Appendices

Appendix 1 – Formulae for relationships

The relationships listed below will **not** be provided for IGCSE candidates either in the form given or in re-arranged form.

(i)   the relationship between speed, distance and time:

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

(ii)   the relationship between force, mass and acceleration:

force = mass × acceleration

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

(iii)   the relationship between density, mass and volume:

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

(iv)   the relationship between force, distance and work:

work done = force × distance moved in direction of force

(v)   the energy relationships:

energy transferred = work done

kinetic energy = ½ × mass × speed^2

change in potential energy = mass × gravitational field strength × change in height

(vi)   the relationship between mass, weight and gravitational field strength:

weight = mass × gravitational field strength

(vii)   the relationship between an applied force, the area over which it acts and the resulting pressure:

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

(viii)   the relationship between the moment of a force and its distance from the pivot:

moment = force × perpendicular distance from pivot

(ix)   the relationships between charge, current, voltage, resistance and electrical power:

charge = current × time

voltage = current × resistance

electrical power = voltage × current

(x)   the relationship between speed, frequency and wavelength:

wave speed = frequency × wavelength

(xi)   the relationship between the voltage across the coils in a transformer and the number of turns in them:

$$\frac{\text{input (primary) voltage}}{\text{output (seconday) voltage}} = \frac{\text{primary turns}}{\text{secondary turns}}$$

(xii)   The relationship between refractive index, angle of incidence and angle of refraction:

$$n = \frac{\sin i}{\sin r}$$

(xiii)   The relationship between refractive index and critical angle:

$$\sin c = \frac{1}{n}$$

(xiv)   The relationship for pressure difference

pressure difference = height × density × g

$$p = h\rho g$$