**Year 10 Physics Formulae for mid GCSE exams**

**You may need to recall the following formulae during the exam:**

weight = mass × gravitational field strength

***W* = *m g***

work done = force × distance along the line of action of the force

***W* = *F s***

force applied to a spring = spring constant × extension

***F* = *k e***

pressure = force normal to a surface area of that surface

***p* = *F/A***

distance travelled = speed × time

***s* = *v t***

acceleration = change in velocity/ time taken

***a* = Δ *v/t***

resultant force = mass × acceleration

***F* = *m a***

momentum = mass × velocity

***p* = *m v***

kinetic energy = 0.5 × mass × speed 2

***Ek* = ½ *m v*2**

gravitational potential energy = mass × gravitational field strength *g*× height

*Ep* = *m g h*

power = energy transferred/time

***P* = *E/t***

power = work done/time

***P* = *W/t***

efficiency = useful output energy transfer/total input energy transfer

efficiency = useful power output/total power input

wave speed = frequency × wavelength

***v* = *f* λ**

charge flow = current × time

***Q* = *I t***

potential difference = current × resistance

***V* = *I R***

power = potential difference × current

***P* = *V I***

power = current 2 × resistance

***P* = *I*2 *R***

energy transferred = power × time

***E* = *P t***

energy transferred = charge flow × potential difference

***E* = *Q V***

density = mass/volume

***ρ* = *m/V***

**The formulae below will be given in the exam**

force = change in momentum/time taken

***F* = *m* Δ*v/* Δ*t***

elastic potential energy = 0.5 × spring constant × extension 2

***Ee* = ½ *k e*2**

change in thermal energy = mass × specific heat capacity× temperature change

**Δ *E* = *m c* Δ *θ***

period = 1 frequency

**T= 1/f**

thermal energy for a change of state = mass × specific latent heat

***E* = *m L***

For gases at fixed temperature: pressure × volume = constant

***pV*= *constant***