National 5 Physics
Radiation
Key Definitions

Word/Term	Definition
Atom	An overall neutral particle consisting of a nucleus (protons and neutrons) and orbiting electrons. All matter is made up of atoms.
Nucleus	The small, dense region containing protons and neutrons at the centre of an atom.
Proton	A positively charged particle in the nucleus of an atom.
Neutron	A particle with neutral charge that exists in the nucleus of an atom.
Electron	A negatively charged particle that orbits the nucleus of an atom.
Radioactive Decay	When unstable nuclei emit nuclear radiation in the form of an alpha particle, beta particle or gamma ray in an attempt to become more stable.
Alpha Particle	A particle made up of 2 protons and 2 neutrons. It is also the nucleus of a helium atom.
Beta Particle	A fast moving electron.
Gamma Ray	An electromagnetic wave of very high frequency and energy.
Ionisation	The addition or removal of an electron from a neutral atom.
Geiger-Muller Tube	A radiation detector that uses the ionisation of gas in the tube to count the number of times radiation hits it.
Scintillation Counter	A radiation detector that counts the flashes of light produced when radiation hits the scintillating material.
Film Badge	A radiation detector often worn by people who work with radioactive materials to monitor the radiation dose that they are exposed to. It uses different filters which blacken or 'fog' when radiation hits them.
Activity	The number of nuclear decays (or disintegrations) per second.
Background Radiation	Radiation that is all around us and is caused by both natural and artificial sources, e.g. radon gas.
Absorbed Dose	The energy absorbed by a material per unit mass.
Shielding	The act of placing a material between a person and a radioactive source to absorb radiation.

Word/Term	Definition
Radiation Weighting Factor	An indicator of the relative biological effect of radiation on a material.
Equivalent Dose	The absorbed dose multiplied by the radiation weighting factor.
Equivalent Dose Rate	The equivalent dose per unit time.
Half-life	The time taken for the activity of a radioactive source to decrease to half its
Nuclear Fission	The process in which an unstable, heavy atomic nucleus splits into two or more lighter nuclei (called fission fragments), with energy being released.
Chain Reaction	When neutrons released in nuclear fission reactions go on to hit other nuclei, causing further fission reactions, and the cycle repeats. The process may be controlled (nuclear reactors) or uncontrolled (nuclear bomb).
Nuclear Fusion	The process of small nuclei joining together to form a larger nucleus, with energy being released.
Plasma Containment	The use of powerful magnetic fields to prevent hydrogen plasma from physically touching any parts of a nuclear reactor.