6.6 Theories of the Atom

Use your textbook (pp 228 – 233) to answer the questions below.

1. In his experiments, J.J. Thomson discovered a tiny stream of particles.
   a) Why did he conclude that these particles were negatively charged?

   The electrons were attracted to the positive end of a circuit and since opposite charges attract, he concluded they are negative.

   b) What were these particles eventually called? ___***electrons***___

   c) According to Thomson, where are these particles located in the atom?

   evenly distributed throughout the atom

   d) Why did Thomson conclude that atoms also contain a positive charge?

   to balance the negative electrons so the atom remains neutral

2. Rutherford's experiment consisted of beaming positively charged particles at thin gold foil.
   a) What did he expect to happen to the particles?

   he expected the particles would travel straight through without deflection

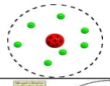
   b) Why did the results surprise him?

   some particles were deflected, which would be impossible if atoms contain only light electrons

   c) From his results, which particles were proposed as part of the atom? __***protons***__

   d) According to Rutherford, where in an atom are these particles located? ***in the nucleus***

3. Complete the following table:

Scientist	Date	Discovery/idea	Model (diagram)
Dalton	***1807***	***atoms of an element are identical and atoms of different elements are different. Atoms are recombined in chemical reactions***	
Thomson	***1897***	***discovered negative electrons in the atom***	
Rutherford	***1909***	***discovered the nucleus containing positive, protons***	
Bohr	***1913***	***discovered that electrons are confined to specific orbits (energy levels) around the nucleus***