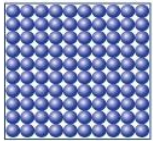
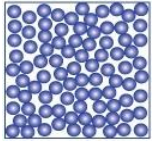
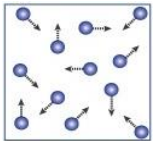


ONE

A PARTICLE MODEL

Solid	Liquid	Gas
		
High density	High density	Low density
Retains its own shape	Assumes shape of container	Assumes shape of container
Fixed volume - incompressible	Fixed volume - incompressible	No fixed volume - Highly compressible
Vibrates	Moves randomly and freely	Moves randomly and freely

THREE

DENSITY

Density is the Mass per unit Volume

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

Density: ρ , kg/m³
Mass: m, kg
Volume: V, m³



FOUR

SPECIFIC HEAT CAPACITY

Three things affect temperature increase:

Mass	the more mass, the more energy needed to change its temperature.
Material	different materials require different amounts of energy to raise their temperature.
Amount of energy supplied	the more heat energy transferred to it the greater its temperature increase.

Specific heat capacity is the amount of energy required to raise the temperature of 1Kg of the substance by 1°C

$$\Delta E = m \times c \times \Delta \theta$$

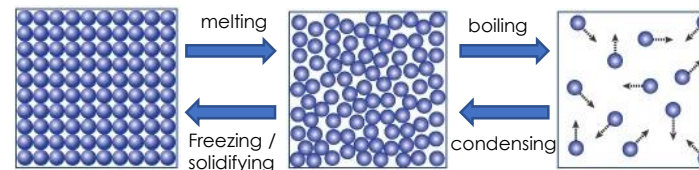
Transferred energy: ΔE , J
Mass: m, kg
Specific heat capacity: c, J/ kg °C
Temperature change: $\Delta \theta$, °C

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TWO

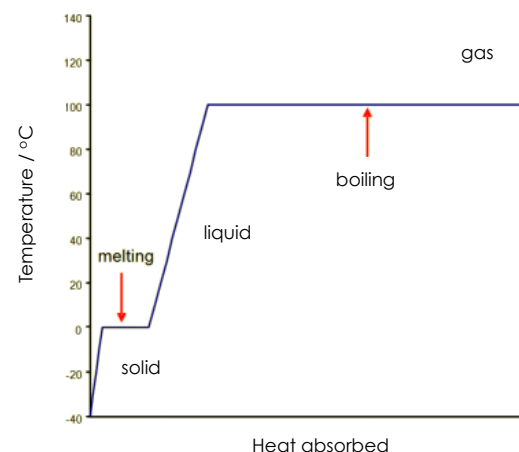
HEATING AND CHANGES OF STATE



Internal energy	The energy stored in a system by the particles (the total kinetic energy and potential energy of all the particles).
Intermolecular forces (Potential energy)	The forces between particles. Applying heat will break the intermolecular forces.
Kinetic energy	The energy resulting in the movement of the particles.
Physical change	A change that is reversible. Changes of state are all examples of physical changes.

FIVE

SPECIFIC LATENT HEAT



There is no temperature change at a substance's melting or boiling point.

Specific latent heat is the **HIDDEN HEAT ENERGY** that broke the intermolecular bonds for the substance to change state.

$$E = m \times L$$

Energy: E, J
Mass: m, kg
Specific Latent heat: L, J/kg

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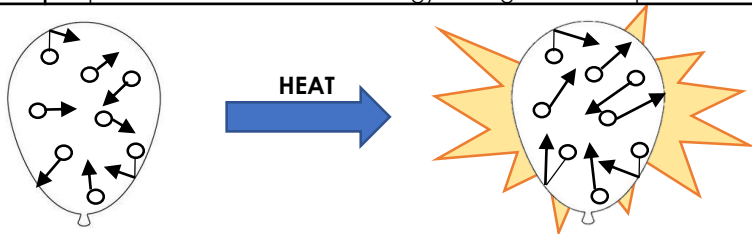
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SCIENCE

SIX

GAS PRESSURE AND TEMPERATURE

Gas pressure	The pressure of a gas is due to the particles colliding with the wall of the container that the gas is held in.
Temperature	The temperature of a gas is related to the average kinetic energy of the particles. The more kinetic energy the higher the temperature.



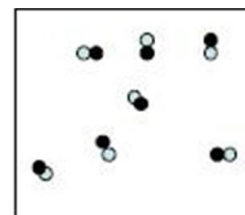
At room temperature the particles have lower kinetic energy. There are fewer collisions per second and therefore the balloon has a lower pressure.

At high temperatures the particles have more kinetic energy therefore there are more collisions per second. The balloon has a higher pressure which may result in the balloon bursting.

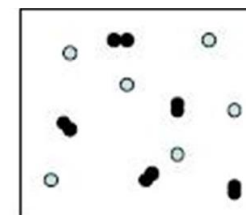
SEVEN

PURE SUBSTANCES AND MIXTURES

Pure substance	A substance which is made up of only one type of atom/ molecule. Pure substances have a fixed melting and boiling point which can be used to distinguish the substance.
Mixture	A mixture consists of two or more different substances, not chemically joined together.



A pure compound



A mixture of elements