Mechanics

Achievement Standard: Science 1.1 Assessment: External Credits: 4

* Draw and interpret distance-time graphs
* Calculate average speed using v = d/t
* Determine speed from a distance-time graph
* Draw and interpret speed-time graphs
* Calculate average acceleration using a = v/t
* Determine acceleration from a distance-time graph
* Name some common forces
* Apply Newton’s First Law of Motion: when the forces on an object are *balanced*, the object will remain in the same state of motion
* Draw free-body force diagrams
* Apply Newton’s Second Law of Motion: when the forces on an object are *unbalanced* the object will *accelerate*
* Calculate force and acceleration using F = ma
* Distinguish between mass and weight
* Calculate weight force using FW = mg
* Define pressure as the force applied per unit area
* Calculate pressure using P = F/A
* Calculate kinetic energy using EK = ½ mv2
* Calculate gravitational potential energy using EP = mgh
* Define work as the transfer of mechanical energy
* Calculate working using W = Fd
* Explain that when an object is in free fall, gravitational potential energy is converted to kinetic energy
* Define power as the rate of energy transfer
* Calculate power using P = W/t

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