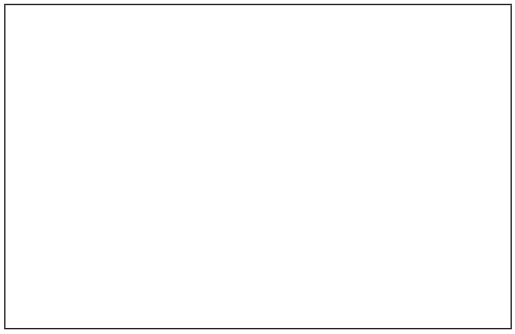
# BOHR MODEL

NAME _____ SECTION _____

1. Draw an energy level diagram for the first 5 energy levels in a hydrogen atom that is based on the Bohr model.



2. Calculate the energy for the n = 1 and the n = 2 level (orbits) for an electron in a hydrogen atom.

3. Describe what can happen when a hydrogen atom absorbs a photon of light, and when a photon of light is emitted from a hydrogen atom.

4. Calculate the energy difference between the n = 1 and the n = 4 levels in a hydrogen atom. What is the energy of a photon that would excite an electron from the n = 1 level to the n = 4 level?

5. Calculate the wavelength of a photon of light that would excite an electron in a hydrogen atom from the n = 1 to the n = 4 level.

6. Calculate the amount of energy required to ionize a hydrogen atom (remove the electron) when the electron is in the n = 1 level.

7. Which condition requires more energy to remove an electron:

   a. when an electron is close to the nucleus, or when an electron is further from the nucleus? Explain.

   b. when the nuclear charge is a +1, or when the nuclear charge is a +5 (assume the electron is the same distance from the nucleus)? Explain.