

Average Atomic Mass: The average mass of all the atoms of the element.

Like a test average:
85, 76, 61, 92, 70

Average = 76.8

ALL CARBON ATOMS HAVE...~

6 PROTONS

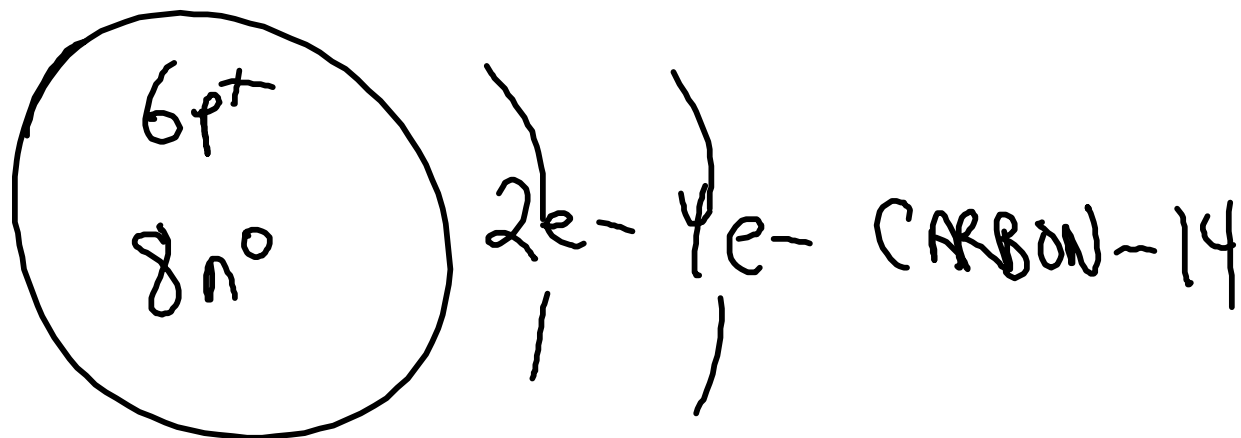
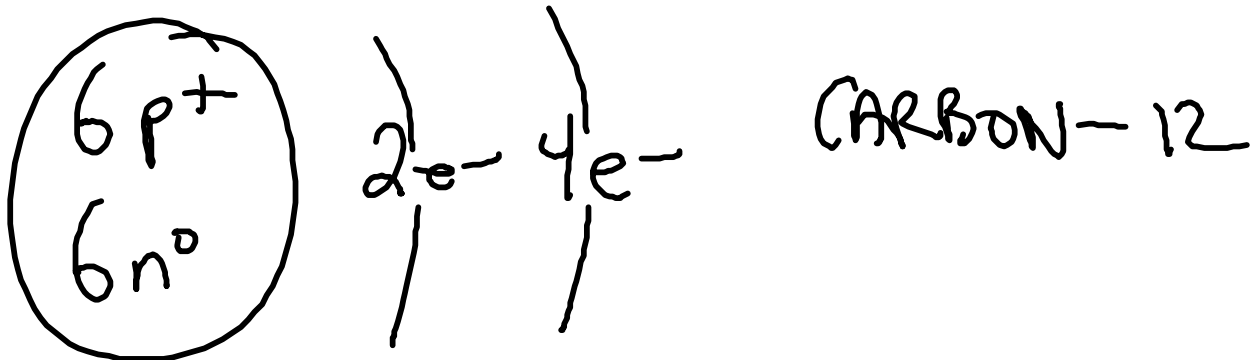
PROTONS DETERMINE THE ATOM

ALL CARBON ATOMS HAVE...~

6 PROTONS

PROTONS DETERMINE THE ATOM

CARBON-12
HAS $6p^+$, $6n^0$ (12 THINGS IN NUCLEUS)
VERY COMMON, STABLE ISOTOPE



Isotopes are atoms with the same atomic number but different atomic mass.

They have the same number of protons.

They have different numbers of neutrons.

ISOTOPES OF CARBON

CARBON - 12

CARBON - 13

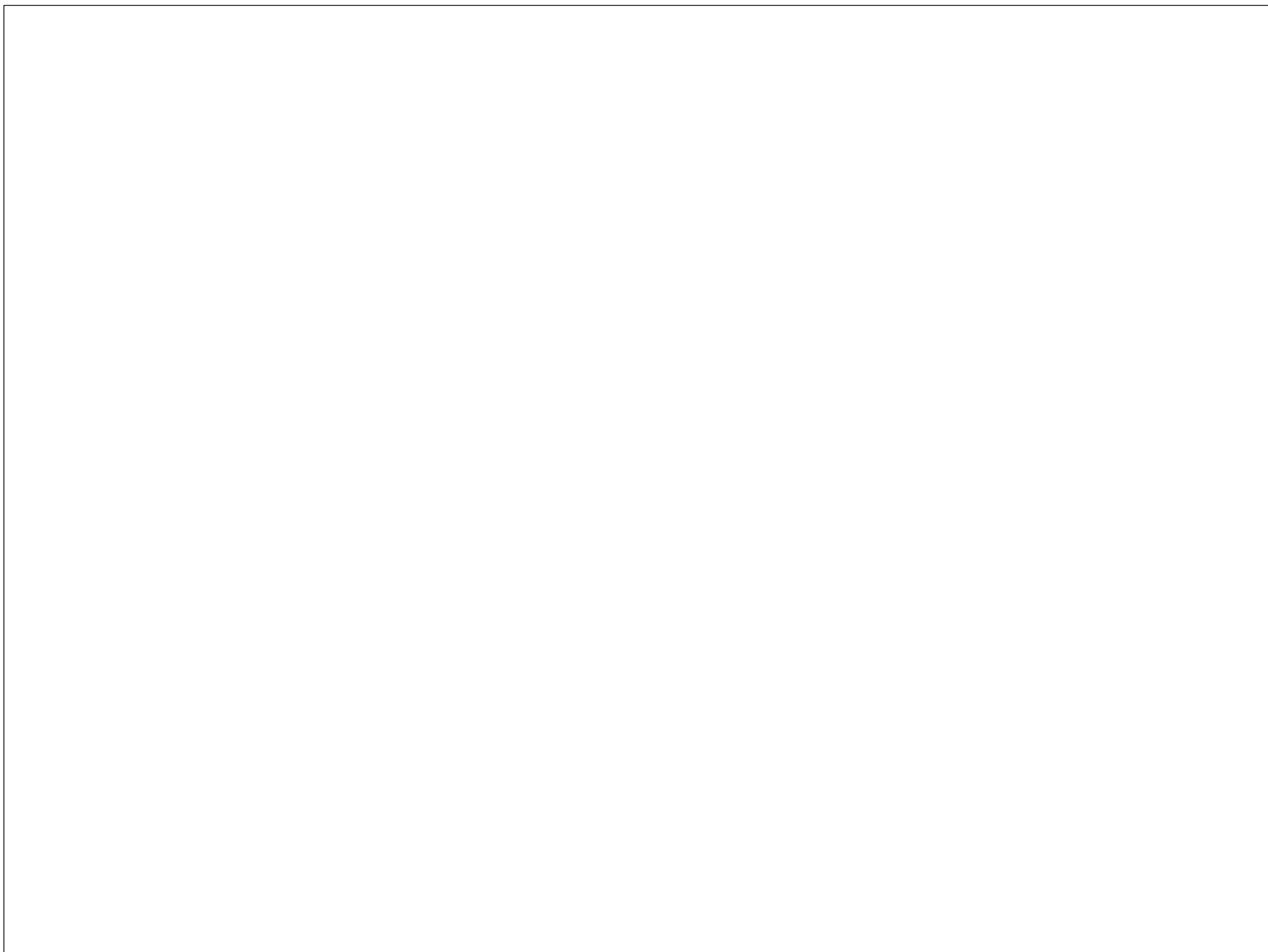
CARBON - 14

HAVE SAME # p^+ BUT DIFFERENT # n^0

Some isotopes are **STABLE**.
Their nuclei don't fall apart.

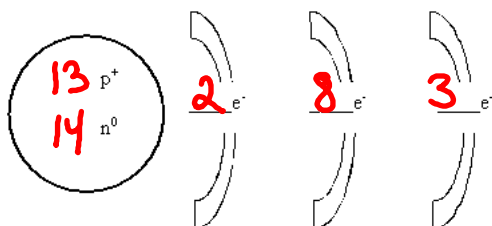
Some nuclei fall apart.

They have a Half-life.

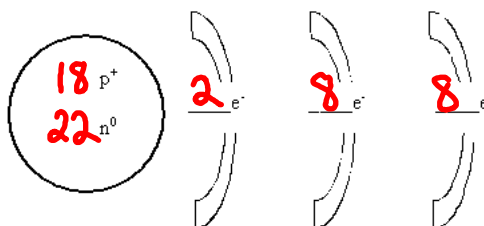


Elements of Periodic Table Models

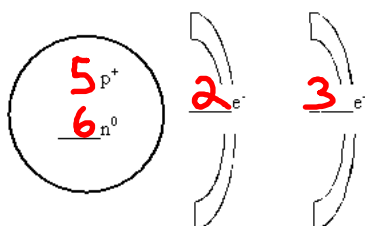
13 Al Aluminum 26.98154	Element Name <u>ALUMINUM</u>
	Number of Protons <u>13</u>
	Number of Neutrons <u>14</u>
	Number of Electrons <u>13</u>



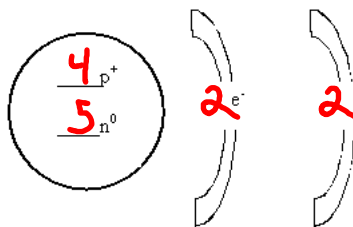
18 Ar Argon 39.948	Element Name <u>ARGON</u>
	Number of Protons <u>18</u>
	Number of Neutrons <u>22</u>
	Number of Electrons <u>18</u>



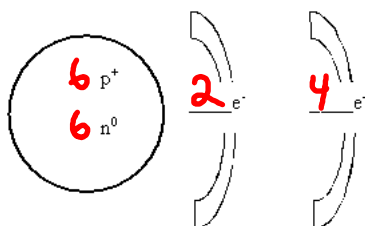
5 B Boron 10.81	Element Name <u>BORON</u>
	Number of Protons <u>5</u>
	Number of Neutrons <u>6</u>
	Number of Electrons <u>5</u>



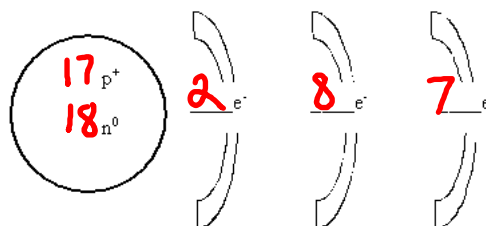
4 Be Beryllium 9.01218	Element Name <u>BERYLLIUM</u>
	Number of Protons <u>4</u>
	Number of Neutrons <u>5</u>
	Number of Electrons <u>4</u>



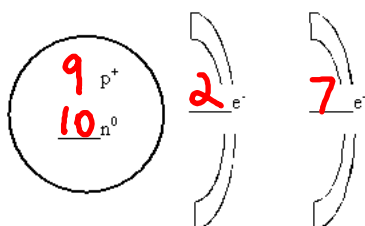
6	Element Name <u>CARBON</u>
C	Number of Protons <u>6</u>
Carbon	Number of Neutrons <u>6</u>
12.011	Number of Electrons <u>6</u>



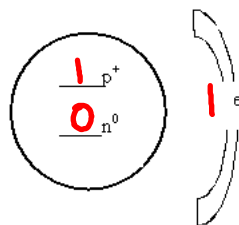
17	Element Name <u>CHLORINE</u>
Cl	Number of Protons <u>17</u>
Chlorine	Number of Neutrons <u>18</u>
35.453	Number of Electrons <u>17</u>



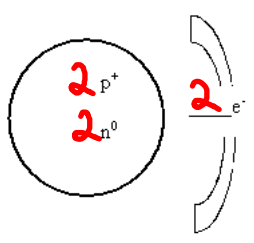
9	Element Name <u>FLUORINE</u>
F	Number of Protons <u>9</u>
Fluorine	Number of Neutrons <u>10</u>
18.998403	Number of Electrons <u>9</u>



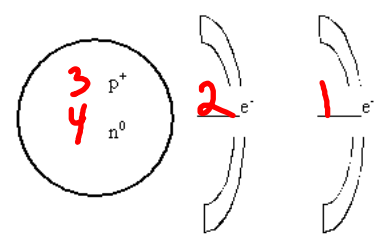
1	Element Name <u>HYDROGEN</u>
H	Number of Protons <u>1</u>
Hydrogen	Number of Neutrons <u>0</u>
1.00794	Number of Electrons <u>1</u>



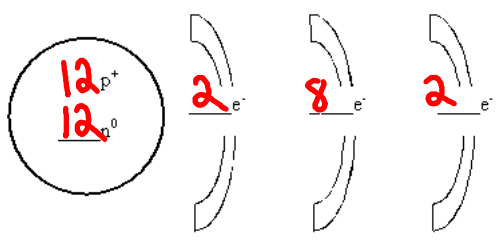
2	Element Name <u>HELIUM</u>
He	Number of Protons <u>2</u>
Helium	Number of Neutrons <u>2</u>
4.0026	Number of Electrons <u>2</u>



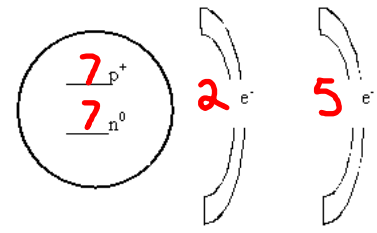
3	Element Name <u>LITHIUM</u>
Li	Number of Protons <u>3</u>
Lithium	Number of Neutrons <u>4</u>
6.941	Number of Electrons <u>3</u>



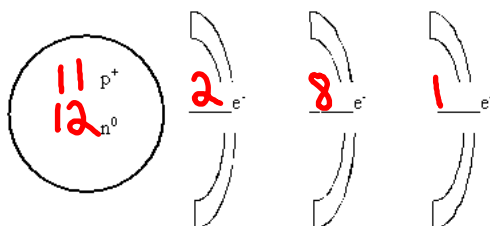
12	Element Name <u>MAGNESIUM</u>
Mg	Number of Protons <u>12</u>
Magnesium	Number of Neutrons <u>12</u>
24.305	Number of Electrons <u>12</u>



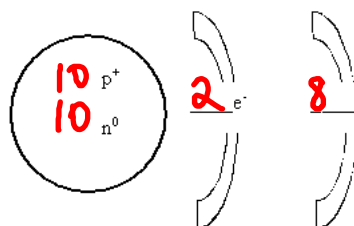
7	Element Name <u>NITROGEN</u>
N	Number of Protons <u>7</u>
Nitrogen	Number of Neutrons <u>7</u>
14.0067	Number of Electrons <u>7</u>



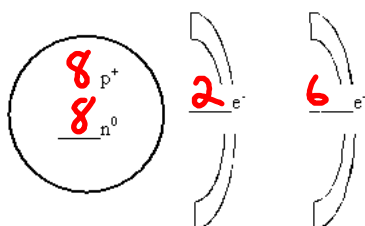
11	Element Name <u>SODIUM</u>
Na	Number of Protons <u>11</u>
Sodium	Number of Neutrons <u>12</u>
22.98977	Number of Electrons <u>11</u>



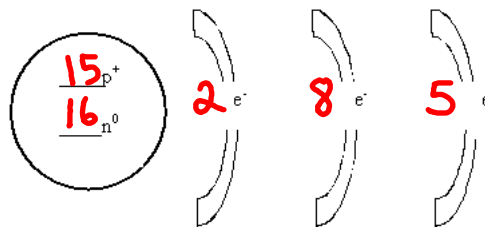
10	Element Name <u>NEON</u>
Ne	Number of Protons <u>10</u>
Neon	Number of Neutrons <u>10</u>
20.179	Number of Electrons <u>10</u>



8	Element Name <u>OXYGEN</u>
O	Number of Protons <u>8</u>
Oxygen	Number of Neutrons <u>8</u>
15.9994	Number of Electrons <u>8</u>

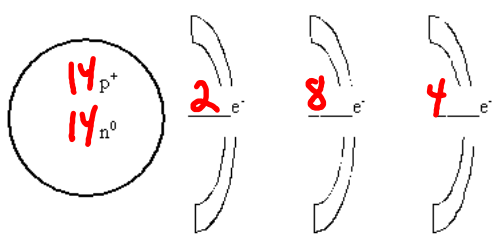
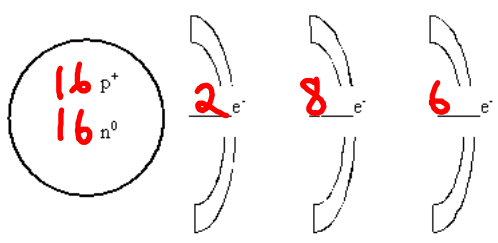


15	Element Name <u>PHOSPHOROUS</u>
P	Number of Protons <u>15</u>
Phosphorous	Number of Neutrons <u>16</u>
30.97376	Number of Electrons <u>15</u>



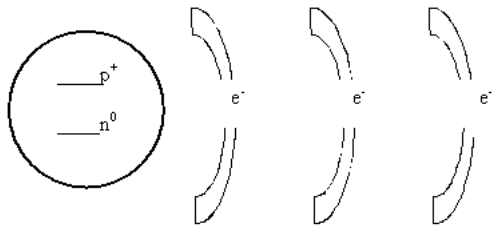
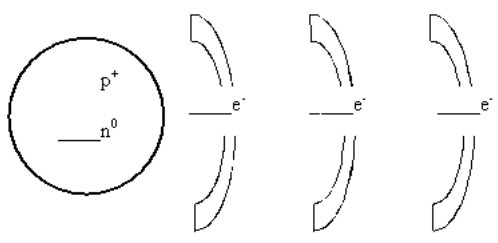
16	Element Name <u>SULFUR</u>
S	Number of Protons <u>16</u>
Sulfur	Number of Neutrons <u>16</u>
32.06	Number of Electrons <u>16</u>

14	Element Name <u>SILICON</u>
Si	Number of Protons <u>14</u>
Silicon	Number of Neutrons <u>14</u>
28.0855	Number of Electrons <u>14</u>



Element Name _____
 Number of Protons _____
 Number of Neutrons _____
 Number of Electrons _____

Element Name _____
 Number of Protons _____
 Number of Neutrons _____
 Number of Electrons _____



The image displays a periodic table for elements 1 through 18, with their atomic numbers, names, and electron configurations. The configurations are written in a simplified shell model format, showing the number of electrons in each shell (K, L, M, N) and the number of electrons in the outermost shell.

Element	Atomic Number	Electron Configuration
1 Hydrogen	1	1. 1.
2 Helium	2	2. 2.
3 Lithium	3	3. 2. 1.
4 Beryllium	4	4. 2. 2.
5 Boron	5	5. 2. 2. 1.
6 Carbon	6	6. 2. 2. 2.
7 Nitrogen	7	7. 2. 2. 3.
8 Oxygen	8	8. 2. 2. 4.
9 Fluorine	9	9. 2. 2. 5.
10 Neon	10	10. 2. 2. 6.
11 Sodium	11	11. 2. 8. 1.
12 Magnesium	12	12. 2. 8. 2.
13 Aluminum	13	13. 2. 8. 3.
14 Silicon	14	14. 2. 8. 4.
15 Phosphorus	15	15. 2. 8. 5.
16 Sulfur	16	16. 2. 8. 6.
17 Chlorine	17	17. 2. 8. 7.
18 Argon	18	18. 2. 8. 8.

Put these elements
into groups

Same protons- neutrons

<p>Mg Magnesium 12 24.305</p> <p>Element Name: <u>Magnesium</u> Number of Protons: <u>12</u> Number of Electrons: <u>12</u></p> <p>12p 12e</p> <p>2, 8, 2</p>	<p>C Carbon 6 12.011</p> <p>Element Name: <u>Carbon</u> Number of Protons: <u>6</u> Number of Electrons: <u>6</u></p> <p>6p 6e</p> <p>2, 4</p>	
<p>Na Sodium 11 22.990</p> <p>Element Name: <u>Sodium</u> Number of Protons: <u>11</u> Number of Electrons: <u>11</u></p> <p>11p 11e</p> <p>2, 8, 1</p>	<p>O Oxygen 8 15.999</p> <p>Element Name: <u>Oxygen</u> Number of Protons: <u>8</u> Number of Electrons: <u>8</u></p> <p>8p 8e</p> <p>2, 6</p>	<p>He Helium 2 4.0026</p> <p>Element Name: <u>Helium</u> Number of Protons: <u>2</u> Number of Electrons: <u>2</u></p> <p>2p 2e</p> <p>2</p>
<p>S Sulfur 16 32.06</p> <p>Element Name: <u>Sulfur</u> Number of Protons: <u>16</u> Number of Electrons: <u>16</u></p> <p>16p 16e</p> <p>2, 8, 6</p>	<p>Ne Neon 10 20.18</p> <p>Element Name: <u>Neon</u> Number of Protons: <u>10</u> Number of Electrons: <u>10</u></p> <p>10p 10e</p> <p>2, 8</p>	<p>N Nitrogen 7 14.007</p> <p>Element Name: <u>Nitrogen</u> Number of Protons: <u>7</u> Number of Electrons: <u>7</u></p> <p>7p 7e</p> <p>2, 5</p>

Different protons-neutrons

<p>Li Lithium 3 6.941</p> <p>Element Name: <u>Lithium</u> Number of Protons: <u>3</u> Number of Electrons: <u>3</u></p> <p>3p 3e</p> <p>2, 1</p>	<p>F Fluorine 9 18.998</p> <p>Element Name: <u>Fluorine</u> Number of Protons: <u>9</u> Number of Electrons: <u>9</u></p> <p>9p 9e</p> <p>2, 7</p>	<p>Na Sodium 11 22.990</p> <p>Element Name: <u>Sodium</u> Number of Protons: <u>11</u> Number of Electrons: <u>11</u></p> <p>11p 11e</p> <p>2, 8, 1</p>
<p>Be Beryllium 4 9.012</p> <p>Element Name: <u>Beryllium</u> Number of Protons: <u>4</u> Number of Electrons: <u>4</u></p> <p>4p 4e</p> <p>2, 2</p>	<p>Al Aluminum 13 26.982</p> <p>Element Name: <u>Aluminum</u> Number of Protons: <u>13</u> Number of Electrons: <u>13</u></p> <p>13p 13e</p> <p>2, 8, 3</p>	<p>Cl Chlorine 17 35.45</p> <p>Element Name: <u>Chlorine</u> Number of Protons: <u>17</u> Number of Electrons: <u>17</u></p> <p>17p 17e</p> <p>2, 8, 7</p>
<p>B Boron 5 10.81</p> <p>Element Name: <u>Boron</u> Number of Protons: <u>5</u> Number of Electrons: <u>5</u></p> <p>5p 5e</p> <p>2, 3</p>	<p>P Phosphorus 15 30.974</p> <p>Element Name: <u>Phosphorus</u> Number of Protons: <u>15</u> Number of Electrons: <u>15</u></p> <p>15p 15e</p> <p>2, 8, 5</p>	<p>Ar Argon 18 39.948</p> <p>Element Name: <u>Argon</u> Number of Protons: <u>18</u> Number of Electrons: <u>18</u></p> <p>18p 18e</p> <p>2, 8, 8</p>

<p>1 Element Name: Hydrogen Number of Protons: 1 Number of Neutrons: 0 Number of Electrons: 1</p>	<p>2 Element Name: Helium Number of Protons: 2 Number of Neutrons: 2 Number of Electrons: 2</p>						
<p>3 Element Name: Lithium Number of Protons: 3 Number of Neutrons: 3 Number of Electrons: 3</p>	<p>4 Element Name: Berillium Number of Protons: 4 Number of Neutrons: 5 Number of Electrons: 4</p>	<p>5 Element Name: Boron Number of Protons: 5 Number of Neutrons: 6 Number of Electrons: 5</p>	<p>6 Element Name: Carbon Number of Protons: 6 Number of Neutrons: 6 Number of Electrons: 6</p>	<p>7 Element Name: Nitrogen Number of Protons: 7 Number of Neutrons: 7 Number of Electrons: 7</p>	<p>8 Element Name: Oxygen Number of Protons: 8 Number of Neutrons: 8 Number of Electrons: 8</p>	<p>9 Element Name: Fluorine Number of Protons: 9 Number of Neutrons: 10 Number of Electrons: 9</p>	<p>10 Element Name: Neon Number of Protons: 10 Number of Neutrons: 10 Number of Electrons: 10</p>
<p>11 Element Name: Sodium Number of Protons: 11 Number of Neutrons: 12 Number of Electrons: 11</p>	<p>12 Element Name: Magnesium Number of Protons: 12 Number of Neutrons: 12 Number of Electrons: 12</p>	<p>13 Element Name: Aluminum Number of Protons: 13 Number of Neutrons: 13 Number of Electrons: 13</p>	<p>14 Element Name: Silicon Number of Protons: 14 Number of Neutrons: 14 Number of Electrons: 14</p>	<p>15 Element Name: Phosphorus Number of Protons: 15 Number of Neutrons: 16 Number of Electrons: 15</p>	<p>16 Element Name: Sulfur Number of Protons: 16 Number of Neutrons: 16 Number of Electrons: 16</p>	<p>17 Element Name: Chlorine Number of Protons: 17 Number of Neutrons: 18 Number of Electrons: 17</p>	<p>18 Element Name: Argon Number of Protons: 18 Number of Neutrons: 22 Number of Electrons: 18</p>

<p>1 Element Name: Hydrogen Number of Protons: 1 Number of Neutrons: 0 Number of Electrons: 1</p>	<p>2 Element Name: Helium Number of Protons: 2 Number of Neutrons: 2 Number of Electrons: 2</p>						
<p>3 Element Name: Lithium Number of Protons: 3 Number of Neutrons: 3 Number of Electrons: 3</p>	<p>4 Element Name: Berillium Number of Protons: 4 Number of Neutrons: 5 Number of Electrons: 4</p>	<p>5 Element Name: Boron Number of Protons: 5 Number of Neutrons: 6 Number of Electrons: 5</p>	<p>6 Element Name: Carbon Number of Protons: 6 Number of Neutrons: 6 Number of Electrons: 6</p>	<p>7 Element Name: Nitrogen Number of Protons: 7 Number of Neutrons: 7 Number of Electrons: 7</p>	<p>8 Element Name: Oxygen Number of Protons: 8 Number of Neutrons: 8 Number of Electrons: 8</p>	<p>9 Element Name: Fluorine Number of Protons: 9 Number of Neutrons: 10 Number of Electrons: 9</p>	<p>10 Element Name: Neon Number of Protons: 10 Number of Neutrons: 10 Number of Electrons: 10</p>
<p>11 Element Name: Sodium Number of Protons: 11 Number of Neutrons: 12 Number of Electrons: 11</p>	<p>12 Element Name: Magnesium Number of Protons: 12 Number of Neutrons: 12 Number of Electrons: 12</p>	<p>13 Element Name: Aluminum Number of Protons: 13 Number of Neutrons: 13 Number of Electrons: 13</p>	<p>14 Element Name: Silicon Number of Protons: 14 Number of Neutrons: 14 Number of Electrons: 14</p>	<p>15 Element Name: Phosphorus Number of Protons: 15 Number of Neutrons: 16 Number of Electrons: 15</p>	<p>16 Element Name: Sulfur Number of Protons: 16 Number of Neutrons: 16 Number of Electrons: 16</p>	<p>17 Element Name: Chlorine Number of Protons: 17 Number of Neutrons: 18 Number of Electrons: 17</p>	<p>18 Element Name: Argon Number of Protons: 18 Number of Neutrons: 22 Number of Electrons: 18</p>