## Cheatography

## Alvl P1: materials (ch8) Cheat Sheet by MostAncientDream via cheatography.com/168994/cs/42399/

Laws/Definitions/Equations			
Hookes Law	force and extension are directly proportional under constant physical conditions		
F	kx (where k is spring constant and x is extension)		
elastic potential	$1/2 Fx = 1/2kx^2$		
for a force-extension graph: area under graph > energy gradient > spring constant			
springs			
for two springs in		k	extension
series		halved	extends more
parallel		doubled	extends less
Young modulus			
every material has its own young modulus. Ym = stress / strain $\Delta L \propto 1/A \propto 1/d^2$ an object that has reached limit of proportionality will still return to its original state. only the force/extension will not be proportional an object that has reached the limit of elasticity will not return to its original shape ductile: large plastic region brittle: high energy, no plastic region ultimate tensile stress: maximum stress it can withstand before breaking = maximum load / original area Force/stress - extension/strain graphs: (f-x and s-s graphs) -the gradient is the energy (more g more e) - the loading curve for example, is a straight line up to the limit of proportionality. - after this point the unloading curve is underneath this - the enclosed area created is the energy lost as heat during the processes			

## By MostAncientDream

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