P2 Topic XXXX Radiation

Atomic structure	
1. Name 2 types of particle in the nucleus of an atom	Proton, neutron
2. Name the type of particle which goes into shells in the atom	Electrons
3. What is most of the atom made of?	Empty space
4. State the mass and charge of a proton	Mass: 1 Charge: +1
5. State the mass and charge of an electron	Mass: 0 Charge: -1
6. State the mass and charge of a neutron	Mass: 1 Charge: 0
7. In an atom, the number of protons is equal to the number of _____	Electrons
8. The overall charge on an atom is	0
9. What does an atom become if it gains or loses electrons?	Ion
10. What do we call atoms of the same element with different numbers of neutrons	Isotopes
11. What is the atomic number?	Number of protons (in an atom)
12. What is the mass number	Total number of protons and neutrons (in an atom)
Nuclear radiation	
13. What do we call substances that give out radiation from the nuclei of their atoms all the time?	Radioactive
14. What do we call radiation that is always present around us?	Background radiation
15. List 4 sources of background radiation	Rocks, cosmic rays, nuclear weapons, nuclear accidents
16. Name 3 types of nuclear radiation	Alpha, beta, gamma
17. What is an alpha particle?	2 protons and 2 neutrons/ Helium nucleus

18. Which nucleus is an alpha particle the same as?	Helium
19. What is a beta particle?	Fast moving electron
20. What is gamma radiation	Electromagnetic wave (remember from Year 10?!)
21. What is meant by 'ionising power'?	How easily a type of radiation can make an atom into an ion
22. List the 3 types of nuclear radiation in order of their ionising power, starting with the most ionising	Alpha, beta, gamma
23. List the 3 types of nuclear radiation in order of their penetrating power, starting with the most penetrating	Gamma, beta, alpha
24. List the 3 types of nuclear radiation in order of their range in air, starting with the shortest range	Alpha, beta, gamma
25. Which types of nuclear radiation are deflected by an electric field?	Alpha and beta
26. Which types of nuclear radiation are deflected by magnetic fields?	Alpha and beta
27. Which type of nuclear radiation is deflected the least?	Alpha
28. What is different about the deflections of alpha and beta particles?	Deflected in opposite directions
29. What do we call the time it takes for the number of nuclei of the isotope in a sample to halve?	Half life
30. State a use of alpha radiation	Smoke detectors
31. State a use of beta radiation	Testing the thickness of paper or thin sheets of metal
32. State 2 uses of gamma radiation	Tracers (to see where a chemical is in the body or to check for leaking/blocked pipes) Treat cancer (radiotherapy)
Nuclear fission and nuclear fusion	
33. Name 2 substances used in nuclear reactors	Uranium-235 and plutonium-239
34. What is nuclear fission?	Splitting of the nucleus

35. What has to happen to a nucleus for fission to occur?	It must absorb a neutron
36. What does the nucleus split into during nuclear fission and what is released?	2 nuclei and 2 or 3 neutrons and energy is released
37. What is it called when nuclear fission releases neutrons which then cause more nuclear fission?	Chain reaction
38. State a use of nuclear fission	Nuclear power stations (remember Year 10?!)
39. What is nuclear fusion?	2 nuclei joining together
40. Where does nuclear fusion happen?	In stars
41. What are stars formed from?	Dust and gas
42. What pulls dust and gas together to make a star?	Gravity
43. What do we call smaller masses which are attracted to, and orbit, a star?	Planets
44. What are the forces in a star balanced?	Main sequence
45. List the stages in the life cycle of a star the same size as the Sun	Protostar Main sequence Red Giant White dwarf Black dwarf
46. List the stages in the life cycle of a star much bigger than the Sun	Protostar Main sequence Red Super Giant Supernova Neutron Star or black hole
47. What produces all the elements?	Nuclear fusion in stars
48. How are elements spread across the universe	Explosion/ supernova
49. When are elements up to iron made?	Main sequence star
50. When are elements heaving than iron formed?	Supernova