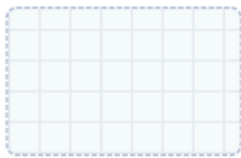
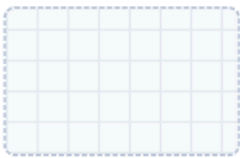
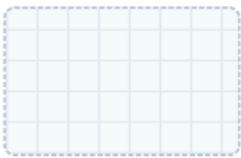
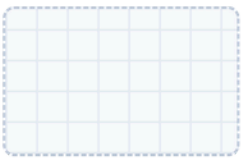
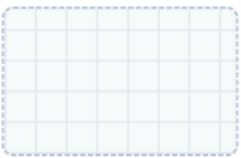


Development of the Model of the Atom

Every time **new evidence** appeared, the model of the atom had to **change**. Draw each model and note what it said.

The timeline		draw each model, then list what it said		
Dalton early 1800s draw the model  what it said _____ _____ _____	Thomson 1897 draw the model  what it said _____ _____ _____	Rutherford 1911 draw the model  what it said _____ _____ _____	Bohr 1913 draw the model  what it said _____ _____ _____	Chadwick 1932 draw the model  what it said _____ _____ _____

Question 1

[4 marks]

Describe the **differences** between the **plum pudding model** and the **nuclear model** of the atom.

(4)

tick each key word as you use it — some words are needed more than once

☐ negatively ☐ electrons ☐ uniform ☐ positive ☐ nucleus

Question 2

[4 marks]

In the **alpha particle scattering experiment**, a few alpha particles bounced straight back off the gold foil. Explain why this result meant the plum pudding model **had to be replaced**.

(4)

tick each key word as you use it

☐ evidence ☐ data ☐ agree ☐ disagree ☐ keep the model ☐ change the model

Alpha Particle Scattering

Evidence supports a model

EVIDENCE

what the scientists actually **saw** happen

MODEL

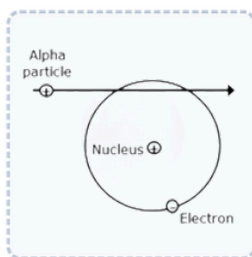
what that observation **tells us** the atom must be like

Rutherford's team fired alpha particles at very thin **gold foil**. They saw **three** different things happen — and each one forced a change to the model of the atom. A model is only kept while it _____ the evidence.

Three observations, three conclusions

stick your diagram in each box, then complete both parts

Observation 1

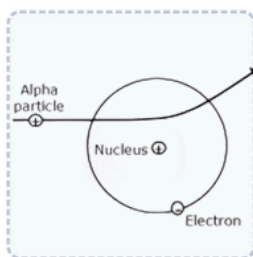


EVIDENCE — what did they see?

MODEL — so the atom must be...

- ☐ most ☐ straight through
☐ empty space

Observation 2

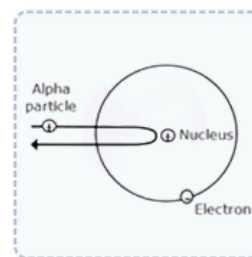


EVIDENCE — what did they see?

MODEL — so the atom must be...

- ☐ some ☐ deflected ☐ positive

Observation 3



EVIDENCE — what did they see?

MODEL — so the atom must be...

- ☐ very few ☐ bounced back ☐ mass
☐ concentrated

Quick check

[2 marks]

1 What did **most** of the alpha particles do?

- ☐ A passed straight through ☐ C bounced straight back
☐ B were deflected ☐ D were absorbed

(1) 2 Which conclusion came from a few particles **bouncing back**?

- ☐ A the atom is mostly empty ☐ C the mass is concentrated
☐ B electrons orbit in shells ☐ D the nucleus has neutrons

(1)

Exam-style question

[5 marks]

Alpha particles were fired at a very thin sheet of gold foil.

Explain how the **results** of this experiment led scientists to the **nuclear model** of the atom. In your answer, **link each observation to the conclusion it supports**.

(5)