TEST #1 REVIEW
7TH GRADE
Do Now 7Pb, B, Zr  10.23.18

- Pb & B: Take HW 7.8 and the study guide packet out to be checked.
- In CJ, copy info down from board. Keep CJs out and open on your desk.
- Take out the packet given to you last week (sub packet)

On Do Now page #4, copy and answer questions below.

1. When ionized, Cl loses/gains ___ electrons to form ___ charge.
2. Helium has ___ electron shells.
3. What is the technique of chromatography used for?
REVIEW: TEST IS NEXT CLASS

• From packet given last week — focus on study guide only, **NOT INCLUDING electron configuration**.

• Answers to study guide and rest of packet are posted online @ [www.chemistrywithdrjames.com](http://www.chemistrywithdrjames.com)

• Test is all multiple choice. Bring a calculator.
EXTRA STUDENT HOURS THIS WEEK

Tuesday 3:15 — 4:00 pm
ROOM 504
Finish up notes for lesson 6.
<table>
<thead>
<tr>
<th>Element Name</th>
<th>Symbol</th>
<th>Atomic Number (# of p)</th>
<th>Mass Number (# of p+n)</th>
<th># of protons</th>
<th># of neutrons</th>
<th># of electrons</th>
<th>Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>$^{27}\text{Al}^{3+}$</td>
<td>13</td>
<td>27</td>
<td>13</td>
<td>$27-13 = 14$</td>
<td>10</td>
<td>3+</td>
</tr>
<tr>
<td>Carbon</td>
<td>$^{12}\text{C}$</td>
<td>6</td>
<td>12</td>
<td>6</td>
<td>$12-6 = 6$</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Sodium</td>
<td>$^{23}\text{Na}^+$</td>
<td>11</td>
<td>23</td>
<td>11</td>
<td>$23-11 = 12$</td>
<td>10</td>
<td>+1</td>
</tr>
<tr>
<td>Iodine</td>
<td>$^{53}\text{I}^-$</td>
<td>53</td>
<td>127</td>
<td>53</td>
<td>$127-53 = 74$</td>
<td>54</td>
<td>1-</td>
</tr>
</tbody>
</table>
PERIODIC TABLE ORGANIZATION

Columns are named by Group # and Family Name. Members within each family have similar properties.

Correspond to an atom’s number of valence electrons. Used to predict ion formed.

Rows are not named.

Correspond to the number of electron shells that exist within an atom’s electron cloud.
<table>
<thead>
<tr>
<th>Family Names</th>
<th>Ion formed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1A: Alkali metals</td>
<td>+1</td>
</tr>
<tr>
<td>Group 2A: Alkaline earth metals</td>
<td>+2</td>
</tr>
<tr>
<td>Group 7A: Halogens</td>
<td>-1</td>
</tr>
<tr>
<td>Group 8A: Noble gases</td>
<td>none</td>
</tr>
<tr>
<td>Group B: Transition metals</td>
<td>varies</td>
</tr>
</tbody>
</table>
Three classes of Elements: Metals, Nonmetals, and Metalloids

Label each group. Then, draw the “metalloid staircase” and color the table to show each class of elements.

- **Metals**
- **Metalloids**
- **Nonmetals**
Metals, Nonmetals, Metalloids: Properties

Metals: solids at room temperature (Hg is an exception), high luster, good conductors of electricity and heat, malleable, ductile, most have a high melting point and high density, easily lose electrons, low electronegativity

Many metals are reactive readily chemically combine with nonmetals to form compounds. Less reactive metals can be found in a native, free state (copper, gold, silver). Metals can be mixed to form alloys (brass, bronze, steel).

Nonmetals: not lustrous, relatively low melting points and densities, poor conductors of heat and electricity, high ionization energies, high electronegativities, brittle solids (not malleable or ductile), easily share or gain valence electrons, dull (not metallic)

Nonmetals exist in different states — solids (carbon, sulfur, iodine, phosphorous, selenium), liquid (bromine) and gases (rest of nonmetals). Nonmetals combine with other nonmetals to form molecular compounds (carbon dioxide CO$_2$, methane CH$_4$, sulfur dioxide SO$_2$). Fluorine is the most reactive nonmetal.

Metalloids: properties that are intermediate between those of metals and nonmetals; semiconductors.
Elements that Exist as Diatomic Molecules

- Hydrogen $- \text{H}_2$ colorless gas
- Oxygen $- \text{O}_2$ colorless gas
- Nitrogen $- \text{N}_2$ colorless gas
- Fluorine* $- \text{F}_2$ pale yellow gas
- Chlorine* $- \text{Cl}_2$ yellow-green gas
- Bromine* $- \text{Br}_2$ reddish brown liquid
- Iodine* $- \text{I}_2$ bluish-black solid
Discovery of the Electron

Discovered by J. J. Thompson.

Used a cathode tube to study electric current. The glowing beam he observed was actually electrons. Seeing a paddle wheel rotate inside the cathode tube showed that electrons have mass.
REMAINDER OF PACKET WILL NOT BE ON TEST #1
HW & STUDY GUIDE REVIEW
Review electron shells
Hydrogen and Helium only have 1 electron shell.
Hydrogen and Helium only have 1 electron shell.
All elements in 2\textsuperscript{nd} row (period) all have 2 electron shells.
All elements in 2\textsuperscript{nd} row (period) all have 2 electron shells.
All elements in 2\textsuperscript{nd} row (period) all have 2 electron shells.

BORON

Electron shells
All elements in 2nd row (period) all have 2 electron shells.
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**NEON**
All elements in 3rd row (period) all have 3 electron shells.
All elements in 3\textsuperscript{rd} row (period) all have 3 electron shells.

MAGNESIUM

Electron shells
All elements in 3\textsuperscript{rd} row (period) all have 3 electron shells.
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