

## **GCSE Physics A (Gateway)**

**J249/01 Physics A P1-P4 and P9 (Foundation Tier)**

### **Question Set 2**

1 Atomic models have changed over time.

**Old atomic model** – Atoms are a positive mass with negative electrons fixed in it.

**Current atomic model** – Atoms are made from protons, neutrons and electrons.

Protons and neutrons are in a central nucleus surrounded by a cloud of electrons.

(a) (i) Write down **two** differences between these models. [2]

1. Current atomic model contains neutrons
2. The current model has a cloud of electrons whereas on the old model, the electrons are fixed in it.

(ii) Why did the atomic model change? [2]

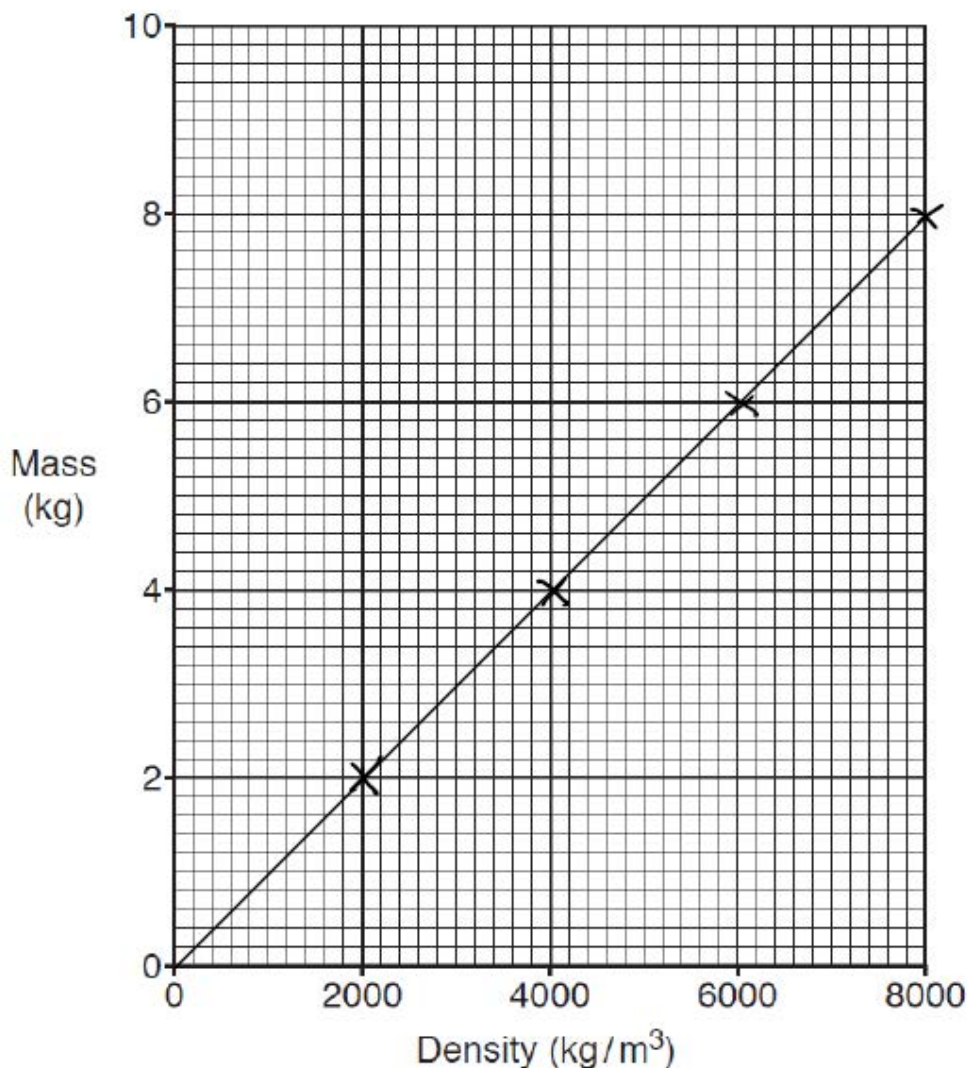
Because after the Rutherford scattering experiment some of the positive alpha particles bounced back, therefore there must be a heavy positive nucleus however as some of them passed through the foil there must be a large empty space where electrons exist.

(b) A student has data on four blocks of different materials.

Each block has the **same** volume.

Block	Mass (kg)	Density (kg/m <sup>3</sup> )
A	2	2000
B	4	4000
C	6	6000
D	8	8000

(i) Plot this data onto the graph and draw a line of best fit.



(ii) Describe the pattern shown on the graph.

[2]

It shows that density and mass are directly proportional to each other, as density increases so does mass by the same amount (both doubles).

## Total Marks for Question Set 2: 8

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