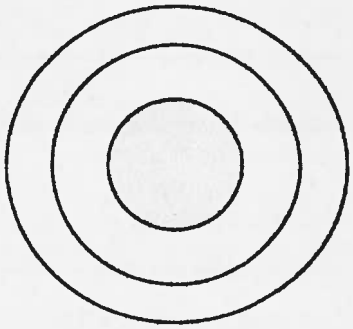
**Atomic Basics** Name _____

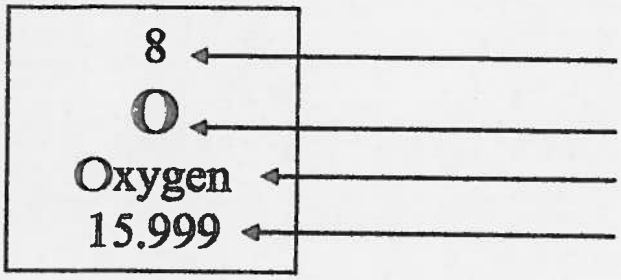
**Part A: Atomic Structure**



1. Draw five protons in the nucleus of the atom. Label them with their charge.
2. Draw six neutrons in the nucleus of the atom.
3. Draw two electrons in the first energy level and label them with their charge.
4. Draw three electrons in the second energy level and label them with their charge.
5. What element is represented by the diagram? _____

**Part B: Atomic Calculations**

6. Label the information provided in the periodic table.




7. What does the atomic number represent?

_____ or _____

8. What does the atomic mass represent?

_____ + _____

9. How would you figure the number of protons or electrons in an atom?

10. How would you figure the number of neutrons in an atom?

11. Use your knowledge of atomic calculations to complete the chart.

| Element | Atomic Number | Atomic Mass | Protons | Neutrons | Electrons |
|---|---|---|---|---|---|
| Li | 3 | 7 | | | |
| P | 15 | 31 | | | |
| Cl | | 35 | 17 | | |
| Ni | 28 | | | 31 | |
| K | | 39 | | | 19 |
| Ag | 47 | | | 61 | |
| H | | 1 | 1 | | |
| Si | | | | 14 | 14 |
| W | | | 74 | 110 | |
| Ne | | | | 10 | 10 |

**Part C: Electron Configuration**

12. How many electrons can each level hold? 1st = _____ 2nd = _____ 3rd = _____

13. What term is used for the electrons in the outermost shell or energy level? _____

14. Scientists use two types of diagrams to show the electron configuration for atoms. Follow your teacher's directions to complete the diagrams.

**Sulfur**

Atomic # = 16

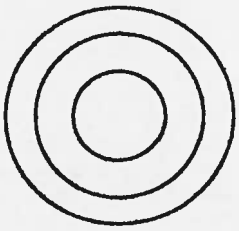
Atomic Mass = 32

Protons = ____

Neutrons = ____

Electron = ____

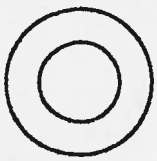
**Bohr Diagram**
Shows all electrons



**Lewis Structure**
Shows valence electrons

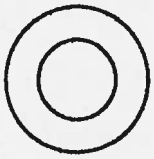
S

15. Calculate the missing information and then draw the Bohr Diagram and Lewis Structure for each element.



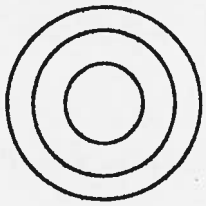
Li

Atomic # = 3
Mass # = 7
# of P = ____
# of N = ____
# of E = ____



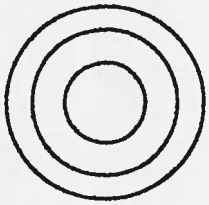
Ne

Atomic # = 10
Mass # = 20
# of P = ____
# of N = ____
# of E = ____



Mg

Atomic # = 12
Mass # = 24
# of P = ____
# of N = ____
# of E = ____

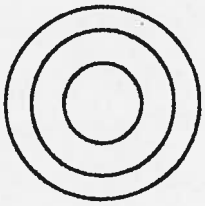


Cl

Atomic # = 17
Mass # = 35
# of P = ____
# of N = ____
# of E = ____

He

Atomic # = 2
Mass # = 4
# of P = ____
# of N = ____
# of E = ____



Si

Atomic # = 14
Mass # = 28
# of P = ____
# of N = ____
# of E = ____

16. Answer the questions below based on the elements in question #15.

(1) Which elements had a filled outermost shell? _____ _____

(2) Which element would be most likely to lose electrons in a chemical bond? _____

(3) Which element would be most likely to gain electrons in a chemical bond? _____

(4) Which elements are not likely to bond with other elements? _____ _____ Why? _____