

## IGCSE Physics (9-1) Specification 4(c)

### (c) Work and power

#### Students should:

**4.11** know and use the relationship between work done, force and distance moved in the direction of the force:

work done = force  $\times$  distance moved

$$W = F \times d$$

**4.12** know that work done is equal to energy transferred

**4.13** know and use the relationship between gravitational potential energy, mass, gravitational field strength and height:

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

$$GPE = m \times g \times h$$

**4.14** know and use the relationship:

kinetic energy =  $\frac{1}{2} \times$  mass  $\times$  speed<sup>2</sup>

$$KE = \frac{1}{2} \times m \times v^2$$

**4.15** understand how conservation of energy produces a link between gravitational potential energy, kinetic energy and work

**4.16** describe power as the rate of transfer of energy or the rate of doing work

**4.17** use the relationship between power, work done (energy transferred) and time taken:

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

$$P = \frac{W}{t}$$