Refer to a Periodic Table and the Key below to fill out this table for each element. Start with Helium as your first atom to match the nucleus with toothpicks.  

1. Fill out the table below with the correct values.
2. Assemble the nucleus using the proper number of large colored and white marshmallows. Stick them together with loctiicks. Select the proper number of small colored marshmallows (all one color) as your electrons. Attach them one at a time to the nucleus with toothpicks.

Name: 

Name of Atom: 

Atomic Number: 

Atomic Symbol: 

Electrons: 

Protons: 

Neutrons: 

Electron Configuration: 

Atomic Mass: 

Number of Electrons = Number of Protons
Number of Electrons = Atomic Mass - Atomic Number
Number of Protons = Atomic Number
Number of Electrons = Atomic Mass

**KEY**

<table>
<thead>
<tr>
<th>Number of Protons</th>
<th>Atomic Number</th>
<th>Atomic Symbol</th>
<th>Atomic Mass</th>
<th>Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
<th>Number of Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>H</td>
<td>1.00794</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Beryllium**

<table>
<thead>
<tr>
<th>Number of Protons</th>
<th>Atomic Number</th>
<th>Atomic Symbol</th>
<th>Atomic Mass</th>
<th>Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
<th>Number of Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>Be</td>
<td>9.0122</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

**Lithium**

<table>
<thead>
<tr>
<th>Number of Protons</th>
<th>Atomic Number</th>
<th>Atomic Symbol</th>
<th>Atomic Mass</th>
<th>Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
<th>Number of Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>Li</td>
<td>6.941</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Helium**

<table>
<thead>
<tr>
<th>Number of Protons</th>
<th>Atomic Number</th>
<th>Atomic Symbol</th>
<th>Atomic Mass</th>
<th>Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
<th>Number of Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>He</td>
<td>4.0026</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

**Hydrogen**

<table>
<thead>
<tr>
<th>Number of Protons</th>
<th>Atomic Number</th>
<th>Atomic Symbol</th>
<th>Atomic Mass</th>
<th>Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
<th>Number of Electrons</th>
<th>Neutrons</th>
<th>Protons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>H</td>
<td>1.00794</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Appendix B - Atoms & Molecules**
### ATOMS: IONS & ISOTOPES

<table>
<thead>
<tr>
<th>ELECTRONS</th>
<th>NEUTRONS</th>
<th>MASS.Atomic</th>
<th>PROTONS</th>
<th>NUMBER.Atomic</th>
<th>SYMBOL</th>
<th>ATOMIC</th>
<th>ATOM</th>
</tr>
</thead>
</table>

**NAMES:**
- Lithium
- Beryllium

**LOCATION:**
Refer to a periodic table and the key below to fill out this table for each element.

**INSTRUCTIONS:**
1. Assemble the nucleus using the proper number of large colored and white marshmallows. Stick them together with toothpicks.
2. Time to the nucleus with toothpicks.
3. Turn the lithium atom into an ion, and note the information.
4. Turn either the lithium atom or the beryllium atom into an isotope. Record what you did.

**KEY**
- Isotope: Add or subtract a neutron from the element.
- Ions: Add or subtract an electron from the element.
- Number of Protons = Atomic Number
- Number of Neutrons = Atomic Mass - Atomic Number
- Number of Electrons = Atomic Number

**Example:**
- **Lithium**
  - Mass: 7
  - Symbol: Li
  - Atomic Number: 3
  - Protons: 3
  - Neutrons: 4
  - Electrons: 3

**Example:**
- **Beryllium**
  - Mass: 4
  - Symbol: Be
  - Atomic Number: 4
  - Protons: 4
  - Neutrons: 0
  - Electrons: 2
Molecules

1. Color in the Molecule Color Key molecules with colored pencils as indicated.
2. Determine the number of elements in each molecule, and write it down.
3. Draw and color the molecule with the correct number of elements.

4. Make each molecule model using appropriately colored gumdrops and toothpicks.

<table>
<thead>
<tr>
<th>Molecule</th>
<th>Elements</th>
<th>Draw It!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (H₂O)</td>
<td>H = _____ O = _____</td>
<td>![Water Diagram]</td>
</tr>
<tr>
<td>Carbon Dioxide (CO₂)</td>
<td>H = _____ O = _____</td>
<td></td>
</tr>
<tr>
<td>Ammonia (NH₃)</td>
<td>H = _____ O = _____</td>
<td></td>
</tr>
<tr>
<td>Methane (CH₄)</td>
<td>H = _____ O = _____</td>
<td></td>
</tr>
</tbody>
</table>

Molecule Color Key

- **Hydrogen** (yellow)
- **Oxygen** (red)
- **Nitrogen** (green)
- **Carbon** (black)
Periodic Table Activity sheet
Use the periodic table you made to answer each question

1. How are the atomic numbers and the atomic masses of the elements related to how the elements are arranged on the Periodic Table?

2. How does the number of electrons relate to the arrangement? What is the difference in the number of electrons in a 3rd period element and the 2nd period element above it?

3. Do some elements next to each other have the same number of neutrons? How is that possible?

4. How are the colors arranged, and what conclusions can be drawn from this arrangement?

Referring to the table below, write the name and number of the group above each color group on the periodic table you made.

<table>
<thead>
<tr>
<th>Green Group I</th>
<th>Blue Group II</th>
<th>Orange Group III</th>
<th>Red Group IV</th>
<th>Tan Group V</th>
<th>Pink Group VI</th>
<th>Purple Group VII</th>
<th>Yellow Group VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkali Metals</td>
<td>Alkaline Earth Metals</td>
<td>Boron Family</td>
<td>Carbon Family</td>
<td>Nitrogen Family</td>
<td>Oxygen Family</td>
<td>Halides</td>
<td>Noble Gases</td>
</tr>
</tbody>
</table>

5. Compare the location of the Metals groups in relation to the Noble Gases group. What is the significance of their locations on the Periodic Table?

6. Which groups have names that help you to remember where certain elements are located?
Periodic Table Cards

Fill in each card using Periodic Table.

Sample Card

Appendix E - Atoms & Molecules