

Name: _____

Date: _____

Notes: The Bohr Model

Who discovered the electron? _____

What apparatus did he use? _____

How did J.J. Thomson determine that electrons were actually small *particles*?

How did J.J. Thomson determine that electrons had a *negative charge*?

What was Rutherford's experiment called? _____

What did Rutherford conclude after some alpha particles were reflected by the gold?

What did Rutherford name this dense, central region of the atom? _____

What did Rutherford's student, James Chadwick, discover? _____

What two main additions to atomic theory did **Niels Bohr** propose?

1. _____ **correct** or **wrong**

2. _____ **correct** or **wrong**

If Bohr was wrong about his model, then why do we still use it often in chemistry class?

What is the name of the current atomic model? _____

What is the most important fact for you about this current model of the atom?

What is the *excited state* of an electron? _____

How does an electron reach the excited state? _____

What is the *ground state* of an electron? _____

How do electrons return to the ground state? _____

What does releasing light energy make the atoms do? _____

What is true of all forms of E.M. radiation? _____

What is the *speed of light*? _____

How are the frequency and wavelength of light related? _____

What does it mean that frequency and wavelength are inversely related?

For each problem, circle the *givens* and underline the *unknown* quantity.

1. What is the frequency of a photon of light that has a wavelength of 5.78×10^{-7} meters?

Equation:

Substitution:

Solution:

2. What is the wavelength of a ray of light that has a frequency of 6.8×10^{14} Hz?

Equation:

Substitution:

Solution:

What is the energy of a photon related to? _____

How are the energy and frequency of a photon related?

What color of light has the highest energy? _____

What color of light has the lowest energy? _____

For each problem, circle the *givens* and underline the *unknown* quantity.

1. The electron in the diagram drops from its excited state to its ground state. In the process, it emits a photon with a frequency of 6.65×10^{14} Hz. How much energy is in the photon of light?

Equation:

Substitution:

Solution:

2. A photon of light with a wavelength of 5.28×10^{-7} meters is emitted from an atom as an electron travels from its excited state to its ground state. How much energy difference was there between the excited state and the ground state of the electron assuming all of the energy is contained in the photon of light?

Equation:

Substitution:

Solution: