Test 2 Review

Vocab
Proton
Neutron
Electron
Atom
Ion
Isotope
Atomic Number
Average Atomic Mass
Mass Number
Earnest Rutherford
J.J Thompson
Dmitri Mendeleev
Periodic Table of Elements
Metal
Non-metal
Metalloid
Group

Learning Target 1: I can explain what the subatomic particles are, their characteristics, and how they change to form ions.

1. What are the 3 sub-atomic particles and what are their charges?
2. What determines the type of element?
3. What is the atomic number on the periodic table equal to?
4. What is the unit to measure mass of atoms?
5. How many AMUs does each sub atomic particle weigh? (and which has a negligible weight)
6. What sub atomic particle makes up most of the VOLUME of an atom?
7. What sub atomic particle number changes when you form an ion?
8. Why do ions form?
9. What ion will Nitrogen form?
10. Fill in the table below:

<table>
<thead>
<tr>
<th>Element Name</th>
<th>Symbol</th>
<th>Atomic Number</th>
<th>Mass Number</th>
<th># of protons</th>
<th># of electrons</th>
<th># of neutrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nickel</td>
<td></td>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ca</td>
<td>Ca</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>3. Calcium</td>
<td>Ca(^{2+})</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Draw a picture of a Carbon atom (show number and location of electrons, protons, neutrons)

Learning Target 2: I can explain what isotopes are, and how they are used to determine relative atomic mass.

12. What is the relative atomic mass for Carbon?
13. What is the atomic mass for Carbon?
14. If you knew that Neon had 3 isotopes, Ne-18, Ne-19 and Ne-20, which one would you say is the most abundant in the natural world? Why? (Use your periodic table)
15. In isotopes, the number of ______________ are different.
16. What two sub atomic particles stay the same in isotopes?
17. Using the following information, calculate the relative atomic mass for “Ottium”.

<table>
<thead>
<tr>
<th>Isotope</th>
<th>Mass (AMU)</th>
<th>% Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottium – 24</td>
<td>23.982</td>
<td>67.03</td>
</tr>
<tr>
<td>Ottium – 25</td>
<td>24.891</td>
<td>28.45</td>
</tr>
<tr>
<td>Ottium – 26</td>
<td>25.964</td>
<td>4.52</td>
</tr>
</tbody>
</table>

**Learning Target 3:** I can identify scientists who worked to organize the elements into the periodic table.

18. Identify the following people and their contributions to the atomic theory
   a. Rutherford
   b. J.J. Thompson
   c. Mendeleev
   d. Dalton
   e. Greek philosophers

**Learning Target 4:** I can explain the way that the periodic table is organized and relationships between groups and periods.

19. Columns in the periodic table are classified as ______________________.
20. Rows in the periodic table are classified as ______________________.
21. What are 2 main groups that have elements that would all be classified as metals?
22. What group has the most reactive metals?
23. What group has the most reactive non-metals?
24. What is another name for group 1? Group 2? Group 17? Group 18?
25. What group has full electron orbitals?
26. What are 2 characteristics of metals?
27. What are 2 characteristics of non-metals?
28. What is the periodic law?
29. Mr. Ott shows you a sample of gas that is yellow in color. He says that it’s a highly reactive non-metal which reacts with group one elements to make salts. The element he is showing you is probably from which group?

30. Fill in the periodic table below with the first 20 elements!