

1. Fill in the missing values.

Chemical Name	Chemical Symbol	Atomic Number	Atomic Mass	Number of Protons	Number of Electrons	Number of Neutrons
Neon						
	Si					
		80				
				11		

2. Draw the electron dot diagram for the following **ATOMS**:

- a. Calcium b. Sulfur

3. Draw the electron dot diagram for the following lone **IONS**:

- a. Fluorine b. Beryllium

4. Show the **formation** of the compound when the following elements combine using Lewis diagrams:

- a. Potassium and Bromine b. Aluminum and Sulfur

5. Define the following and explain their periodic trends:

- a. Atomic radius c. Electron Affinity
b. Ionization energy d. Electronegativity

6. How many significant digits are in each of the following values? If there are more than one option, give all the options.

- a. 0.0134 c. 1600
b. 1.0×10^8 d. 6.00

7. Solve the following using the correct number of significant digits and explain the rule that determines the number of significant digits.

- a. $5.23m \times 42mL$ b. $12.43g + 6.22g + 5g$

8. Natural argon contains three isotopes: Ar-36, Ar-38, and Ar-40. In a sample, 0.34% of the atoms are Ar-36, 0.06% of the atoms are Ar-38, and 99.60% of the atoms are Ar-40. Calculate the average atomic mass of argon.

9. Fill in the following table.

Molecule	ΔEN	Type of BONDS (ionic, covalent, polar covalent)
NH ₃		
CaBr ₂		
N ₂		

10. What is an isotope? What is a radioisotope?
11. Two atoms respectively have: $^{14}_6X$ and $^{12}_6X$. Are they isotopes? Explain.
12. Fill in the following table. For the polar molecules, show the **partial charges**.

Molecule	Lewis Structures	VSEPR Diagram	Type of MOLECULE (polar or non-polar)
NF_3			
I_2			
SF_2			
CCl_4			

13. What are the general physical properties of:
- Ionic compounds?
 - Covalent compounds?
14. Explain the difference between bonded electron pairs and lone electron pairs. A diagram may be useful.
15. Explain the following types of bonds:
- Ionic
 - Covalent
 - Polar-covalent