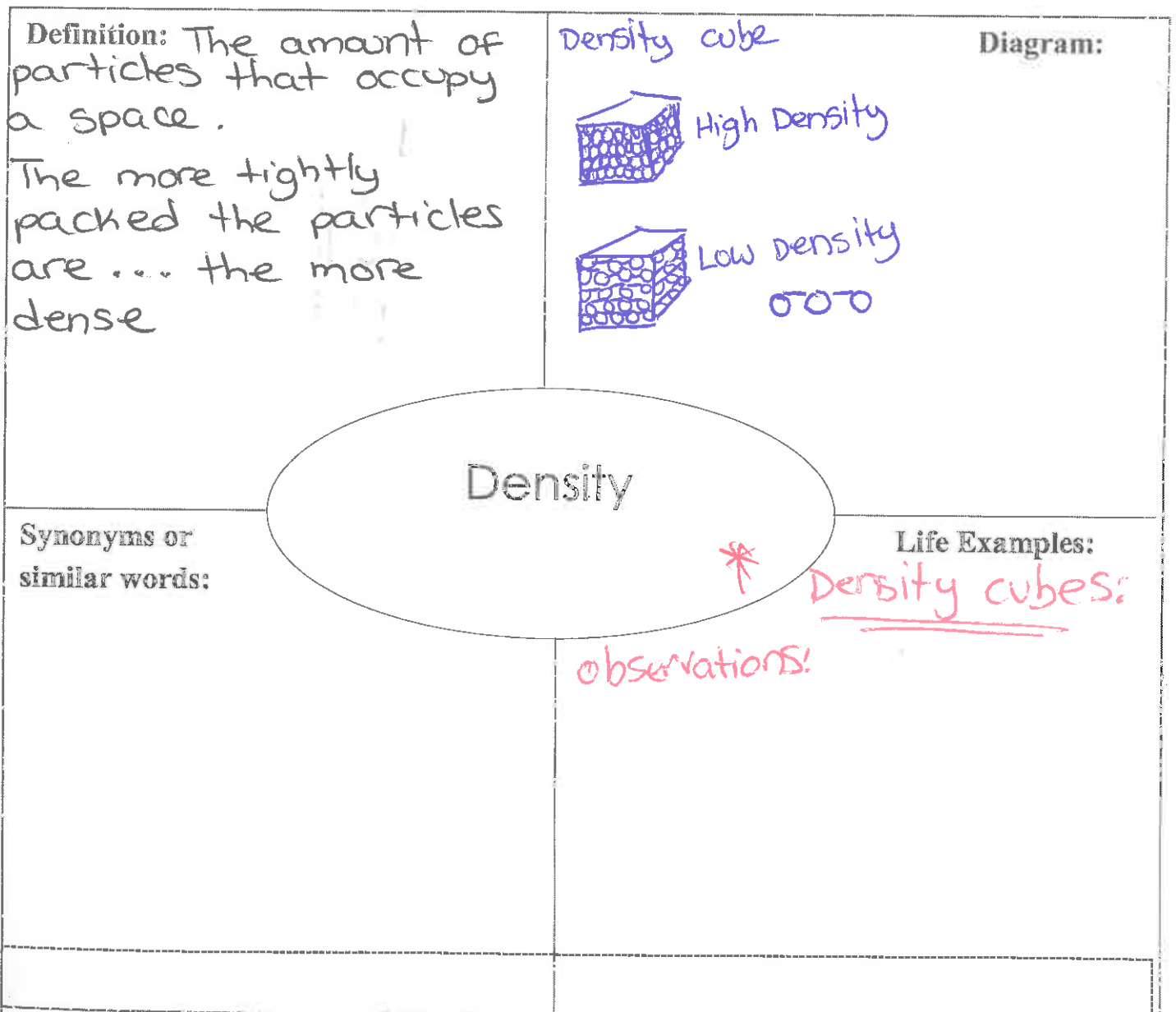
M = Mass

V = volume

D = density

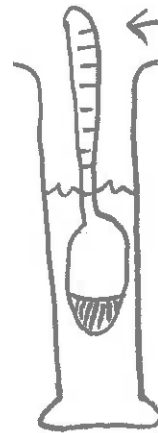
Density can be found if you know the mass and volume of a substance.

What this word reminds me of...



What this word  
reminds me of...

**Definition:** An instrument  
for measuring  
the density of  
liquids.



**Diagram:**

Device that  
floats in  
liquids and  
measures  
density

Hydrometer

**Synonyms or  
similar words:**

**Life Examples:**

**Sentences:**

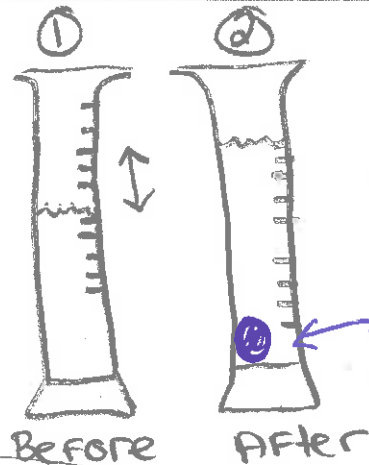
The amount of water displaced is equal to the                      volume of that object (irregular shape)

What this word reminds me of...

**Definition:** Buoyant Force = weight (amount) of displaced water

*equals*

**Diagram:**



$2 - 1 = \text{change ml}$

\* Buoyant force is related to density

Archimedes  
Principle  
Story... Eureka

**Synonyms or similar words:**

water Displacement

**Life Examples:**

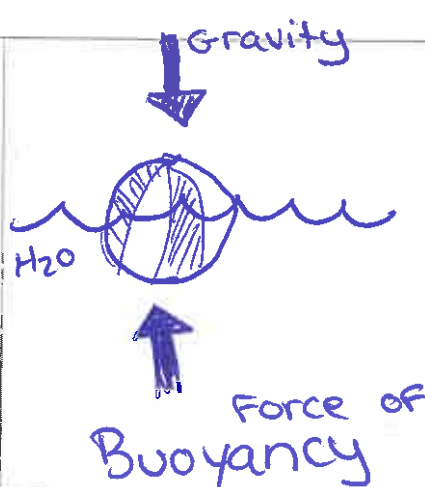
The volume of an irregular solid shape can be found by measuring the amount (volume) of displaced water

**Sentences:**

Buoyancy can be seen in all fluids  
(liquids and gas)

What this word reminds me of...

**Definition:** Force opposing gravity exerted by particles in a fluid (upwards force)



Buoyancy  
Buoyant Force

**Synonyms or similar words:**

Floating

**Life Examples:**

- paper airplanes
- Beach ball in water
- Ship on water

**Sentences:**

What this word  
reminds me of...

**Definition:** pressurized system  
that uses moving liquid  
to do work.  
A force applied at  
one point transmits  
to another point.

**Diagram:**

Hydraulic

**Synonyms or  
similar words:**

**Life Examples:**

Hydraulic  
Brakes on car  
or vehicle.

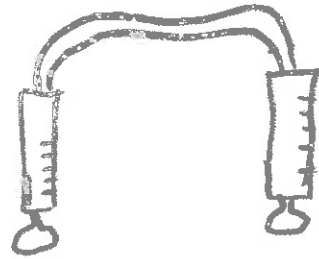
• your Heart + Blood  
vessels are a natural  
hydraulic system

**Sentences:**

What this word  
reminds me of...

**Definition:** A pressurized system that uses moving air + other gases to do work.

**Diagram:**



simple system with syringes

Pneumatic

**Synonyms or similar words:**

**Life Examples:**

- pneumatic breaks
- Air Bag in car
- pneumatic air compressor
- Lungs

**Sentences:**