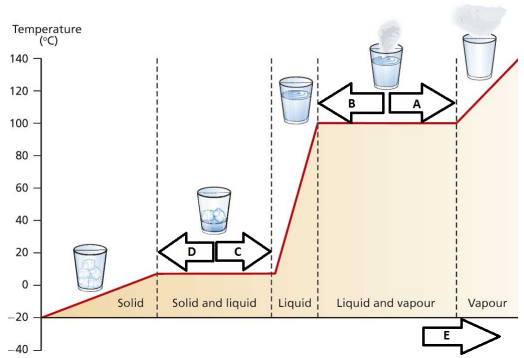
Year 10 Physics 3: Particle Model Knowledge Organiser

1. Density

$$\rho = \frac{m}{V}$$

Symbol	Meaning	Unit
ρ	density	kg/m^3
m	mass	kg
V	volume	m^3

2. Changes of state



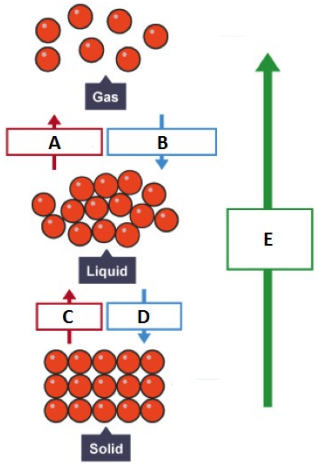
A. Evaporation/ Vaporisation

B. Condensation

C. Melting/ Fusion

D. Freezing

E. Increasing internal energy



3. Specific Heat Capacity

Energy transferred, ΔE (joules, J) = **mass, m** (kilograms, kg) x **Specific heat capacity, c** (joule per kilogram per degree Celsius, J/kg°C) x **Temperature change, Δθ** (degree Celsius, °C)

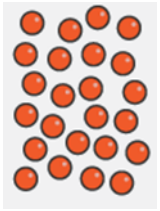
To find the specific heat capacity of a substance the equation can be rearranged to: $c = \frac{\Delta E}{m\Delta\theta}$

4. Specific Latent Heat

Energy transferred, ΔE (joules, J) = **mass, m** (kilograms, kg) x **Latent heat, L** (joule per kilogram J/kg)

To find the specific latent heat of a substance the equation can be rearranged to: $L = \frac{\Delta E}{m}$

5. Gas properties

Diagram	
Arrangement of particles	Randomly arranged Far apart
Movement of particles	Brownian motion
Energy of particles	Very high energy
Density of substance	Very low density

6. Pressure in gases (TRIPLE ONLY)

change	effect	reason
Increase Pressure	Increase volume	More particles so more collisions Increase the force stretching the balloon until the forces balance
Decrease pressure	Decrease volume	Less particles so less collision. Decrease the force causing the balloon to contract until the forces balance
Formula	**pV=constant**	**IF fixed mass and constant temperature**