

Name \_\_\_\_\_ **Unit 3: Atomic Theory**

If you can do all the things listed below, you are ready for the Unit 3 test.

Place a checkmark next to each item that you can do! If a sample problem is given, complete it as evidence.

<p>___1. I can describe John Dalton's contribution to our understanding of the atom.</p>	<p>Dalton's Model:</p> <p>What it looked like:</p>
<p>___2. I can describe JJ Thomson's contribution to our understanding of the atom.</p>	<p>Thomson's Experiment:</p> <p>Thomson's Model:</p> <p>What it looked like:</p>
<p>___3. I can describe Ernest Rutherford's contribution to our understanding of the atom.</p>	<p>Rutherford's Experiment:</p> <p>Rutherford's Model:</p> <p>What it looked like:</p>
<p>___4. I can describe Niels Bohr's contribution to our understanding of the atom.</p>	<p>Bohr's Model:</p> <p>What it looked like:</p>
<p>___5. I can describe how Schrodinger, Heisenberg, Pauli, Dirac, and others contributed to our understanding of the atom.</p>	<p>What does the modern model of the atom look like?</p> <p>Where, in an atom, are electrons likely to be found according to the modern model?</p>

<p>___6. I can state the chronological order of atomic models.</p>	<p>From oldest to newest, list the models that we have used to describe an atom.</p>			
<p>___7. I can state the three subatomic particles, their location in an atom, their charges, and their masses (in amu).</p>		<p><b>Particle #1</b></p>	<p><b>Particle #2</b></p>	<p><b>Particle #3</b></p>
	<p><b>Name</b></p>			
	<p><b>Charge</b></p>			
	<p><b>Mass</b></p>			
	<p><b>Location in Atom</b></p>			
<p>___8. I can explain why atoms are electrically neutral.</p>	<p>Atoms are electrically neutral because the number of _____ is equal to the number of _____.</p>			
<p>___9. I can define mass number and atomic number.</p>	<p><b>Definitions:</b>  mass number   atomic number</p>			
<p>___10. Given the mass number, I can determine the number of protons, neutron, and electrons in an atom.</p>	<p>In an atom of <math>^{212}\text{Po}</math>, how many protons are present?  84  In an atom of <math>^{212}\text{Po}</math>, how many electrons are present?  84  In an atom of <math>^{212}\text{Po}</math>, how many neutrons are present?  84</p>			
<p>___11. I can use the Periodic Table to determine the atomic number of an element.</p>	<p>How many protons are in an atom of selenium?   How many protons are in an atom of silicon?</p>			

<p>___12. I can calculate average atomic mass given the masses of the naturally occurring isotopes and the percent abundances.</p>	<p>Element Q has two isotopes. If 77% of the element has an isotopic mass of 83.7 amu and 23% of the element has an isotopic mass of 89.3 amu, what is the average atomic mass of the element?</p>
<p>___13. Given the mass number and the charge, I can determine the number of protons, neutrons, and electrons in an ion.</p>	<p>How many protons are in <math>^{19}\text{F}^{1-}</math>?</p> <p style="text-align: center;">10</p> <p>How many neutrons are in <math>^{19}\text{F}^{1-}</math>?</p> <p style="text-align: center;">10</p> <p>How many electrons are in <math>^{19}\text{F}^{1-}</math>?</p> <p style="text-align: center;">10</p>
<p>___14. I can state the relationship between distance from the nucleus and energy of an electron.</p>	<p>As the distance between the nucleus and the electron increases, the energy of the electron _____.</p>
<p>___15. I can state the relationship between the number of the principal energy level and the distance to the atom's nucleus.</p>	<p>As the number of the PEL increases, the distance to the nucleus _____.</p>
<p>___16. I can explain, in terms of subatomic particles and energy states, how a bright line spectrum is created.</p>	<p>A brightline spectrum is created when</p>
<p>___17. I can identify the elements shown in a bright line spectrum.</p>	<p style="text-align: center;"><b>Bright-Line Spectra</b></p> <p>Which element(s) is/are present in the mixture?</p>
<p>___18. I can define valence electrons.</p>	<p><b>Definition:</b></p> <p>valence electron</p>

<p><b>___19. I can locate and interpret an element's electron configuration on the Periodic Table.</b></p>	<p>How many valence electrons does an atom of rubidium have in the ground state?</p> <p>How many principal energy levels contain electrons in an atom of iodine in the ground state?</p>
<p><b>___20. I can identify an electron configuration that shows an atom in the excited state.</b></p>	<p>Which electron configuration represents an atom of potassium in the excited state?</p> <p>A) 2-8-7-1      C) 2-8-7-2</p> <p>B) 2-8-8-2      D) 2-8-8-1</p>
<p><b>___21. I can define and state the importance of "octet of valence electrons."</b></p>	<p><b><u>Definition:</u></b></p> <p>octet of valence electrons</p> <p>The importance of having a complete "octet of valence electrons" is</p>