

Name _____ Block _____

Lab 3 Simulation of Rutherford's Gold Foil Experiment

Objective: to recreate Rutherford's ground-breaking research on your lab bench

Materials: lab bench, 3 large magnets, small magnet, tape

Procedure:

1. Place the three large magnets 30 cm apart on the lab bench. Tape them to the bench using masking tape.
2. Stand 1.5 m away and slide the small magnet across the tabletop towards the weighted magnets.
3. On a separate sheet of paper, sketch the path of the free-sliding magnet.
4. Repeat step two 50 times.

Questions for lab write-up (in complete sentences!)

1. What do the stationary magnets represent in this simulation?
2. What does the free sliding magnet represent?
3. How many trials did the magnet pass straight through without deflection?
4. Calculate the percentage of shots that were deflected.
5. Calculate the percentage of shots that were not deflected
6. Calculate the percentage of shots that were deflected straight back toward you.
7. What can you conclude about the number of head-on collisions from your answer to question 6?
8. What did scientists believe an atom looked like before Rutherford's experiment?
9. Describe Rutherford's experiment. What were his results?
10. Summarize Rutherford's conclusions about the structure of the atom after he analyzed his results.
11. Write a paragraph on whether or not you think this simulation is an accurate depiction of Rutherford's experiment.
12. Draw a diagram of what Rutherford's atom would look like.