



Gleniffer High School

N5 Physics

Key Definitions

Name: _____

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Key Definitions Electricity

Term	Definition
alternating current	The direction of the flow of charge repeatedly reverses
capacitor	An electronic component which stores electrical charge
current	The flow of charge per unit time measured in amperes
direct current	The direction of flow of charge is in one direction
LED	An electronic component which allows current to flow in one direction only; changes electrical energy into light energy
LDR	An electrical component that changes resistance as the light level changes (Light Up Resistance Down)
parallel circuit	The supply current splits up when it reaches a branch in the circuit AND The voltage across each branch equals the supply voltage
potential difference	A measure of how much energy is transferred to the charges in a circuit
power	The energy transferred per unit time
resistance	A measure of the opposition to the movement of charge in a circuit
series circuit	The same current passes through each component AND The supply voltage divides across each component
thermistor	An electrical component that changes resistance as the temperature level changes (Temperature Up Resistance Down)

$$Q = It$$

$$V = IR$$

$$R_T = R_1 + R_2 + \dots$$

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$$

$$V_2 = \left(\frac{R_2}{R_1 + R_2} \right) V_s$$

$$\frac{V_1}{V_2} = \frac{R_1}{R_2}$$

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

$$P = IV$$

$$P = I^2 R$$

$$P = \frac{V^2}{R}$$

Key Definitions

Dynamics and Space

Term	Definition
acceleration	The rate of change of velocity; an acceleration of 3ms^{-2} means the velocity increases by 3ms^{-1} every second
cosmic rays	High energy particles that arrive at Earth from space
deceleration	The rate of change of velocity; an deceleration of 3ms^{-2} means the velocity decreases by 3ms^{-1} every second
displacement	The direct distance of a finishing point from a starting point which is quoted with its associated direction; Pythagoras and SOH CAH TOA calculations can be used to calculate the displacement
free fall	When an object is falling freely due to the force of gravity
friction	A force that acts in the opposite direction to the direction of motion of an object
geostationary orbit	An orbit above the Equator in which a satellite takes 24 hours to orbit the Earth
gravitational field strength (g.f.s.)	The weight per unit mass
light year	The distance travelled by light in one year
Newton	One Newton is equal to the force which causes an acceleration of 1ms^{-2} when applied to 1kg of mass
projectile	An object that has been launched into the air
resultant force	A single force that has the same effect as adding two (or more) forces that are acting on an object
satellite path	A projectile path produced by a constant horizontal speed acting at the same time as a constant vertical acceleration caused by g.f.s.
scalar	A physical quantity that has magnitude only
speed	The distance travelled by an object per unit time
terminal velocity	A constant velocity created when the driving force is balanced by the frictional force (the forces acting on it are balanced)
thrust	Name given to a force produced by an engine
vector	A physical quantity that has magnitude and direction
velocity	The displacement of an object per unit time
weight	The gravitational force acting on an object
work done	The value of energy required to move an object through a distance

$$E_p = mgh$$

$$E_k = \frac{1}{2}mv^2$$

$$s = vt$$

$$d = \bar{v}t$$

$$a = \frac{v-u}{t}$$

$$W = mg$$

$$F = ma$$

$$E_w = Fd$$

Key Definitions

Properties of Matter

Term	Definition
absolute zero	The temperature at which particles no longer have kinetic motion; the value of this temperature is 0 Kelvin or -273°C
Boyle's Law	The pressure of a gas is inversely proportional to its volume for a constant mass and temperature
Charles Law	The volume of a gas is directly proportional to its temperature in Kelvin for a constant mass and pressure
conservation of energy	Energy is never destroyed but is always transformed into other types of energy; the total energy before a transformation is equal to the total energy after the transformation
Kinetic Theory	A model which explains the behaviour of particles of a gas in terms of volume, pressure and temperature
latent heat of fusion	The energy required to change the state of substance from a solid to a liquid
latent heat of vaporisation	The energy required to change the state of substance from a liquid to a gas
power	The energy transferred per unit time
pressure	The force per unit area
Pressure Law	The pressure of a gas is directly proportional to its temperature in Kelvin for a constant mass and volume
specific heat capacity	The value of heat energy required to raise the temperature of 1kg of a substance by 1°C
temperature	A measure of the mean kinetic energy of the particles of a substance

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

$$E_h = ml$$

$$E_h = cm\Delta T$$

$$p = \frac{F}{A}$$

$$\frac{pV}{T} = \text{constant}$$

$$p_1V_1 = p_2V_2$$

$$\frac{p_1}{T_1} = \frac{p_2}{T_2}$$

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

Key Definitions

Waves and Radiation

Term	Definition
absorbed dose	The energy per kilogram (of human tissue) received from exposure to nuclear radiation
activity	The number of disintegrations per unit time (the number of atoms in a radioactive substance that disintegrate per unit time)
alpha radiation	A slow moving nuclear radiation that has a positive charge; can be absorbed by paper; travels a few centimetres in air
amplitude	The peak value of a wave shape; it is measured from the central line to the crest of the wave
angle of incidence	The angle that a ray of light makes with the normal before it passes into a new material
angle of refraction	The angle that a ray of light makes with the normal after it passes into a new material
atom	A basic unit of matter containing protons and neutrons in a central nucleus; electrons orbit the central nucleus
background radiation	Radiation that is present in the atmosphere; can be caused by natural materials (granite rocks) or man-made materials (hospital waste)
beta radiation	A fast moving nuclear radiation that has a negative charge; can be absorbed by thin aluminium; travels tens of centimetres in air
chain reaction	Process that normally happens in a nuclear reactor; the splitting of an uranium nucleus by a neutron which releases neutrons and causes further nuclei to split; release large values of energy
concave	The shape of a lens that causes light rays to diverge
convex	The shape of a lens that causes light rays to converge
crest	The topmost part of a wave shape
diffraction	The property of a wave in which the wave is "bent" around an obstacle or through a gap
EM spectrum	A family of transverse waves which travel at $3 \times 10^8 \text{ms}^{-1}$; usually arranged in order of wavelength from gamma rays (short wavelength) to radio waves (long wavelength)
equivalent dose	A measure of the effect that exposure to radiation has on humans
fission	The process of splitting the nucleus of an atom into smaller nuclei and releasing energy
frequency	The number of waves which pass a point in a second
fusion	The process of joining two smaller nuclei together to produce a larger nuclei and releasing energy
gamma radiation	An EM wave that is also a nuclear radiation; has no charge and is absorbed by thick lead or concrete; travels many kilometres in air
GM tube	A radiation detector, usually connected to a counter
half-life	The time taken for the activity of a radioactive substance to reduce to half its original value

Key Definitions Waves and Radiation

Term	Definition
ionisation	The addition or removal of electrons from an atom, to form an ion; this can be carried out by nuclear radiation
longitudinal waves	Waves in which the direction of travel of the energy is along the same direction as the oscillation of the particles
normal	A line drawn at right angles to an edge; used when drawing diagrams to represent the path of light rays
period	The time taken for one complete wave to be produced
radiation weighting factor	A measure of the harmful effect on human tissue of nuclear radiation
refraction	A property of waves in which the waves change speed when passing from one material to another material; this can also result in a change of direction of the wave
tracer	A radioactive material injected into a human to help with the diagnosis of health problems
transverse wave	Waves in which the direction of travel of the energy is at right angles to the oscillation of the particles
trough	The lowest part of a wave shape
wavelength	The distance from one position on a wave to the corresponding position on the next wave (e.g. crest to crest; trough to trough)

Equations Waves and Radiation

$$v = f\lambda$$

$$T = \frac{1}{f}$$

$$A = \frac{N}{t}$$

$$D = \frac{E}{m}$$

$$H = Dw_R$$

$$\dot{H} = \frac{H}{t}$$