Appendix 6 – Formulae for relationships

The GCSE Criteria for science issued by QCA specify that certain relationships and formulae should not be provided to students in examinations. This is mandatory for all awarding bodies.

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

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

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

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

$$force = mass \times acceleration$$

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

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

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

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

$$work\ done = force \times distance\ moved\ in\ direction\ of\ force$$

(v) the energy relationships:

$$energy\ transferred = work\ done$$

$$kinetic\ energy = \tfrac{1}{2} \times mass \times speed^2$$

$$change\ in\ potential\ energy = mass \times gravitational\ field\ strength \times change\ in\ height$$

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

$$weight = mass \times gravitational\ field\ strength$$

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

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

(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:

$$\frac{\textit{voltage across secondary}}{\textit{voltage across primary}} = \frac{\textit{number of turns in secondary}}{\textit{number of turns in primary}}$$