SCIENCE AS 90940 V3
Demonstrate understanding of aspects of mechanics
Level 1, 4 Credits

This achievement standard involves demonstrating understanding of aspects of mechanics and may include using methods when solving related problems.

Speed & Motion

- ❑ Measurement of distance
  - Units of measurement
- ❑ Calculating speed; the relationship $v = \frac{\Delta d}{\Delta t}$
  - Units for speed
- ❑ Interpretation of distance time graphs
  - Calculating average speed; the relationship $a = \frac{\Delta v}{\Delta t}$
- ❑ Interpretation of speed time graphs
  - Calculating acceleration
  - Calculating distance travelled
- ❑ Calculating average acceleration and deceleration in the context of everyday experiences such as journeys, sport, getting going

Mass, Weight & Force

- ❑ Mass
  - Unit of mass – kg
  - Mass is the amount of material (matter) in an object
- ❑ Weight
  - Unit of Weight – N; $F_W = mg$
  - Turning mass into weight (on Earth); weight as the gravitational force acting on an object
- ❑ Acceleration due to gravity
- ❑ Forces
  - Unit of force
  - Balanced and unbalanced forces, in the context of everyday experiences such as being stationary, moving at constant speed, accelerating.
- ❑ The relationship $F_{net} = ma$.

Force & Pressure

- ❑ Force and pressure in the context of everyday experiences.
- ❑ Units for pressure, Pa and N m^{-2}.
- ❑ The relationship $P = \frac{F}{A}$.

Work, power & energy

- ❑ Work and power and the relationships $W = F\,d$ & $P = \frac{W}{t}$.
- ❑ Gravitational potential energy & the relationship $\Delta E_P = mg\Delta h$
- ❑ Kinetic energy & the relationship $E_K = \frac{1}{2}mv^2$
- ❑ Conservation of mechanical energy in free fall situations in the context of everyday experiences such as sports performance, dropping things, tossing balls.