

## Basic Chemistry Problem Set

1.

		<u>Physical</u>
a) Iron rusts	<input type="radio"/>	<input type="radio"/>
b) Water begins to boil	<input type="radio"/>	<input type="radio"/>
c) Grass grows	<input type="radio"/>	<input type="radio"/>
d) Food is digested	<input type="radio"/>	<input type="radio"/>
e) Ingested salt dissolves in blood	<input type="radio"/>	<input type="radio"/>

2.



7. Classify the following statements as True or False. If the statement is False, re-write the statement to make it True.

	<u>TRUE</u>	<u>FALSE</u>
a) Bond polarity arises from differences in electronegativity between two covalently bonded atoms.	<input type="radio"/>	<input type="radio"/>

If False: \_\_\_\_\_

b) The electronegativity of atoms decreases down a group in the Periodic Table of Elements.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

c) When an atom has a large number of neutrons, it will have a large electronegativity.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

d) Electronegativity arises because some atoms are capable of attracting protons better than others.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

e) Water is the human body's main solvent because it can dissolve most polar molecules.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

f) Some physical properties of molecules, such as boiling points, are entirely dependent on individual bond polarities.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

g) Hydrogen bonding is responsible for the high boiling point of water.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

h) The low boiling point of nitrogen is due to hydrogen bonding between nitrogen molecules.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

i) Hydrogen bonding is very important in biological systems such as for holding the strands of DNA together.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

j) Hydrogen bonding is a specific example of ionic bonding when hydrogen atoms from two different molecules attract each other.	<input type="radio"/>	<input type="radio"/>
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If False: \_\_\_\_\_

8. Classify the following statements as True or False. If the statement is False, re-write the statement to make it True.

- |   | <u>True</u>           | <u>False</u>          |
|---|-----------------------|-----------------------|
| a) When covalent molecules dissolve in water, they break apart.                     | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| b) Salts are electrolytes because they release ions when dissolved in water.        | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| c) A cation is a positively charged ion.  | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| d) An anion is a negatively charged ion.  | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| e) An acid is a substance that produces $H^+$ when dissolved in water               | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| f) Stomach acid is primarily hydrochloric acid.                                     | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| g) Ammonia is a very important acid formed through the breakdown of muscle protein. | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| h) Sulfuric acid is a strong acid.  | <input type="radio"/> | <input type="radio"/> |
| If False: _____   |                       |                       |
| i) Carbonic acid transports carbon dioxide in the body.                             |                       |                       |

## Periodic Table of the Elements

<b>1</b> <b>H</b> 1.0079																<b>2</b> <b>He</b> 4.0026	
<b>3</b> <b>Li</b> 6.941	<b>4</b> <b>Be</b> 9.0122											<b>5</b> <b>B</b> 10.811	<b>6</b> <b>C</b> 12.0107	<b>7</b> <b>N</b> 14.0067	<b>8</b> <b>O</b> 15.9994	<b>9</b> <b>F</b> 18.9984	<b>10</b> <b>Ne</b> 20.1797
<b>11</b> <b>Na</b> 22.990	<b>12</b> <b>Mg</b> 24.3050											<b>13</b> <b>Al</b> 26.98154	<b>14</b> <b>Si</b> 28.0855	<b>15</b> <b>P</b> 30.9738	<b>16</b> <b>S</b> 32.066	<b>17</b> <b>Cl</b> 35.4527	<b>18</b> <b>Ar</b> 39.948
<b>19</b> <b>K</b> 39.0983	<b>20</b> <b>Ca</b> 40.078	<b>21</b> <b>Sc</b> 44.956	<b>22</b> <b>Ti</b> 47.867	<b>23</b> <b>V</b> 50.9415	<b>24</b> <b>Cr</b> 51.996	<b>25</b> <b>Mn</b> 54.938	<b>26</b> <b>Fe</b> 55.845	<b>27</b> <b>Co</b> 58.9332	<b>28</b> <b>Ni</b> 58.6934	<b>29</b> <b>Cu</b> 63.546	<b>30</b> <b>Zn</b> 65.39	<b>31</b> <b>Ga</b> 69.723	<b>32</b> <b>Ge</b> 72.61	<b>33</b> <b>As</b> 74.9216	<b>34</b> <b>Se</b> 78.96	<b>35</b> <b>Br</b> 79.904	<b>36</b> <b>Kr</b> 83.80
<b>37</b> <b>Rb</b> 85.4678	<b>38</b> <b>Sr</b> 87.62	<b>39</b> <b>Y</b> 88.906	<b>40</b> <b>Zr</b> 91.224	<b>41</b> <b>Nb</b> 92.906	<b>42</b> <b>Mo</b> 95.94	<b>43</b> <b>Tc</b> 98	<b>44</b> <b>Ru</b> 101.07	<b>45</b> <b>Rh</b> 102.9055	<b>46</b> <b>Pd</b> 106.42	<b>47</b> <b>Ag</b> 107.8682	<b>48</b> <b>Cd</b> 112.411	<b>49</b> <b>In</b> 114.818	<b>50</b> <b>Sn</b> 118.710	<b>51</b> <b>Sb</b> 121.760	<b>52</b> <b>Te</b> 127.60	<b>53</b> <b>I</b> 126.9045	<b>54</b> <b>Xe</b> 131.29
<b>55</b> <b>Cs</b> 132.9054	<b>56</b> <b>Ba</b> 137.327	<b>57</b> <b>La</b> 138.905	<b>72</b> <b>Hf</b> 178.49	<b>73</b> <b>Ta</b> 180.948	<b>74</b> <b>W</b> 183.84	<b>75</b> <b>Re</b> 186.207	<b>76</b> <b>Os</b> 190.23	<b>77</b> <b>Ir</b> 192.222	<b>78</b> <b>Pt</b> 195.084	<b>79</b> <b>Au</b> 196.967	<b>80</b> <b>Hg</b> 200.59	<b>81</b> <b>Tl</b> 204.38	<b>82</b> <b>Pb</b> 207.2	<b>83</b> <b>Bi</b> 208.980	<b>84</b> <b>Po</b> 209	<b>85</b> <b>At</b> 210	<b>86</b> <b>Rn</b> 222

132.9054 ( ) 137.327 0 138.905 72.36 291.12 32 -0/P <</MCID 214 >T3 1 Tf 0 Tc 0 37 8.04 -0 0 8.04 105 205.16 Tm (Ba)Tj 0 Tc 0 Tw 1.163 0 435Tj EMC /P <</MCITT4 16>>BDC /TT4 16Tf -0.006 Tc 0