Gateway Science B Equations

Science J640 **Unit B621 (covering module P1) - Foundation**
Unit B622 (covering module P2) - Foundation

$$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy input}}$$

wave speed = frequency x wavelength

power = voltage x current

energy (kilowatt hours) = power (kw) x time (h)

Science J640 **Unit B621 (covering module P1) - Higher**
Unit B622 (covering module P2) - Higher

$$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy input}}$$

energy = mass x specific heat capacity x temperature change

energy = mass x specific latent heat

fuel energy input = waste energy output + electrical energy output

power = voltage x current

energy supplied = power x time

energy (kilowatt hours) = power (kw) x time (h)

wave speed = frequency x wavelength

Gateway Additional Science B Equations

Additional Science J641 **Unit B623 (covering module P3) – Foundation**
Unit B624 (covering module P4) – Foundation

$$\text{speed} = \frac{\text{distance}}{\text{time taken}}$$

$$\text{acceleration} = \frac{\text{change in speed}}{\text{time taken}}$$

force = mass x acceleration

work done = force x distance

$$\text{power} = \frac{\text{work done}}{\text{time}}$$

$$\text{resistance} = \frac{\text{voltage}}{\text{current}}$$

Additional Science J641 **Unit B623 (covering module P3) – Higher**
Unit B624 (covering module P4) – Higher

$$\text{speed} = \frac{\text{distance}}{\text{time taken}}$$

$$\text{acceleration} = \frac{\text{change in speed}}{\text{time taken}}$$

force = mass x acceleration

work done = force x distance

$$\text{power} = \frac{\text{work done}}{\text{time}}$$

$$\text{kinetic energy} = \frac{1}{2}mv^2$$

potential energy = mgh

weight = mass x gravitational field strength

$$\text{resistance} = \frac{\text{voltage}}{\text{current}}$$

Gateway Physics B Equations

Physics B J645 Unit B651 (covering modules P1, P2, P3) – Foundation

$$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy input}}$$

wave speed = frequency x wavelength

power = voltage x current

energy (kilowatt hours) = power (kw) x time (h)

$$\text{speed} = \frac{\text{distance}}{\text{time taken}}$$

$$\text{acceleration} = \frac{\text{change in speed}}{\text{time taken}}$$

force = mass x acceleration

work done = force x distance

$$\text{power} = \frac{\text{work done}}{\text{time}}$$

Physics B J645 Unit B651 (covering modules P1, P2, P3) – Higher

$$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy input}}$$

energy = mass x specific heat capacity x temperature change

energy = mass x specific latent heat

fuel energy input = waste energy output + electrical energy output

power = voltage x current

energy supplied = power x time

energy (kilowatt hours) = power (kw) x time (h)

wave speed = frequency x wavelength

$$\text{speed} = \frac{\text{distance}}{\text{time taken}}$$

$$\text{acceleration} = \frac{\text{change in speed}}{\text{time taken}}$$

force = mass x acceleration

work done = force x distance

$$\text{power} = \frac{\text{work done}}{\text{time}}$$

$$\text{kinetic energy} = \frac{1}{2}mv^2$$

potential energy = mgh

weight = mass x gravitational field strength

Physics B J645 Unit B652 (covering modules P4, P5, P6) – Foundation

$$\text{resistance} = \frac{\text{voltage}}{\text{current}}$$

$$v = u + at$$

$$s = \frac{(u+v)}{2}t$$

$$\text{momentum} = \text{mass} \times \text{velocity}$$

$$\frac{V_p}{V_s} = \frac{N_p}{N_s}$$

Physics B J645 Unit B652 (covering modules P4, P5, P6) – Higher

$$\text{resistance} = \frac{\text{voltage}}{\text{current}}$$

$$v = u + at$$

$$s = \frac{(u+v)}{2}t$$

$$v^2 = u^2 + 2as$$

$$s = ut + \frac{1}{2}at^2$$

momentum = mass x velocity

$$\text{force} = \frac{\text{change in momentum}}{\text{time}}$$

$$\text{refractive index} = \frac{\text{speed of light in vacuum}}{\text{speed of light in medium}}$$

$$\text{refractive index} = n = \frac{\sin i}{\sin r}$$

i = incident angle r = reflected angle

$$\sin c = \frac{n_r}{n_i}$$

c = critical angle
n_r = refractive index of less dense material
n_i= refractive index of more dense material

$$\text{magnification} = \frac{\text{image size}}{\text{object size}}$$

$$Vout = Vin \times \frac{R_2}{(R_1 + R_2)}$$

$$\frac{V_p}{V_s} = \frac{N_p}{N_s}$$

$$V_p I_p = V_s I_s$$