Using Evidence

Based on the following passages, identify the evidence that would support the claim made by each individual.

1. By 1911 the components of the atom had been discovered. The atom consisted of subatomic particles called protons and electrons. However, it was not clear how these protons and electrons were arranged within the atom. J.J. Thomson suggested the "plum pudding" model. In this model the electrons and protons are uniformly mixed throughout the atom. Rutherford tested Thomson's hypothesis by devising his "gold foil" experiment. Rutherford reasoned that if Thomson's model was correct then the mass of the atom was spread out throughout the atom. Then, if he shot high velocity alpha particles (helium nuclei) at an atom then there would be very little to deflect the alpha particles. He decided to test this with a thin film of gold atoms. As expected, most alpha particles went right through the gold foil but to his amazement a few alpha particles rebounded almost directly backwards. These deflections were not consistent with Thomson's model. Rutherford was forced to discard the Plum Pudding model and reasoned that the only way the alpha particles could be deflected backwards was if most of the mass in an atom was concentrated in a nucleus. He thus developed the planetary model of the atom which put all the protons in the nucleus and the electrons orbited around the nucleus like planets around the sun.

Claim: The atom is made up of a nucleus around which electrons orbit

Identify 2 pieces of evidence that Rutherford used to support this claim. Write that evidence in the space below.