Name: _____ _____/ 20

Chapter 10.1 Homework
Conceptual Physics Parent Signature: _____

Each numbered question is worth 1 point unless noted.

Reviewing Concepts

1. Contrast John Dalton's atomic theory with today's knowledge of the atom. (List the four statements from your textbook and how today's knowledge is different. If the two agree, note "same" in the second column.) (4)

Dalton's Atomic Theory	Today's Knowledge
1.	1.
2.	2.
3.	3.
4.	4.

2. What did Ernest Rutherford discover about the atom with his gold foil experiment?

3. What particles make up the nucleus of the atom? (0.5)

4. What takes up the most space in an atom, the nucleus or the electron cloud? (0.5)

5. If the positive charge on the protons in the nucleus causes protons to repel each other, why doesn't the nucleus break apart?

6. Compare the electrons, protons, and neutrons in terms of size, mass, and charge. (1.5)

Size:

Mass:

Charge:

7. Name the scientists credited with the discovery of the electron, the proton, the nucleus, and the neutron. (2)

8. Name the four fundamental forces in the atom in order from strongest to weakest and the scientist responsible for identifying or measuring each. (2)

9. Describe the significance of the atomic number and mass number of an element.

10. What are isotopes? Give an example of isotopes of an element.

11. What is the derivation of the atomic mass unit? What is the value in kilograms and the abbreviation for 1 atomic mass unit?

Solving Problems

For some questions, you will need to use a periodic table. Your textbook has one on page 261.

1. An atom has seven protons and eight neutrons. What is this atom's atomic number? What is its mass number? What element is this atom?

2. How many neutrons are in a silicon atom with an atomic number of 14 and a mass number of 30? (0.5)

3. Carbon-12 and carbon-14 have an atomic number of 6. How many protons and neutrons do carbon-12 and carbon-14 have? (0.5)

4. Find the number of protons in an oxygen atom.(0.25)

5. An atom has 20 protons and 24 neutrons. (0.5)

   a. What is this atom's mass number?

   b. What is this atom's atomic number?

   c. What element is this atom?

6. A common isotope of carbon has a mass number of 13. What is the total number of particles in its nucleus? (0.25)

7. Draw a model of an atom that has five protons, five neutrons, and five electrons. Label the charge of each particle. What element is this? (1.5)