

PHYSICS

Learning objectives I can:	I can do this very well	I can do this quite well	I need to do more work on this
5.1 Describe the structure of nuclei of isotopes using the terms atomic (proton) number and mass (nucleon) number and using symbols in the format $^{14}_6\text{C}$			
HSW 11 Present information using scientific conventions and symbols			
5.2 Explain how atoms may gain or lose electrons to form ions			
5.3 Recall that alpha and beta particles and gamma rays are ionising radiations emitted from unstable nuclei in a random process			
5.4 Recall that an alpha particle is equivalent to a helium nucleus, a beta particle is an electron emitted from the nucleus and a gamma ray is electromagnetic radiation			
5.5 Compare alpha, beta and gamma radiations in terms of their abilities to penetrate and ionise			
HSW 3 Describe how phenomena are explained using scientific theories and ideas			
5.6 Demonstrate an understanding that nuclear reactions can be a source of energy, including fission, fusion and radioactive decay			
5.7 Explain how the fission of U-235 produces two daughter nuclei and two or more neutrons, accompanied by a release of energy			
5.8 Explain the principle of a controlled nuclear chain reaction			
5.13 Explain the difference between nuclear fusion and nuclear fission			
HSW 10 Use qualitative and quantitative approaches when presenting scientific ideas and arguments, and recording observations			
5.9 Explain how the chain reaction is controlled in a nuclear reactor including the action of moderators and control rods			
5.10 Describe how thermal (heat) energy from the chain reaction is converted into electrical energy in a nuclear power station			
5.11 Recall that the products of nuclear fission are radioactive			
HSW 13 Understand how and why decisions about science and technology are made, including those that raise ethical issues, and about the social, economic and environmental effects of such decisions			
5.12 Describe nuclear fusion as the creation of larger nuclei from smaller nuclei, accompanied by a release of energy and recognise fusion as the energy source for stars			
5.13 Explain the difference between nuclear fusion and nuclear fission			
H 5.14 Explain why nuclear fusion does not happen at low temperatures and pressures, due to electrostatic repulsion of protons			

P2 Topic 5 Revision tracker

H 5.15 Relate the conditions for fusion to the difficulty of making a practical and economic form of power station			
5.16 Demonstrate an understanding that new scientific theories, such as 'cold fusion', are not accepted until they have been validated by the scientific community			
HSW 14 Describe how scientists share data and discuss new ideas, and how over time this process helps to reduce uncertainties and revise scientific theories			