

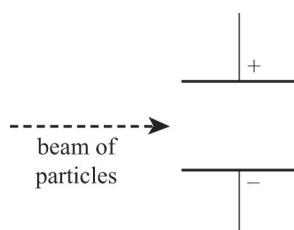
# Worksheet 2.1

## Sub-atomic particles

- 1 The structure of the atom can be described using certain key terms.  
Use the terms in the middle column of the table below to write two short paragraphs on the structure of the atom and its importance.

Paragraph	Terms to use	Marks allocated
<b>a</b> The three particles and their properties	electron neutron proton relative charge relative mass sub-atomic particles no charge	[6]
<b>b</b> The arrangement of the particles in the atom	electrons energy levels protons neutrons nucleons nucleus	[3]

- 2 Describe the sub-atomic structure of an atom of  $^{108}_{48}\text{Cd}$ .  
You do not need to describe the exact arrangement of the electrons. [8]
- 3 Separate beams of electrons, neutrons and protons are fired into an electric field produced by two charged plates as shown in the diagram.



- a** Which of these three types of particle will be deflected the most? [1]  
**b** Explain your answer to part **a**. [2]  
**c** In which direction, if any, will each of these types of particles be deflected? [2]  
**d** What is the importance of proton number in the structure of the Periodic Table? [1]
- 4 Isotopes can be made by firing streams of neutrons and protons at the nucleus of specific atoms. The neutrons or protons collide with the nucleus of the target atom and cause it to break up. Explain why neutrons are more effective than protons in breaking up the nucleus. [2]