

1. What evidence showed us there were electrons?

1. \_\_\_\_\_ discovered, using a \_\_\_\_\_ ray tube, that the atom did \_\_\_\_\_ travel in a straight line, but \_\_\_\_\_ towards the \_\_\_\_\_ charged plate.

2. What evidence showed there was a nucleus?

2. Rutherford used the \_\_\_\_\_ experiment and found:

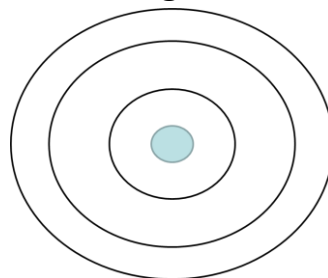
**Table 2 Summary of Rutherford's Conclusions**

Evidence	Conclusion
Most of the alpha particles passed right through the gold foil.	
The charged particles that bounced back could not have been knocked off course unless they had hit a mass much larger than their own.	
A few of the alpha particles bounced directly back.	

3. What happens when an electron gets excited?

3. When an \_\_\_\_\_ gets \_\_\_\_\_ the electron jumps \_\_\_\_\_ to a \_\_\_\_\_ (ring around the nucleus).

- When it \_\_\_\_\_ off, it \_\_\_\_\_ the energy in the form of \_\_\_\_\_ and goes back to its original orbital.

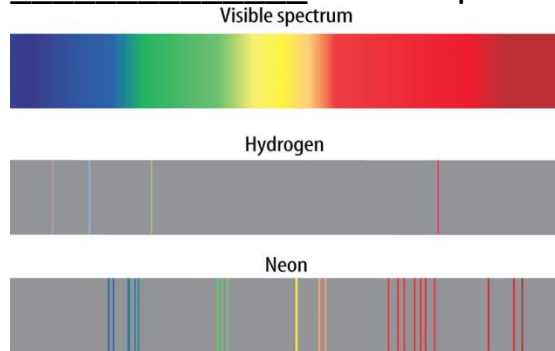


4. What are

\_\_\_\_\_

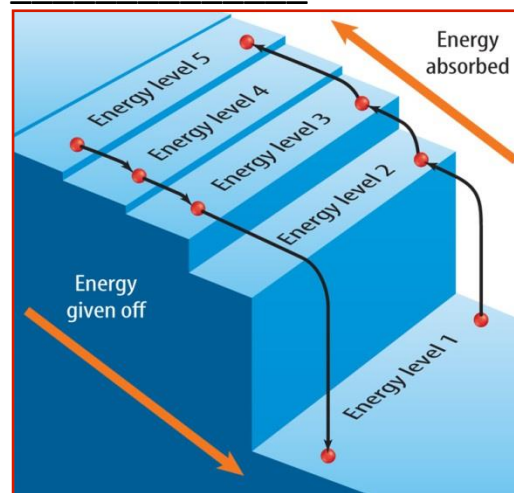
\_\_\_\_\_

4. When \_\_\_\_\_ atoms give off unique \_\_\_\_\_ of \_\_\_\_\_ on the spectrum.



5. What is an **energy level**?

5. The \_\_\_\_\_ in space that an \_\_\_\_\_ can move \_\_\_\_\_ the \_\_\_\_\_.



6. What evidence did the spectral lines provide?

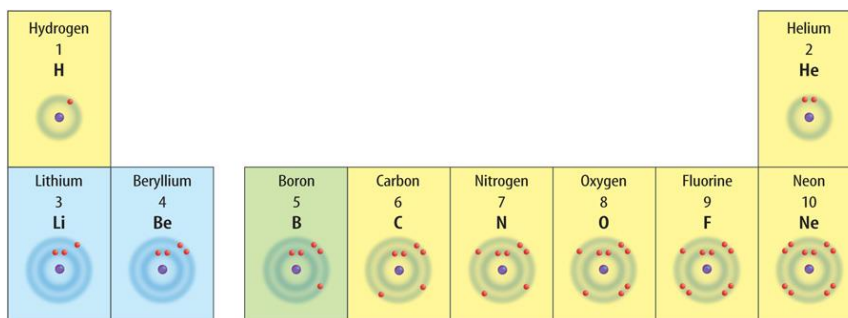
6. a) The \_\_\_\_\_ can move only in an \_\_\_\_\_ that is a \_\_\_\_\_ from the \_\_\_\_\_.

b) Each energy \_\_\_\_\_ can hold a certain number of \_\_\_\_\_.

7. How do electrons fill the orbitals?

7. Electrons fill the energy levels in \_\_\_\_\_.

- The \_\_\_\_\_ level is filled first.
- The \_\_\_\_\_ level has \_\_\_\_\_ until the first level is \_\_\_\_\_.
- The \_\_\_\_\_ level holds \_\_\_\_\_ electrons (sports car), the \_\_\_\_\_ level holds \_\_\_\_\_ electrons (minivan).
- The last energy level may or may not be filled.



8. How do the electrons in the orbitals affect chemical reactivity?

8. -- \_\_\_\_\_ elements have the \_\_\_\_\_ number of electrons needed to fill their \_\_\_\_\_ energy level.

-- Elements with \_\_\_\_\_ outer energy \_\_\_\_\_ are likely to form \_\_\_\_\_.

