



Eduqas Physics – Component 1

Module 8: Thermal Physics

This topic introduces the idea that the internal energy of a system is the sum of the potential and kinetic energy of its molecules. It considers the internal energy of an ideal gas and discusses energy transfer between a gas and its surroundings. The first law of thermodynamics is introduced in the form $\Delta U = Q - W$.

You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
The idea that the internal energy of a system is the sum of the potential and kinetic energies of its molecules				
Absolute zero being the temperature of a system when it has minimum internal energy				
The internal energy of an ideal monatomic gas being wholly kinetic, so it is given by $U = \frac{3}{2}nRT$				
The idea that heat enters or leaves a system through its boundary or container wall, according to whether the system's temperature is lower or higher than that of its surroundings, so heat is energy in transit and not contained within the system				
The idea that if no heat flows between systems in contact, then they are said to be in thermal equilibrium, and are at the same temperature				
The idea that energy can enter or leave a system by means of work, so work is also energy in transit				
The equation $W = p\Delta V$ can be used to calculate the work done by a gas under constant pressure				
The idea that even if p changes, W is given by the area under the $p - V$ graph				
The use of the first law of thermodynamics, in the form $\Delta U = Q - W$ and know how to interpret negative values of ΔU , Q , and W				
The idea that for a solid (or liquid), W is usually negligible, so $Q = \Delta U$				
$Q = mc\Delta\theta$, for a solid or liquid, and this is the defining equation for specific heat capacity, c				



You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
SPECIFIED PRACTICAL WORK				
Estimation of absolute zero by use of the gas laws				
Measurement of the specific heat capacity for a solid				

