

Combined science - Physics

Key stage 4 - Atomic Structure

Developing Ideas about the Atom

Mr van Hoek



Independent task

Use the words below to complete the sentences

Dalton electron indivisible JJ Thompson positive removed

In 1803 the scientist _____ proposed that atoms were solid spheres of different sizes and were _____.

In 1904, following the discovery of the _____, another scientist _____ suggested the atom was like a Plum Pudding - a _____ blob with negative _____ that could be _____ or added.



Spot the mistakes

In 1904, Dalton proposed the Cherry Pudding model of the atom.

He said that negatively charged electrons must be scattered over a large positive proton.

This would make the atom neutral overall.

Please re-write it out and correct the mistakes.



Match up these findings to the conclusion

Most alpha particles went straight through

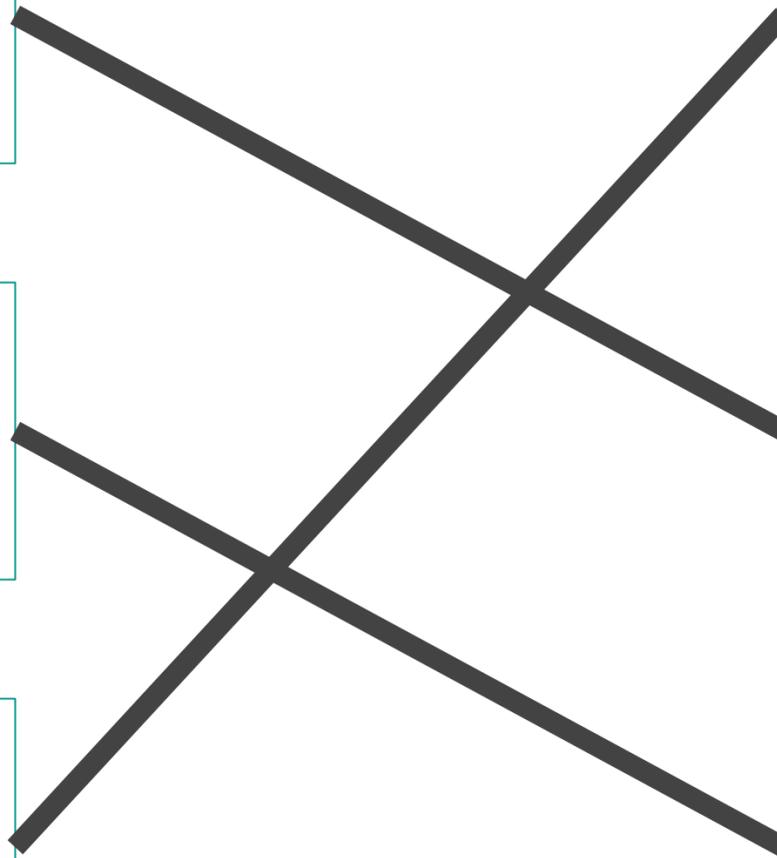
Some alpha particles changed direction

A few alpha particles bounced straight back

The centre of the atom is very dense and small

Atoms are mostly empty space

The centre of an atom is positively charged



Alpha scattering experiment

Independent task

1. What charge do alpha particles have?
2. What charge does a gold atom have?
3. When alpha particles were fired at the gold foil, what did the scientists expect to occur?
4. Some particles were deflected - what did this prove?
5. Some particles passed straight through - what did this prove?
6. Some particles bounced back - what did this prove?



Development of the atom - part 1 of 2

1. Describe the plum pudding model.

A ball of _____ with _____.

2. Give 2 main changes to the atomic model the alpha scattering experiment resulted in.

Mass : _____ and

charge : _____.

3. Who explained how electrons orbit the nucleus? N_____ B_____

4. Who discovered the existence of the neutron? J_____ C_____



Development of the atom - part 2 of 2

5. Which particles are found in the nucleus? P_____ & n_____
6. Where are electrons found?
e_____ l_____
7. Which particle did James Chadwick discover? N_____
8. Describe and explain the pathways seen in the alpha scattering experiment as shown in the diagram.

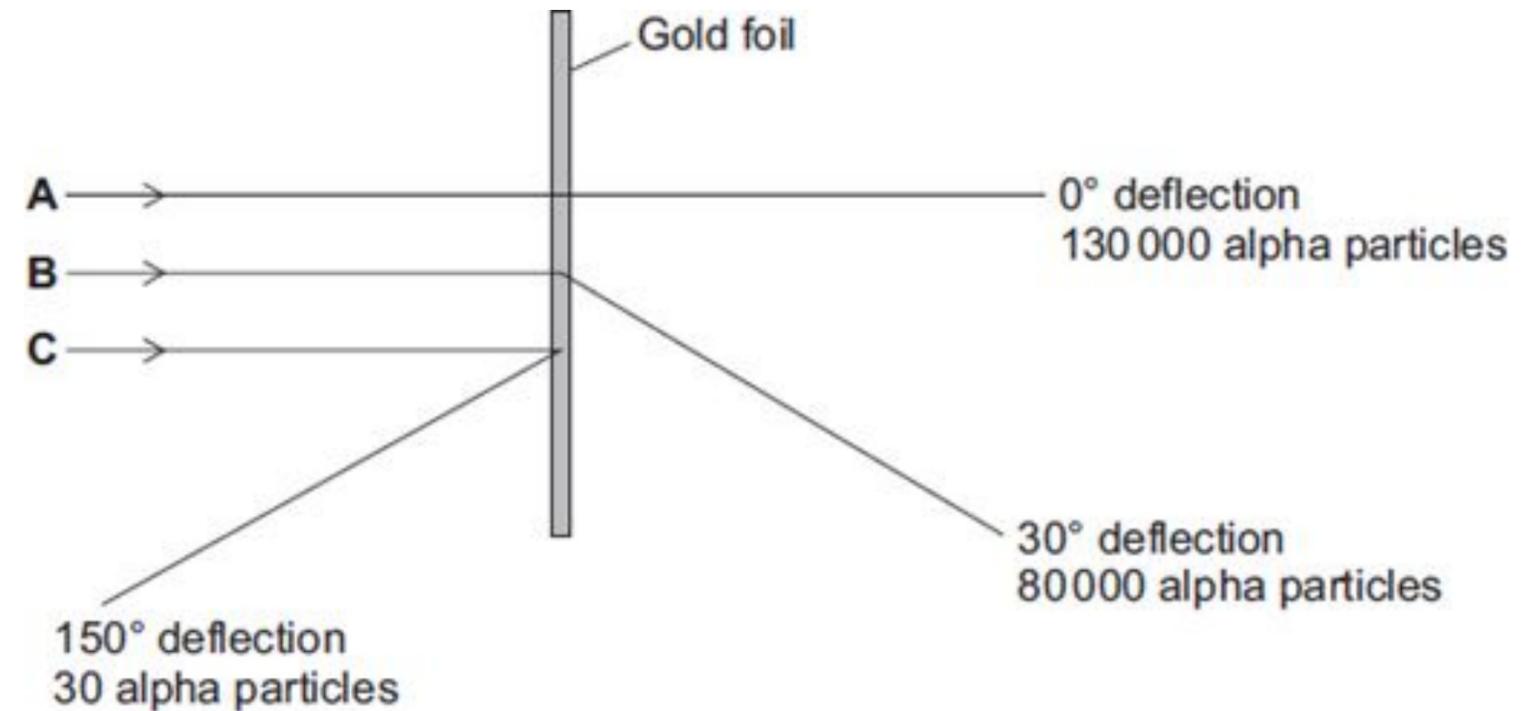


Image credit: A question from Exampro

