

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 – g
 - 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 $F_{\text{net}} = ma$.

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 $W = Fd$ & $P = \frac{W}{t}$.
- 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.