



Table: Sub-Atomic Particles
Protons, Electrons, & Neutrons

Name of sub-atomic particle in an atom	How many are there?	Where are they located in an atom? (Location)	Charge	Size (compared to other particles)
<i>PROTON</i>				
<i>ELECTRON</i>				
<i>NEUTRON</i>				

Draw and label the hydrogen atom	Draw and label the Lithium atom:	Draw and label the Helium atom:
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<p>The atom you are looking for has</p> <p>1</p> <p>Proton in its Nucleus.</p>	<p>Atomic Number 1</p> <p>HYDROGEN (H)</p> <p>Atomic Mass 1.01</p> <p>H</p>
<p>The atom you are looking for has</p> <p>1</p> <p>Electron surrounding its Nucleus.</p>	<p>The atom you are looking for has this Energy Level Model:</p> 
<p>The atom you are looking for has</p> <p>0</p> <p>Neutrons (usually) in its Nucleus.</p>	<p>The atom you are looking for has 1 Electron on the First Energy Level.</p>
<p>The atom you are looking for has</p> <p>1</p> <p>fewer Proton than Helium (He).</p>	<p>The atom you are looking for is directly above the atom with this Energy Level.</p> 
<p>The atom you are looking for has</p> <p>2</p> <p>fewer Electrons than Lithium (Li).</p>	<p>The atom you are looking for is the only atom with only 1 Electron in the First Energy Level.</p>

The atom you are looking for has

2

Protons in its Nucleus.

Atomic Number **2**
HELIUM (He)
Atomic Mass 4.00

He

The atom you are looking for has

2

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

2

Neutrons (usually)
in its Nucleus.

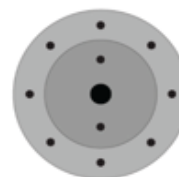
The atom you are looking for has
2 Electrons on the **First** Energy Level and
no other electrons.

The atom you are looking for has

1

more Proton
than Hydrogen (H).

The atom you are looking for is
directly above the atom with this Energy Level.



The atom you are looking for has

2

fewer Electrons
than Beryllium (Be).

The atom you are looking for is the only atom with only
2 Electrons in the First Energy Level and
no other electrons on any other level.

The atom you are looking for has

3

Protons in its Nucleus.

Atomic Number **3**

LITHIUM (Li)

Atomic Mass 6.94

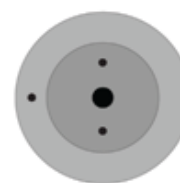
Li

The atom you are looking for has

3

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

4

Neutrons (usually)
in its Nucleus.

The atom you are looking for has
2 Electrons on the **First** Energy Level and
1 Electron on the **Second** Energy Level.

The atom you are looking for has

3

fewer Protons
than Carbon (C).

The atom you are looking for is
directly below the atom with this Energy Level.

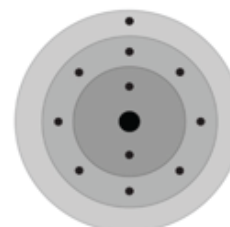


The atom you are looking for has

2

fewer Electrons
than Boron.

The atom you are looking for is
directly above the atom with this Energy Level.



The atom you are looking for has

4

Protons in its Nucleus.

Atomic Number **4**
BERYLLIUM (Be)
Atomic Mass 9.01

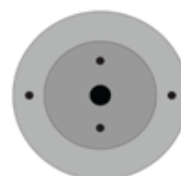
Be

The atom you are looking for has

4

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

5

Neutrons (usually)
in its Nucleus.

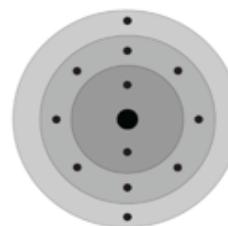
The atom you are looking for has
2 Electrons on the **First** Energy Level and
2 Electrons on the **Second** Energy Level.

The atom you are looking for has

4

fewer Protons
than Oxygen (O).

The atom you are looking for is
directly above the atom with this Energy Level.



The atom you are looking for has

3

fewer Electrons
than Nitrogen (N).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

5

Protons in its Nucleus.

Atomic Number **5**

Boron (B)

Atomic Mass 10.81

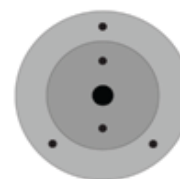
B

The atom you are looking for has

5

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

6

Neutrons (usually)
in its Nucleus.

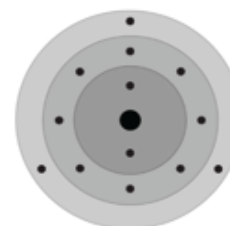
The atom you are looking for has
2 Electrons on the **First** Energy Level and
3 Electrons on the **Second** Energy Level.

The atom you are looking for has

4

more Protons
than Hydrogen (H).

The atom you are looking for is
directly above the atom with this Energy Level.

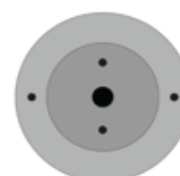


The atom you are looking for has

3

more Electrons
than Helium (He).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

6

Protons in its Nucleus.

Atomic Number **6**

Carbon (C)

Atomic Mass 12.01

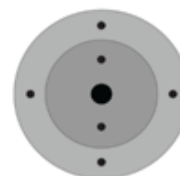
C

The atom you are looking for has

6

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

6

Neutrons (usually)
in its Nucleus.

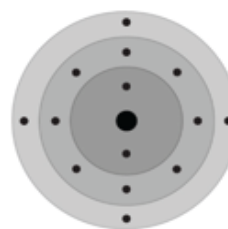
The atom you are looking for has
2 Electrons on the **First** Energy Level and
4 Electrons on the **Second** Energy Level.

The atom you are looking for has

1

more Proton
than Boron (B).

The atom you are looking for is
directly above the atom with this Energy Level.

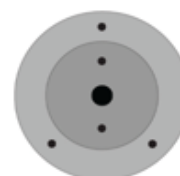


The atom you are looking for has

3

more Electrons
than Lithium (Li).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

7

Protons in its Nucleus.

Atomic Number **7**
Nitrogen (N)
Atomic Mass 14.01

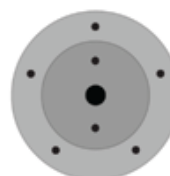
N

The atom you are looking for has

7

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

7

Neutrons (usually)
in its Nucleus.

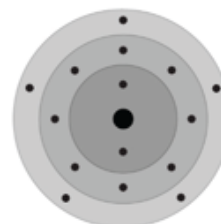
The atom you are looking for has
2 Electrons on the **First** Energy Level and
5 Electrons on the **Second** Energy Level.

The atom you are looking for has

3

fewer Protons
than Neon (Ne).

The atom you are looking for is
directly above the atom with this Energy Level.

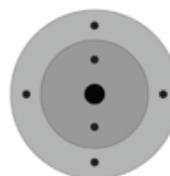


The atom you are looking for has

1

fewer Electron
than Oxygen (O).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

8

Protons in its Nucleus.

Atomic Number **8**
Oxygen (O)
Atomic Mass 16.00

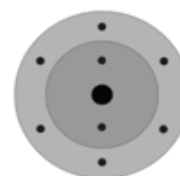


The atom you are looking for has

8

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

8

Neutrons (usually)
in its Nucleus.

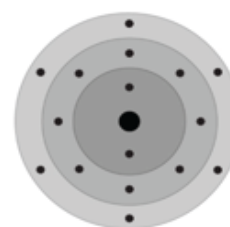
The atom you are looking for has
2 Electrons on the **First** Energy Level and
6 Electrons on the **Second** Energy Level.

The atom you are looking for has

2

more Protons
than Carbon (C).

The atom you are looking for is
directly above the atom with this Energy Level.

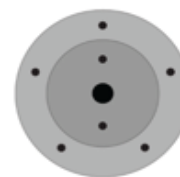


The atom you are looking for has

6

more Electrons
than Helium (He).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

9

Protons in its Nucleus.

Atomic Number **9**

Fluorine (F)

Atomic Mass 18.99

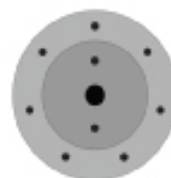
F

The atom you are looking for has

9

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

10

Neutrons (usually)
in its Nucleus.

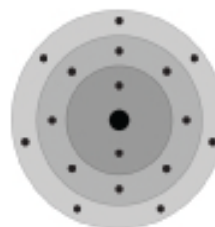
The atom you are looking for has
2 Electrons on the **First** Energy Level and
7 Electrons on the **Second** Energy Level.

The atom you are looking for has

1

fewer Proton
than Neon (Ne).

The atom you are looking for is
directly above the atom with this Energy Level.



The atom you are looking for has

2

more Electrons
than Nitrogen (N).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

10

Protons in its Nucleus.

Atomic Number **10**
Neon (Ne)
Atomic Mass 20.18

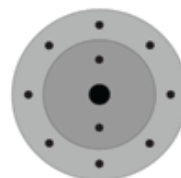
Ne

The atom you are looking for has

10

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

10

Neutrons (usually)
in its Nucleus.

The atom you are looking for has
2 Electrons on the **First** Energy Level and
8 Electrons on the **Second** Energy Level.

The atom you are looking for has

8

more Protons
than Helium (He).

The atom you are looking for is
directly below the atom with this Energy Level.

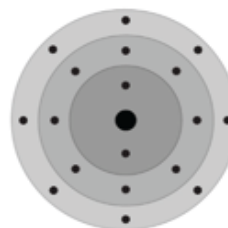


The atom you are looking for has

2

more Electrons
than Oxygen (O).

The atom you are looking for is
directly above
of the atom with this Energy Level.



The atom you are looking for has

11

Protons in its Nucleus.

Atomic Number **11**
Sodium (Na)
Atomic Mass 22.99

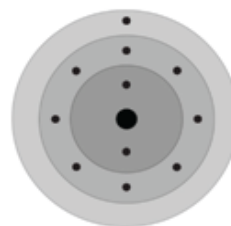
Na

The atom you are looking for has

11

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

12

Neutrons (usually)
in its Nucleus.

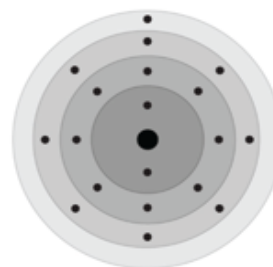
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
1 Electron on the **Third** Energy Level.

The atom you are looking for has

2

fewer Protons
than Aluminum (Al).

The atom you are looking for is
directly above the atom with this Energy Level.

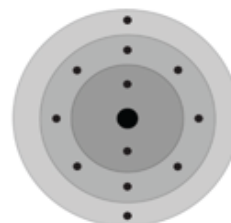


The atom you are looking for has

3

more Electrons
than Oxygen (O).

The atom you are looking for is
directly to the left
of the atom with this Energy Level.



The atom you are looking for has

12

Protons in its Nucleus.

Atomic Number 12
Magnesium (Mg)
Atomic Mass 24.31

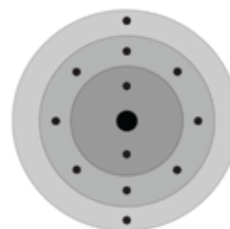
Mg

The atom you are looking for has

12

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

12

Neutrons (usually)
in its Nucleus.

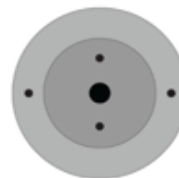
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
2 Electrons on the **Third** Energy Level.

The atom you are looking for has

10

more Protons
than Helium (He).

The atom you are looking for is
directly below the atom with this Energy Level.

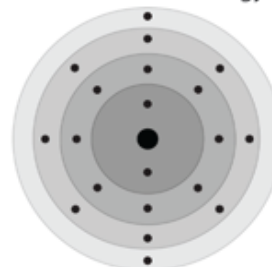


The atom you are looking for has

8

more Electrons
than Beryllium (Be).

The atom you are looking for is
directly above
of the atom with this Energy Level.



The atom you are looking for has

13

Protons in its Nucleus.

Atomic Number **13**
Aluminum (Al)
Atomic Mass 26.98

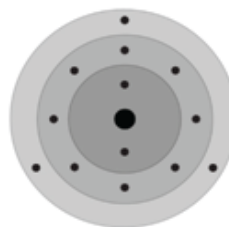
Al

The atom you are looking for has

13

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

14

Neutrons (usually)
in its Nucleus.

The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
3 Electrons on the **Third** Energy Level.

The atom you are looking for has

8

more Protons
than Boron (B).

The atom you are looking for is
directly below the atom with this Energy Level.

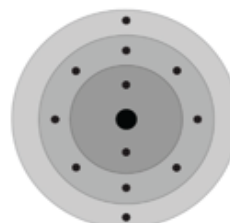


The atom you are looking for has

5

more Electrons
than Oxygen (O).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

14

Protons in its Nucleus.

Atomic Number **14**

Silicon (Si)

Atomic Mass 28.09

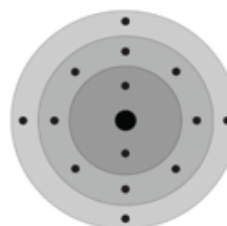
Si

The atom you are looking for has

14

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

14

Neutrons (usually)
in its Nucleus.

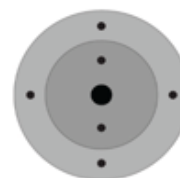
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
4 Electrons on the **Third** Energy Level.

The atom you are looking for has

3

fewer Protons
than Chlorine (Cl).

The atom you are looking for is
directly below the atom with this Energy Level.

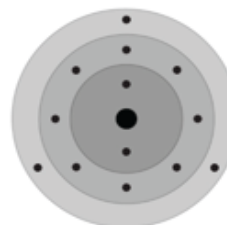


The atom you are looking for has

2

more Electrons
than Magnesium (Mg).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

15

Protons in its Nucleus.

Atomic Number **15**
Phosphorous (P)
Atomic Mass 30.97

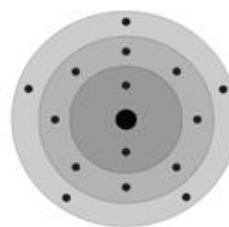
P

The atom you are looking for has

15

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

16

Neutrons (usually)
in its Nucleus.

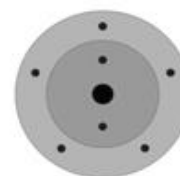
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
5 Electrons on the **Third** Energy Level.

The atom you are looking for has

8

more Protons
than Nitrogen (N).

The atom you are looking for is
directly below the atom with this Energy Level.

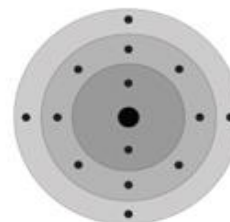


The atom you are looking for has

3

fewer Electrons
than Argon (Ar).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

16

Protons in its Nucleus.

Atomic Number **16**
Sulfur (S)
Atomic Mass 32.07

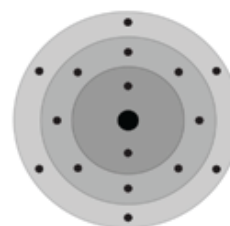
S

The atom you are looking for has

16

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

16

Neutrons (usually)
in its Nucleus.

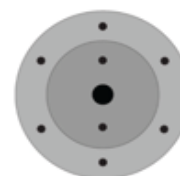
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
6 Electrons on the **Third** Energy Level.

The atom you are looking for has

10

more Protons
than Carbon (C).

The atom you are looking for is
directly below the atom with this Energy Level.

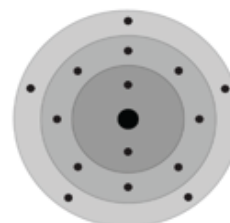


The atom you are looking for has

6

more Electrons
than Neon (Ne).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

17

Protons in its Nucleus.

Atomic Number **17**
Chlorine (Cl)
Atomic Mass 35.45

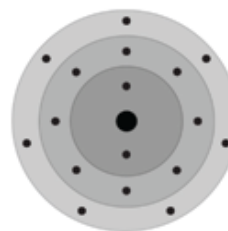
Cl

The atom you are looking for has

17

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

18

Neutrons (usually)
in its Nucleus.

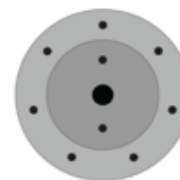
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
7 Electrons on the **Third** Energy Level.

The atom you are looking for has

3

fewer Protons
than Calcium (Ca).

The atom you are looking for is
directly below the atom with this Energy Level.

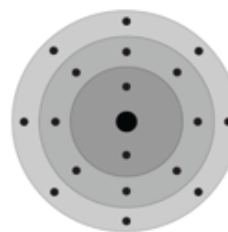


The atom you are looking for has

8

more Electrons
than Fluorine (F).

The atom you are looking for is
directly to the left
of the atom with this Energy Level.



The atom you are looking for has

18

Protons in its Nucleus.

Atomic Number **18**
Argon (Ar)
Atomic Mass 39.95

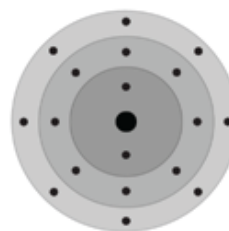
Ar

The atom you are looking for has

18

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

22

Neutrons (usually)
in its Nucleus.

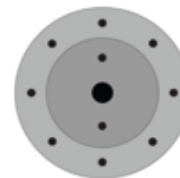
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level, and
8 Electrons on the **Third** Energy Level.

The atom you are looking for has

7

more Protons
than Sodium (Na).

The atom you are looking for is
directly below the atom with this Energy Level.

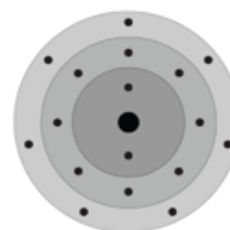


The atom you are looking for has

8

more Electrons
than Neon (Ne).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.



The atom you are looking for has

19

Protons in its Nucleus.

Atomic Number **19**

Potassium (K)

Atomic Mass 39.10

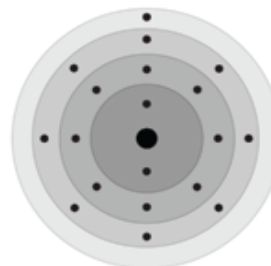
K

The atom you are looking for has

19

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

20

Neutrons (usually)
in its Nucleus.

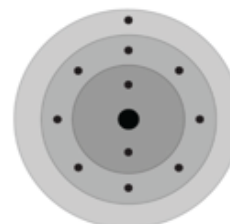
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level,
8 Electrons on the **Third** Energy Level, and
1 Electron on the **Fourth** Energy Level.

The atom you are looking for has

4

more Protons
than Phosphorous (P).

The atom you are looking for is
directly below the atom with this Energy Level.

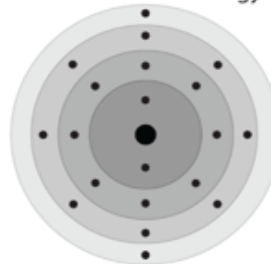


The atom you are looking for has

18

more Electrons
than Hydrogen (H).

The atom you are looking for is
directly to the left
of the atom with this Energy Level.



The atom you are looking for has

20

Protons in its Nucleus.

Atomic Number **20**

Calcium (Ca)

Atomic Mass 40.08

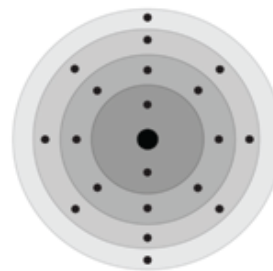
Ca

The atom you are looking for has

20

Electrons surrounding
its Nucleus.

The atom you are looking for has this
Energy Level Model:



The atom you are looking for has

20

Neutrons (usually)
in its Nucleus.

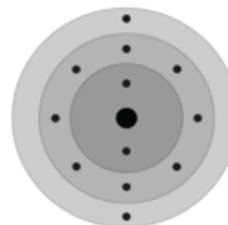
The atom you are looking for has
2 Electrons on the **First** Energy Level,
8 Electrons on the **Second** Energy Level,
8 Electrons on the **Third** Energy Level, and
2 Electrons on the **Fourth** Energy Level.

The atom you are looking for has

8

more Protons
than Magnesium (Mg).

The atom you are looking for is
directly below the atom with this Energy Level.

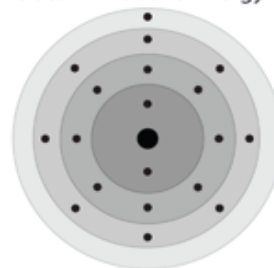


The atom you are looking for has

2





















more Electrons
than Argon (Ar).

The atom you are looking for is
directly to the right
of the atom with this Energy Level.

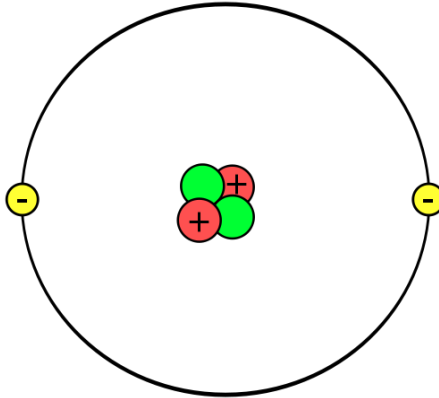
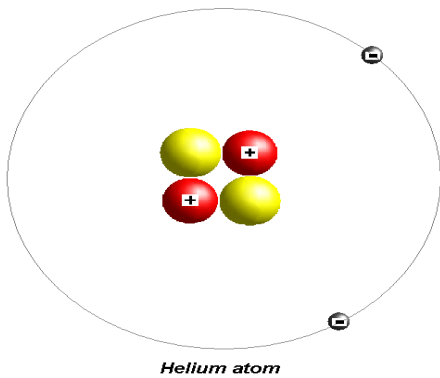
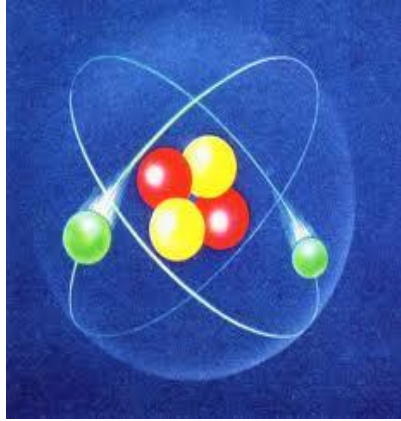
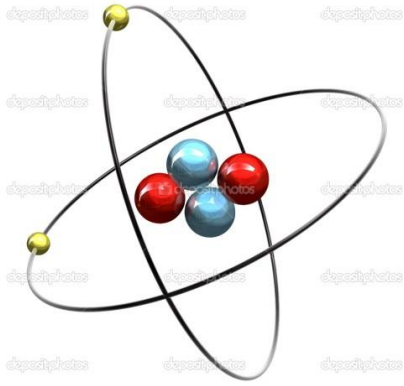
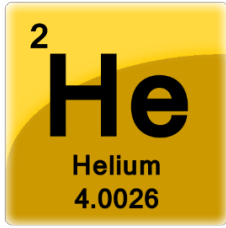


ENERGY LEVELS ELEMENTS 1-20

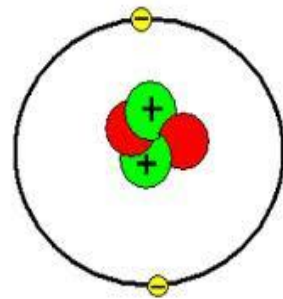
Complete each energy level model by drawing the correct number of electrons in their corresponding energy levels.

<p>HYDROGEN 1</p>  <p>1.01</p>	<p>HELIUM 2</p>  <p>4.00</p>
<p>LITHIUM 3</p>  <p>6.94</p>	<p>BERYLLIUM 4</p>  <p>9.01</p>
<p>SODIUM 11</p>  <p>22.99</p>	<p>NEON 10</p>  <p>20.18</p>
<p>POTASSIUM 19</p>  <p>39.10</p>	<p>FLUORINE 9</p>  <p>19.00</p>
<p>MAGNESIUM 12</p>  <p>24.31</p>	<p>OXYGEN 8</p>  <p>16.00</p>
<p>ALUMINUM 13</p>  <p>26.98</p>	<p>NITROGEN 7</p>  <p>14.01</p>
<p>CALCIUM 20</p>  <p>40.08</p>	<p>ARGON 18</p>  <p>39.95</p>
<p>SILICON 14</p>  <p>28.09</p>	<p>CHLORINE 17</p>  <p>35.45</p>
<p>BORON 5</p>  <p>10.81</p>	<p>SULFUR 16</p>  <p>32.07</p>
<p>CARBON 6</p>  <p>12.01</p>	<p>PHOSPHORUS 15</p>  <p>30.97</p>

The Helium Atom

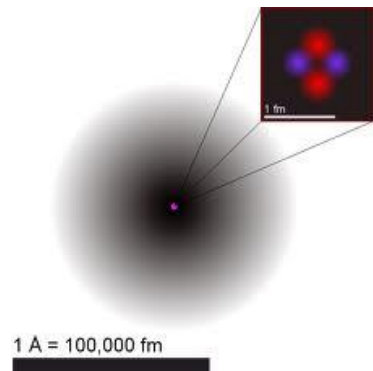
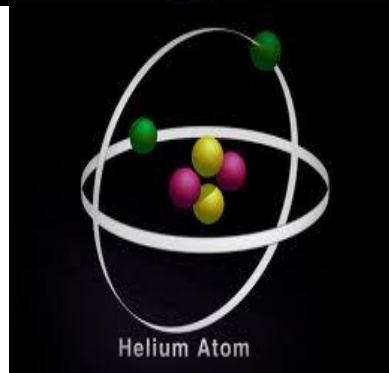
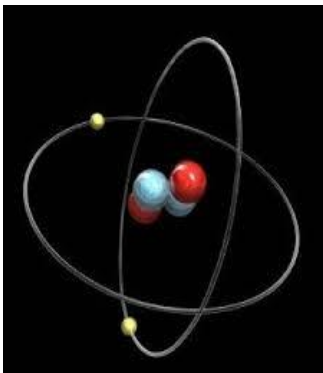
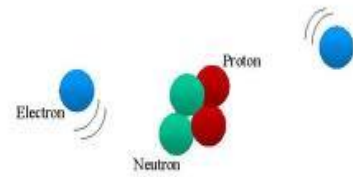
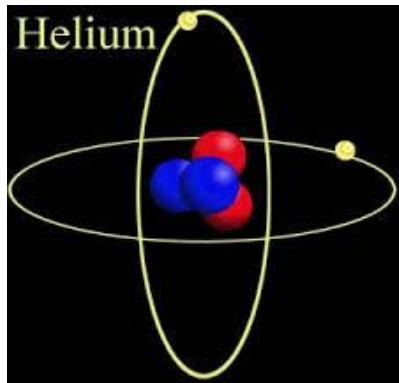
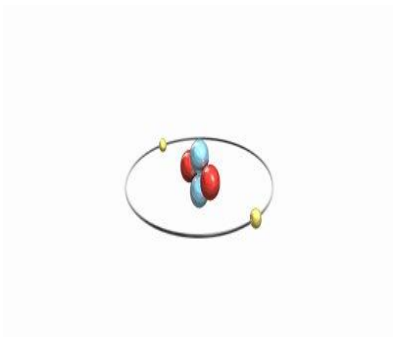


A Helium Atom



Helium atom

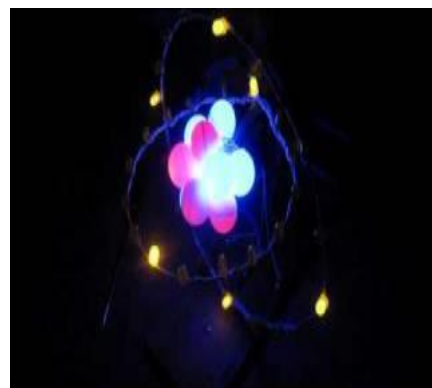
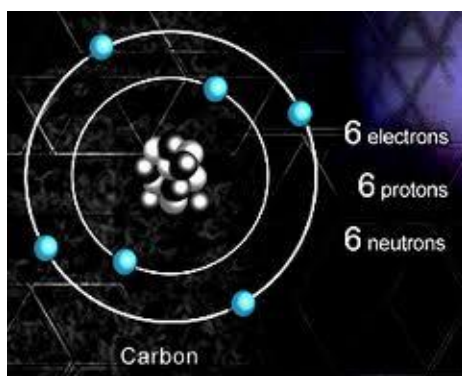
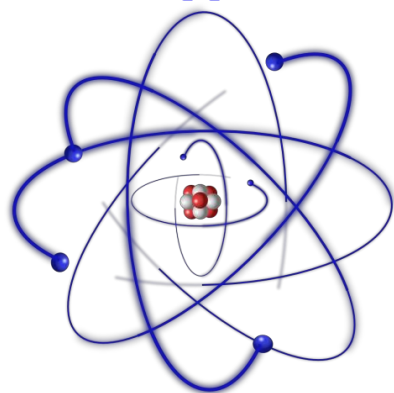
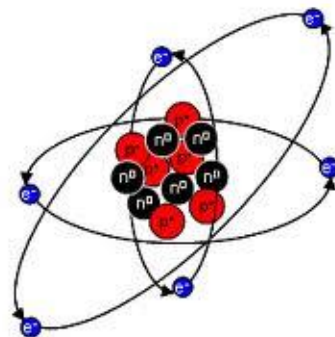
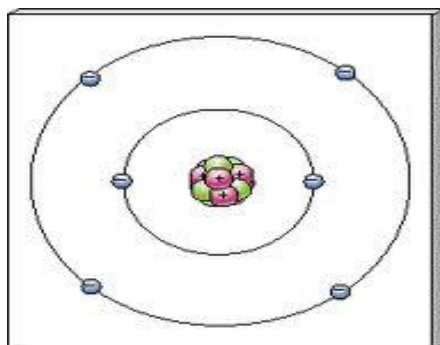
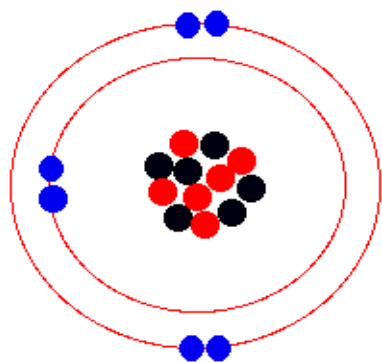
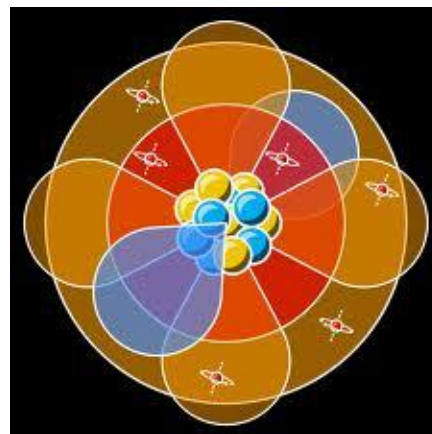
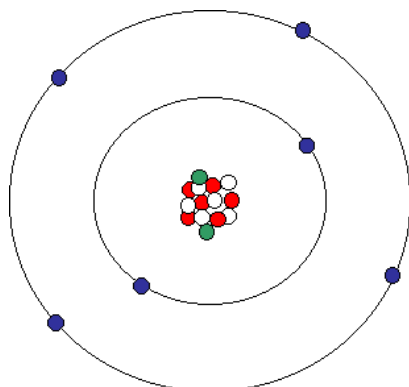
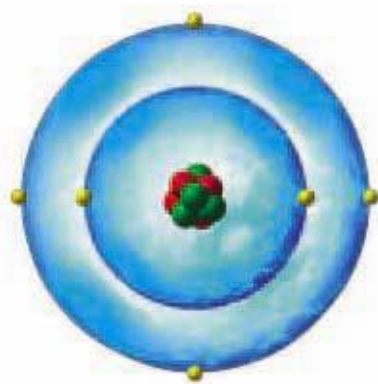
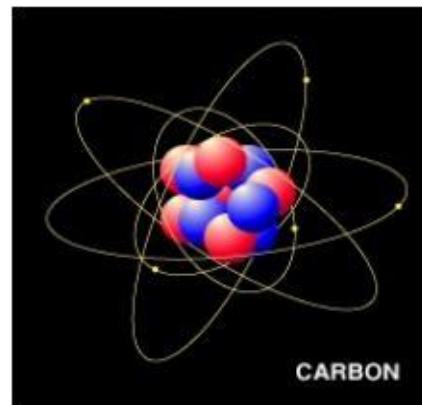
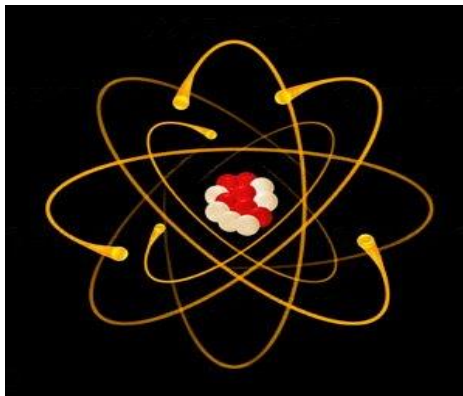
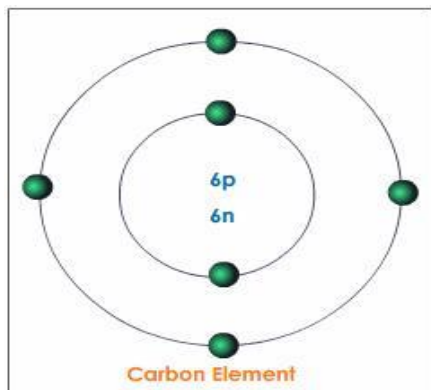
The Helium Atom



1 Å = 100,000 fm

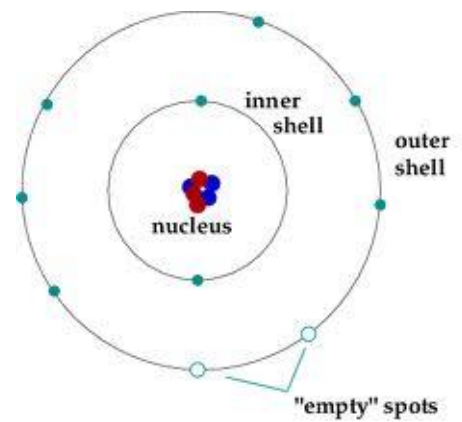
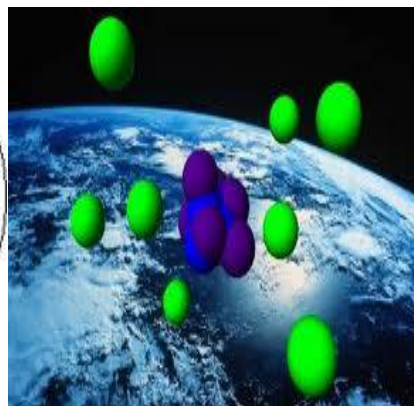
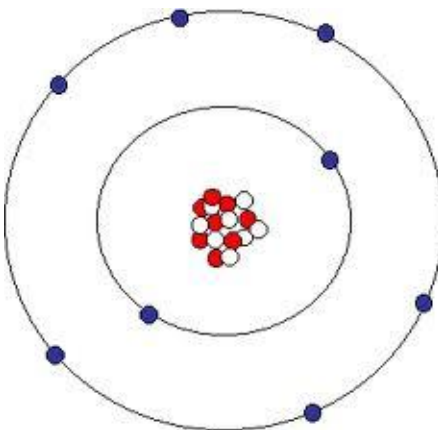
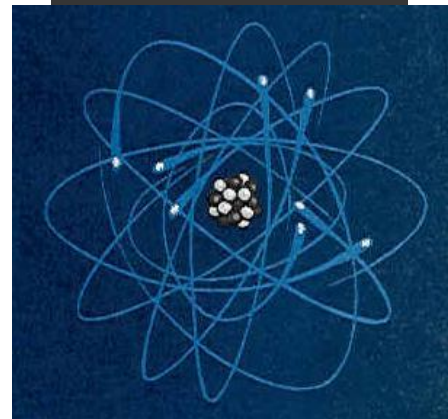
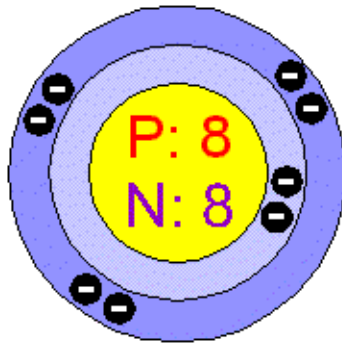
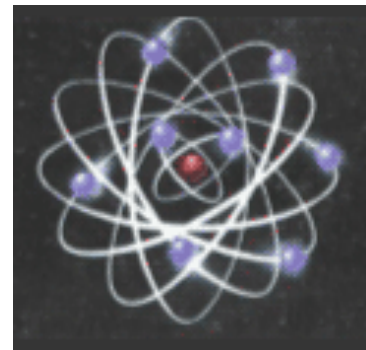
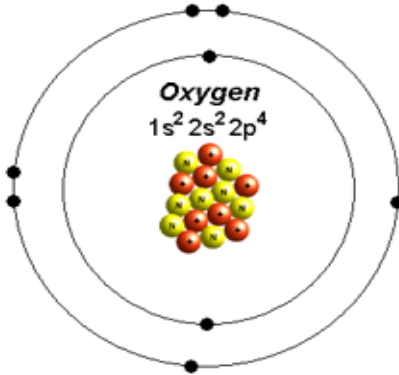
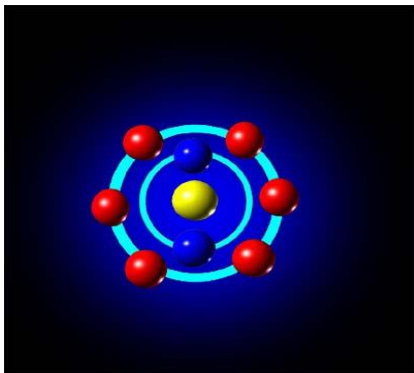
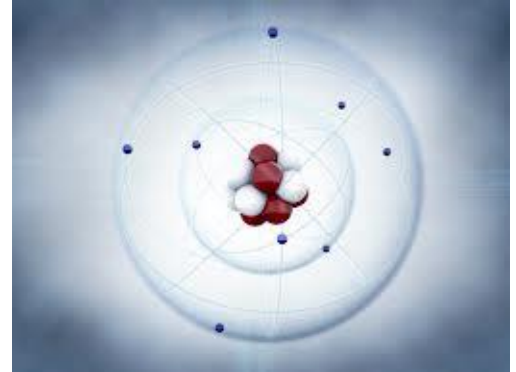
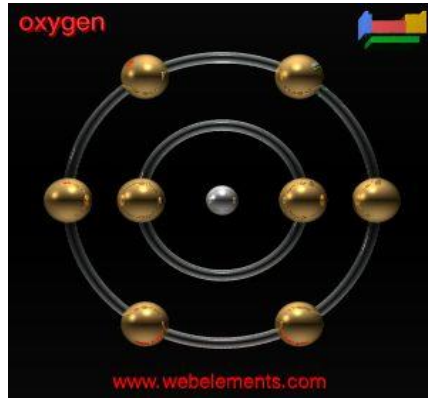
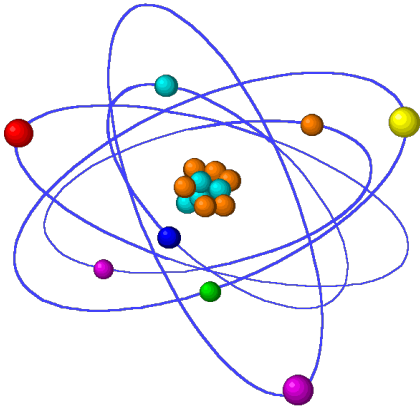
The Carbon Atom

6
C
Carbon
12.0



The Oxygen Atom

8	←
O	←
Oxygen	←
15.999	←



Word Bank:

- 1) proton
- 2) neutron
- 3) electron
- 4) electron cloud
- 5) electron orbit or shell
- 6) nucleus