

Electron Configuration Worksheet

Name: *Key*
Date:
Block:

What is the full electron configuration for the following?

- Sc $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$
- Na $1s^2 2s^2 2p^6 3s^1$
- Mn $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$
- Zn $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$
- Al $1s^2 2s^2 2p^6 3s^2 3p^1$

Complete the following table. You may use core notation.

Element	Electron Configuration	Orbital Diagram
6. Ge	$[Ar] 4s^2 3d^{10} 4p^2$	$[Ar] \begin{array}{c} \uparrow\downarrow \\ 4s \end{array} \begin{array}{c} \uparrow\downarrow \uparrow\downarrow \uparrow\downarrow \uparrow\downarrow \\ 3d \end{array} \begin{array}{c} \uparrow\downarrow \\ 4p \end{array}$
7. K	$[Ar] 4s^1$	$[Ar] \begin{array}{c} \uparrow \\ 4s \end{array}$
8. Sb	$[Kr] 5s^2 4d^{10} 5p^3$	$[Kr] \begin{array}{c} \uparrow\downarrow \\ 5s \end{array} \begin{array}{c} \uparrow\downarrow \uparrow\downarrow \uparrow\downarrow \uparrow\downarrow \\ 4d \end{array} \begin{array}{c} \uparrow\downarrow \uparrow\downarrow \uparrow\downarrow \\ 5p \end{array}$
9. Cl	$[Ne] 3s^2 3p^5$	$[Ne] \begin{array}{c} \uparrow\downarrow \\ 3s \end{array} \begin{array}{c} \uparrow\downarrow \uparrow \\ 3p \end{array}$
10. F	$[He] 2s^2 2p^5$	$[He] \begin{array}{c} \uparrow\downarrow \\ 2s \end{array} \begin{array}{c} \uparrow\downarrow \uparrow \\ 2p \end{array}$

Which element does the following electron configuration represent?

- $1s^2 2s^2 2p^6 3s^2 3p^3$ Phosphorus
- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^6 7s^2 5f^{14} 6d^{10} 7p^2$ ununquadium
- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^6$ Osmium
- $1s^2 2s^1$ Lithium
- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$ Rubidium
- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10}$ Cadmium
- $1s^2 2s^2 2p^6 3s^2 3p^2$ Silicon
- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$ Bromine
- $1s^2 2s^2 2p^6$ Fluorine
- $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$ Titanium

Determine what elements are denoted by the following electron configurations:

21. $1s^2 2s^2 2p^6 3s^2 3p^4$ Selenium

22. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$ Rubidium

23. $[\text{Kr}] 5s^2 4d^{10} 5p^3$ Antimony

24. $[\text{Xe}] 6s^2 4f^{14} 5d^6$ Osmium

25. $[\text{Rn}] 7s^2 5f^{11}$ Holmium

Determine which of the following electron configurations are not valid? Explain:

26. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^5$ ↓ 3d not 4d.

27. $1s^2 2s^2 2p^6 3s^3 3d^5$ ↓ 3s²

28. $[\text{Ra}] 7s^2 5f^8$ needs to be noble gas

29. $[\text{Kr}] 5s^2 4d^{10} 5p^5$ ✓

30. $[\text{Xe}]$ can't just be itself, go up one level!!