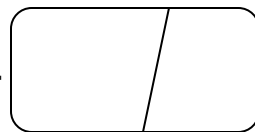


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Chemistry 11 - Electron Configuration Worksheet

1) Why is the subshell, **3d**, not referred to as **4d** instead since its apart of the 4th period?

When the 3d subshell is FULL it drops BELOW 4s in energy.

Since an energy level MUST begin with "s", it cannot be 4d.

2) Give the full electronic configuration for the following particles:

Be: $1s^2 2s^2$

S: $1s^2 2s^2 2p^6 3s^2 3p^4$

Kr: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$

V: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$

Mo: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1 4d^5$

Ga: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^1$

Ga³⁺: $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^0 4p^0$

bromide: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$

3) Give the core notation for the following particles:

Li: $[\text{He}] 2s^1$

Al: $[\text{Ne}] 3s^2 3p^1$

P: $[\text{Ne}] 3s^2 3p^3$

I: $[\text{Kr}] 5s^2 4d^{10} 5p^5$

Cu⁺¹: $[\text{Ar}] 3d^{10} 4s^0$

Kr: $[\text{Ar}] 4s^2 3d^{10} 4p^6$

core notation continued...

Es: $[Rn] 7s^2 5f^{11}$	Hf: $[Xe] 6s^2 4f^{14} 5d^2$
K ⁺¹ : $[Ne] 3s^2 3p^6$	Ce: $[Xe] 6s^2 4f^2$
Sn ⁺⁴ : $[Kr] 4d^{10} 5s^0 5p^0$	N ³⁻ : $[He] 2s^2 2p^6$

4) Determine the number of **valence electrons** in the following particles. Show work by completing the electron structure and circle the electrons that make up your answer.

phosphorus: $[Ne] 3s^2 3p^3$	5
Selenium: $[Ar] 4s^2 3d^{10} 4p^4$	6
Indium(III) ion: $[Xe] 4f^{14} 5d^6 6s^0$	6



5) Identify the following elements or ions:

- 1) $1s^2 2s^2 2p^3$: nitrogen
- 2) $1s^2 2s^2 2p^6 3s^2 3p^1$: aluminum
- 3) $1s^2 2s^2 2p^6$: fluoride (9 protons)
- 4) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2$: zinc
- 5) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^0$: Zn⁺² (zinc ion)
- 6) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9 4s^0$: Cu⁺²
- 7) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 5s^0 4d^2$: Zr⁺²
- 8) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 5s^0 4d^4$: Mo⁺²
- 9) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 5s^2 4d^7$: Rh (rhodium)
- 10) $1s^2 2s^2 2p^6 3s^2 3p^1$: aluminum