

Unit 8 (Chapter 4) Atoms Review --- Answer Key

For questions 1 - 8, if the statement is true, write **true** on your paper. If the statement is false, write false and then rewrite the statement so that it is true.

- 1) Protons and neutrons have the same charge. False
Protons have a + charge and Neutrons have no charge.
- 2) Protons and electrons have opposite charges. True
- 3) Protons and neutrons have the same mass. True
- 4) Protons, neutrons, and electrons all live in the nucleus. False
Protons and neutrons live in the nucleus BUT electrons live in the electron cloud.
- 5) Neutrons have no charge and no mass. False
Neutrons have no charge and the mass of 1 amu or about the same mass as a proton.
- 6) An electron has the same mass as a neutron. False
Electrons have about 1/3 the mass of neutrons.
- 7) Both oxygen-17 and oxygen-18 are isotopes of oxygen. True
- 8) An electron cloud represents all the electron orbitals in an atom. True

Answer the following questions completely.

- 9) Write the three (3) parts of John Dalton's Atomic Theory.
 - Atoms of the same element are exactly alike.
 - Atoms of different elements can join to form molecules.
 - Every element is made of tiny, unique particles called atoms that cannot be subdivided.
- 10) In Niels Bohr's model of the atom, electrons move like planets orbiting the sun.
- 11) Where is the nucleus located in the atom? In the center of the atom
 - a. What charge does the nucleus have? Positive charge
- 12) Which subatomic particle has a negative charge? Electrons
 - a. Where are they located in the atom? Electron cloud
- 13) Which subatomic particle has a positive charge? Protons
 - a. Where are they located in the atom? Nucleus
- 14) Which subatomic particle has a neutral charge? Neutrons
 - a. Where are they located in the atom? Nucleus
- 15) Which subatomic particles have the same mass? Protons and Neutrons

- 16) The number of **protons** in one atom of an element is that element's atomic number which in turn tells you its electrons.
- 17) To find the number of neutrons in an atom, you would subtract the atomic number from the mass number.
- 18) If element Q has 11 protons, its atomic number is 11.
- 19) The nuclei of isotopes contain different numbers of neutrons.
- 20) The region in which an electron is most likely to be found is called a(an) electron cloud.
- 21) The maximum number of electrons in the *first energy level* of an atom is: 2
in the *second energy level*: 8
in the *third energy level*: 18
- 22) A certain atom has 26 protons, 26 electrons, and 30 neutrons. Its mass number (atomic mass) is 56 (# of protons + # of neutrons).
- 23) Fill in the chart below with the missing information:

Element Name	Symbol	Atomic #	Mass #	# of Protons	# of Neutrons	# of Electrons
Nitrogen	<u>N</u>	<u>7</u>	<u>14</u>	<u>7</u>	<u>7</u>	<u>7</u>
<u>Arsenic</u>	As	<u>33</u>	<u>75</u>	<u>33</u>	<u>42</u>	<u>33</u>
<u>Scandium</u>	Sc	21	<u>45</u>	<u>21</u>	<u>24</u>	<u>21</u>
<u>Copper</u>	<u>Cu</u>	<u>29</u>	<u>64</u>	29	<u>35</u>	<u>29</u>
<u>Iodine</u>	I	<u>53</u>	<u>127</u>	<u>53</u>	<u>74</u>	<u>53</u>
<u>Krypton</u>	<u>Kr</u>	36	<u>84</u>	<u>36</u>	<u>48</u>	<u>36</u>
Strontium	<u>Sr</u>	<u>38</u>	<u>88</u>	<u>38</u>	<u>50</u>	<u>38</u>
<u>Uranium</u>	<u>U</u>	92	<u>238</u>	<u>92</u>	<u>146</u>	<u>92</u>
<u>Iron</u>	Fe	<u>26</u>	<u>56</u>	<u>26</u>	<u>30</u>	<u>26</u>
<u>Nickel</u>	<u>Ni</u>	<u>28</u>	<u>59</u>	28	<u>31</u>	<u>28</u>
<u>Chlorine</u>	<u>Cl</u>	<u>17</u>	<u>35</u>	<u>17</u>	<u>18</u>	17
<u>Aluminum</u>	Al	<u>13</u>	<u>27</u>	<u>13</u>	<u>14</u>	<u>13</u>
Sulfur	<u>S</u>	<u>16</u>	<u>32</u>	<u>16</u>	<u>16</u>	<u>16</u>
<u>Mercury</u>	<u>Hg</u>	80	<u>201</u>	<u>80</u>	<u>121</u>	<u>80</u>
<u>Tin</u>	<u>Sn</u>	<u>50</u>	<u>119</u>	50	<u>69</u>	<u>50</u>

- 27) **Draw the Bohr's model for the following elements.** Make sure to show the number of protons, neutrons and electrons. Identify how many valence electrons are in each element.

