**GAS LAWS SUMMARY**

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| **1. Pressure and Temperature**  | (\*\*Volume constant, mass constant) |
|  | Image result for pressure temperature 0C graph | Related image | **\*\* TEMP MUST BE IN KELVIN** |
| **Kinetic theory****- Temp ↑ particles have greater speed, and greater Ek****- Particles collide with container walls more often and with greater Force, - since P = F/A, Pressure ↑** |
| https://www.patana.ac.th/secondary/science/anrophysics/unit5/images/charles_law_app.png**2. Volume and Temperature** | (\*\*Pressure constant, mass constant) |
|  | Image result for volume temperature | **\*\* TEMP MUST BE IN KELVIN** |
| **Kinetic theory****- Volume ↓ particles collide with container walls more often**- **Overall force increases, - since P = F/A, Pressure ↑** |
| **3. Pressure and Volume** | (\*\*Temperature constant, mass constant) |
| http://www.schoolphysics.co.uk/age16-19/Thermal%20physics/Gas%20laws/text/Gas_laws/images/1.png | https://i0.wp.com/c2.staticflickr.com/4/3746/32484071303_debe92a388_o.png?resize=392%2C197&ssl=1 |  |
| **Kinetic theory****- Volume ↓ particles collide with container walls more often**- **Overall force increases** **- since P = F/A, Pressure ↑** |
| **Pressure is the force per unit area****p : (Pa or Nm-2) F : (N) A : (m2)** | **Combined Gas Equation** | **Degrees Celsius to Kelvin: + 273****Kelvin to degrees Celsius: - 273****Absolute Zero: -273 oC / 0 K****There is no negatives on the kelvin scale****Temperature is a measure of the mean kinetic energy of particles** |

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| **Specific heat capacity (c)**: Heat energy required to raise the temperature of 1kg of a substance by 1oC | Specific heat capacity values are different for all materials – values found in data sheet |
| *EH = c m ∆T* |  can be used to find heat energy supplied by appliancesHeat energy will usually be lost to the surroundings – not all will be transferred to the substance being heated |
| EH : Heat energy (J)c : specific heat capacity (J kg-1 oC-1)m : mass (kg)∆T : change in Temperature (oC) |  |
| **Low specific heat capacity –**not much energy to heat (heats up quickly for constant power) but loses heat quickly**High specific heat capacity –** lots of energy to heat (heats up slowly for constant power) but loses heat slowly (retains heat better) |
| **Specific latent heat (****l)**: Heat energy required to change the state of 1kg of a substance at the same temperature | Specific latent heat values are different for all materials – values found in data sheet |
| *EH = m* ***l*** |  | ***Specific Latent heat of fusion,* lf *:***Solid -> Liquid  |
| EH : heat energy (J)m : mass (kg) | ***Specific Latent heat of vaporisation* lv *:***Liquid -> Gas  |
| **l** : specific latent heat of fusion / vaporisation |  |
| The same material **requires different quantities of heat** to change the state of unit mass from **solid to liquid (fusion)** and to change the state of unit mass from **liquid to gas (vaporisation).** |
| Melting pointboiling point | During change of state– **temperature remains constant** |
| ***For change of temperature:******EH = c m ∆T*** |
| ***For change of state:******EH = m l*** |
| **“specific”= per kilogram** |