8I Fluids

1. The Particle Model		
States of Matter	The three forms that a substance can be in; solid, liquid or gas.	
Solid Properties	Do not flow, fixed shape, fixed volume, cannot be compressed	
Liquid	Can flow, no fixed shape, fixed volume, cannot be compressed	
Gas Properties	Can flow, no fixed shape, no fixed volume, can be compressed	
Particle Theory	Used to explain the different properties and observations of solids, liquids and gases.	
Solid Particle Properties	Fixed arrangement of particles held closely together that cannot move over each other but vibrate.	
Liquid Particle Properties	Held closely together but not in a fixed arrangement and can move over each other.	
Gas Particle Properties	Far apart from each other and free to move about in all directions.	
Diffusion	The movement of particles spreading out and mixing with each other without anything moving them.	

Brownian Motion	an a also a f manettan and and less	
	specks of matter caused by	
	being hit by the moving	
	particles that make up liquids or	
	gases.	
Expanding	Materials expand when heated	
	because the particles vibrate	
	more, taking up more space.	
Contract	Materials contract when cooled	
	because the particles vibrate	
Contract	because the particles vibrate	
Contract	less and take up less space.	
Contract	•	
	less and take up less space. The mass of a certain volume of a material.	
Density	less and take up less space. The mass of a certain volume of	

2. Changing State		
Changes of State	Changing from one state of matter to another. Physical changes because no new chemicals are made.	
Melting	Turning from a solid to a liquid- occurs at melting point	
Freezing	Turning from a liquid to a solid- occurs at freezing point	
Condensing	Turning from a gas into a liquid.	
Sublimation	Turning from a solid to a gas.	
Evaporation	Turning from a liquid into a gas. Can occur at the surface of a liquid at any temperature.	
Boiling	When evaporation occurs within a liquid- occurs at the boiling point	
Pure	A substance made up of a single type of atom or compound.	
Pure	Occurs at a set temperature.	
Substances	The temperature stays	
Changing	constant when changing state	
State	as bonds are broken or made.	

Mixtures Changing State	Occurs over a range of temperatures as it contains substances with different melting/boiling points.
Water	Contracts as it is cooled up until 4°c and then it expands slightly. Ice takes up more space than water and is less dense

3. Pressure in Fluids		
Fluids	Liquids and Gases	
	The force of particles hitting	
Pressure	things- comes from all	
Pressure	directions in gases and	
	liquids.	
	Pascals (Pa)	
Pressure	One pascal is the a force of	
Units	one newton on every square	
	metre.	
Atmospheric	The pressure of the air-	
Pressure	100,000 Pa	
	Contain air under high	
	pressure because they are	
Tyres	pumped with extra air	
	causing more particles to hit	
	the inside walls.	
	Pressure in fluids increases as	
	you increase temperature	
Temperature	because particles move faster	
	and hit the walls of the	
	container harder.	
	If you compress a gas into a	
Volume	smaller volume the pressure	
Volume	increases because the	
	particles hit the walls more.	
	As you go down the ocean	
	there is more water above	
Pressure	you so pressure increases. As	
From Above	you go up a mountain there	
	is less air above you so	
	pressure decreases.	

4. Floating and Sinking	
Upthrust	The force of water pushing
	upwards.
Weight	The amount of force with which
	gravity pulls on a mass.
Water	The density of water is 1 g/cm ³
Floating	If something has a density less
	than water it will float in water.
Sinking	If something has a density greater
	than water it will sink in water.
Air	The density of air at sea level is
	around 0.001 g/cm³
Hot Air Balloons	Fly because the overall density of
	the balloon is less than the air
	around it.

5. Drag		
Drag	A resistance force acting on an	
	object to slow it down.	
Water	Type of drag that occurs in	
Resistance	water.	
Air	Type of drag that occurs in air.	
Resistance		
Friction	Partly causes the drag on a	
Friction	moving object.	
Stroomlined	Smooth shape to reduce air /	
Streamlined	water resistance.	
Spood	The faster an object is moving,	
Speed	the greater the drag.	
Balanced	Equal forces acting in opposite	
Forces	directions.	
Engine	Forward force of an engine	
	needs to balance the drag.	

Lesson	Memorised?
1. The Particle Model	
2. Changing State	
3. Pressure in Fluids	
4. Floating & Sinking	
5. Drag	