AQA GCSE Physics Student Checklist

P7 Radioactivity

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P7.1 Atoms and radiation	I can name the three types of nuclear radiation.	☐	I can describe some safety precautions used when dealing with radioactive materials.	☐	I can describe in detail the decay of an unstable nucleus.	☐
	I can name the three sub-atomic particles found in an atom (proton, neutron, and electron).	☐	I can describe how a Geiger counter can be used to detect radiation.	☐	I can explain the similarities and differences between nuclear radiation and visible light.	☐
	I can identify some sources of background radiation.	☐	I can identify natural and man-made sources of background radiation.	☐	I can describe the relative penetrating powers of the three types of nuclear radiation.	☐
P7.2 The discovery of the nucleus	I can identify the Rutherford (nuclear) model of an atom.	☐	I can describe he plum pudding model of the atom.	☐	I can compare the plum pudding model, Rutherford model, and Bohr model of the atom in terms of the evidence for	☐
	I can identify the locations of protons, neutrons, and electrons in the nuclear model.	☐	I can describe the evidence provided by the Rutherford scattering experiment.	☐	I can explain how Rutherford and Marsden's experiment caused a rejection of the plum pudding model.	☐
	I can state that electrons can move between fixed energy levels within an atom.	☐	I can describe the properties of protons, neutrons, and electrons.	☐	I can describe how the initial evidence for the nuclear model was processed and how the model came to be	☐
P7.3 Changes in the nucleus	I can identify the mass and atomic number by using nuclear notation.	☐	I can calculate the number of neutrons in an isotope by using nuclear notation.	☐	I can explain why particles are ejected from the nucleus during nuclear decay.	☐
	I can identify the type of decay taking place from a nuclear equation.	☐	I can describe the differences between isotopes.	☐	I can describe the changes in the nucleus that occur during nuclear decay.	☐
	I can describe how isotopes are atoms of the same element with different mass numbers.	☐	I can complete decay equations for alpha and beta decay.	☐	I can write full decay equations for example nuclear decays.	☐

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P7.4 More about alpha, beta, and gamma radiation	I can rank the three types of nuclear radiation in order of their penetrating power.	☐	I can describe how the penetrating powers of radiation can be measured.	☐	I can describe in detail how the thickness of a material being manufactured can be monitored by	☐
	I can rank the three types of nuclear radiation in order of their range through air.	☐	I can describe the path of radiation types through a magnetic field.	☐	I can compare the ionisation caused by different types of nuclear radiation.	☐
	I can state that all three types of nuclear radiation are ionising.	☐	I can describe the process of ionisation.	☐	I can evaluate in some detail the risks caused by alpha radiation inside and outside the human body.	☐
P7.5 Activity and half-life	I can state that the activity of a radioactive sample will fall over time.	☐	I can find the ratio of a sample remaining after a given number of half-lives.	☐	I can compare a physical model of decay with the decay of nuclei, noting the limitations of the model.	☐
	I can define half-life in simple terms such as 'the time it takes for half of the material to decay'.	☐	I can state that all atoms of a particular isotope have an identical chance to decay in a fixed time.	☐	I can outline how the age of organic material can be determined by using radioactive dating.	☐
	I can find the half-life of a substance from a graph of count rate (or nuclei remaining) against time with support.	☐	I can plot a graph showing the decay of a sample and use it to determine half-life.	☐	I can calculate the changes in count rate or nuclei remaining by using an exponential decay function.	☐