Chapter 4 Test Review

Use this worksheet to help you prepare for your test covering chapter 4. Please see me if you have any questions. See the back of this sheet for assignments to review.

1. What is an atom? smallest unit of matter
2. What are the 3 parts of the atom? protons, neutrons, electrons
3. Where are those parts located in the atom?
4. What charges do the 3 parts have? \( P^+ \) in nucleus, \( e^- \) outside of nucleus in shells, orbitals
5. How do you determine the number of protons in an atom? Neutrons? Electrons?
6. What part of the atom has the least amount of mass? The most mass?
7. What is an ion? atom with a charge from gaining or losing electrons
8. What information does the atomic number give us?
9. What information does the atomic mass number give us?
10. What is an isotope?
11. What information does the number that is listed after the isotope name give? (ex. Carbon-14)?
12. Why are atomic masses not whole numbers?
13. Compare and contrast ionic and covalent bonds.
14. How many atoms are in the following compounds:
   - \( H_2O \) - 3
   - \( 2 \) \( O_2 \) - 4
   - \( CH_4 \) - 5
   - \( 3 \) \( H_2O \) - 9
15. Balance the following equation: \( P + O_2 \rightarrow P_4O_{10} \)
   In order to balance chemical equations, you must add coefficients not subscripts.

16. Practice:

<table>
<thead>
<tr>
<th>Atom/Element</th>
<th># protons</th>
<th># neutrons</th>
<th># electrons</th>
<th># valence e-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>6</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Silver</td>
<td></td>
<td>47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>17</td>
<td>18</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Argon</td>
<td>18</td>
<td>22</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>Nitrogen-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Draw an electron configuration and a Lewis Dot Diagram for the following elements:
   - Carbon
   - Potassium
   - Argon
CLUES:

Down:
1. I have 26 protons.
2. I am not really an alkali metal, but since I have only 1 electron I behave like them.
3. I am a metal with 28 electrons.
4. I am a member of the boron family and am the most abundant metal in the Earth’s crust.
5. I am a gas with 8 protons and 8 neutrons.
6. I am a member of the carbon family often mistaken for the end of your pencil.
7. I am a metal that is liquid at room temperature.
8. My atomic number is 47 and I am used to make photographic film.
9. I have 20 neutrons and am found in your teeth and bones.
10. I am a member of the nitrogen family with 16 neutrons.
11. I am a gas with a mass number of 19.
12. I am the first element in the fourth period used in making fertilizer.
13. You can find me in the carbon family in the fifth period.

Across:
2. My atomic mass is 35.453.
3. I have 2 electrons in the first shell, 8 in the second shell, and 6 in the third shell.
4. I am the head of the carbon family known as the “basis of life”.
5. My atomic number is 79.
6. I am a transition metal with 25 electrons.
7. I make up 78% of the air and am found in the 15th group.
8. I am a silvery white metal used to make salt.
9. I am a member of the alkaline earth metals used to make fireworks and medicines.
10. I am a noble gas with 2 electrons.
11. I am the 2nd most abundant element in the Earth’s crust and have 14 neutrons.
12. I am a member of the halide family with an atomic number of 53.
13. I am a transition metal with 30 electrons useful in making paint.
14. I am the only element in the halide family that is a liquid.