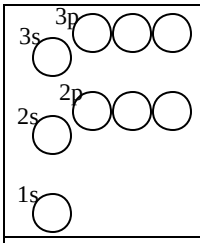
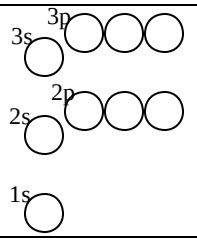
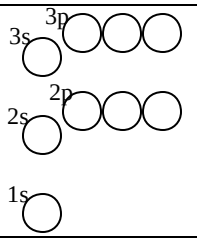
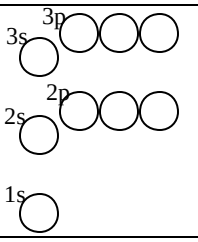
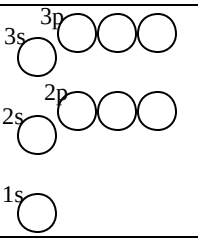
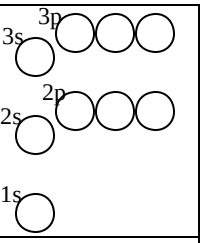
South Pasadena • AP Chemistry

Name _____
Period ___ Date ___/___/___

8 • Electron Configurations & Periodicity

WRITING ELECTRON CONFIGURATIONS

For each given element, fill in the orbital diagram and then write the electron configuration for the element.

1.	2.	3.	4.	5.	6.
					
Element: Ar # of e⁻'s: ___	Element: Mg # of e⁻'s: ___	Element: N # of e⁻'s: ___	Element: Li # of e⁻'s: ___	Element: P # of e⁻'s: ___	Element: Cl # of e⁻'s: ___

Write the electron configurations of each of these in **long form** and **short form**:

1. Ar

   Ar

2. Mg

   Mg

3. N

   N

4. Li

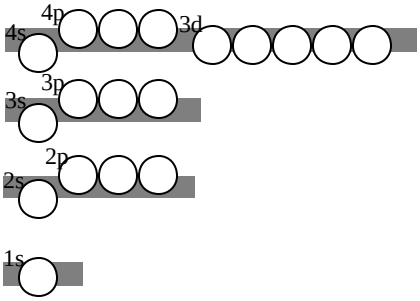
   Li

5. P

   P

6. Cl

   Cl

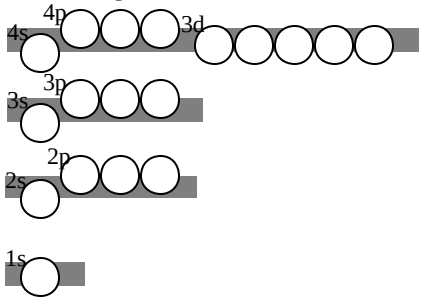


7. Fill in the orbital diagram for the element, Fe, and write the electron configuration of Fe in the long and short form.

   Fe

   Fe

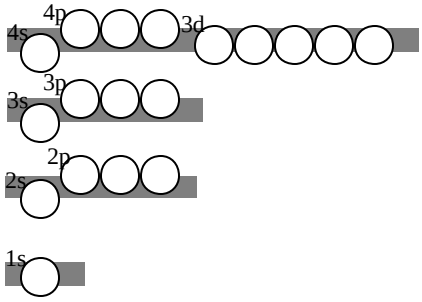
A few elements do not follow the “rules”. There is some lowering of the energy of the atom by completely filling or half-filling the five d-orbitals.



8. Fill in the orbital diagram for the element, Cu, and write the electron configuration of Cu in the long and short form.

Cu

Cu



9. Fill in the orbital diagram for the element, Cr, and write the electron configuration of Cr in the long and short form.

Cr

Cr

Shade in the six elements that do not follow the Aufbau Principle:

Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd
La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg

Fill in the orbitals that are filled by these elements.

1s		1s
2s		

10. Write the orbital occupied by the last electron of each of the following elements:

As	W	Li	U	O	Rn	V

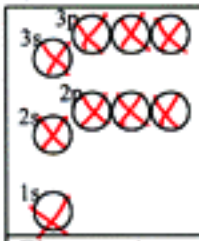
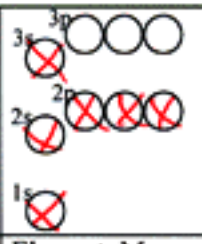
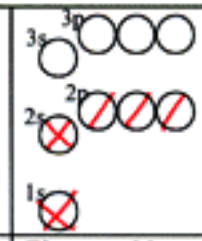
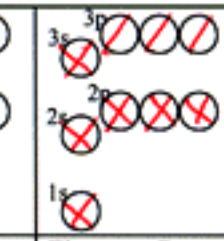
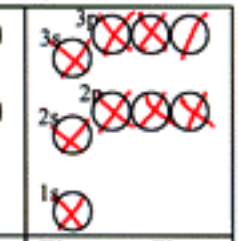
South Pasadena • AP Chemistry

Name Grover
Period ___ Date ___/___/___ "eCONFIG"

8 • Electron Configurations & Periodicity

WRITING ELECTRON CONFIGURATIONS

For each given element, fill in the orbital diagram and then write the electron configuration for the element.

1.	2.	3.	4.	5.	6.
					
Element: Ar # of e⁻'s: 18	Element: Mg # of e⁻'s: 12	Element: N # of e⁻'s: 7	Element: Li # of e⁻'s: 3	Element: P # of e⁻'s: 15	Element: Cl # of e⁻'s: 17

Write the electron configurations of each of these in **long form** and **short form**:

1. Ar $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$
   Ar $[Ne]\ 3s^2\ 3p^6$

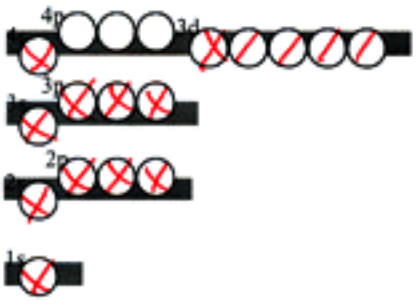
2. Mg $1s^2\ 2s^2\ 2p^6\ 3s^2$
   Mg $[Ne]\ 3s^2$

3. N $1s^2\ 2s^2\ 2p^3$
   N $[He]\ 2s^2\ 2p^3$

4. Li $1s^2\ 2s^1$
   Li $[He]\ 2s^1$

5. P $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$
   P $[Ne]\ 3s^2\ 3p^3$

6. Cl $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$
   Cl $[Ne]\ 3s^2\ 3p^5$

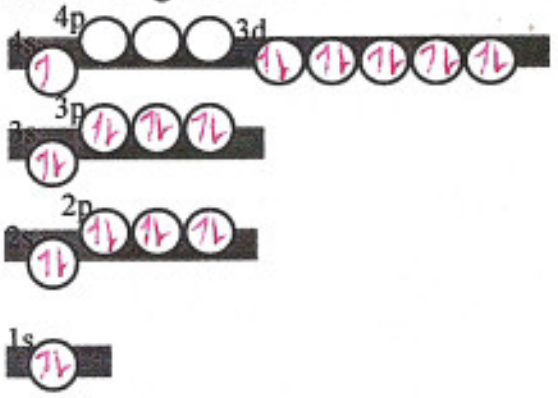


7. Fill in the orbital diagram for the element, Fe, and write the electron configuration of Fe in the long and short form.

Fe $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^6\ 4s^2$

Fe $[Ar]\ 3d^6\ 4s^2$

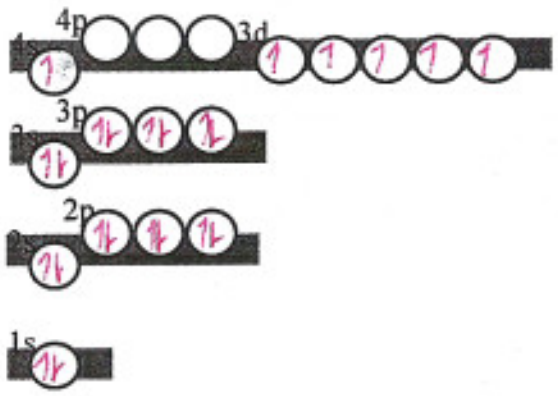
A few elements do not follow the "rules". There is some lowering of the energy of the atom by completely filling or half-filling the five d-orbitals.



8. Fill in the orbital diagram for the element, Cu, and write the electron configuration of Cu in the long and short form.

Cu $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^1\ 3d^{10}$ or $3d^{10}\ 4s^1$

Cu $[Ar]\ 4s^1\ 3d^{10}$ or Cu $[Ar]\ 3d^{10}\ 4s^1$



9. Fill in the orbital diagram for the element, Cr, and write the electron configuration of Cr in the long and short form.

Cr $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^1\ 3d^5$ or $3d^5\ 4s^1$

Cr $[Ar]\ 4s^1\ 3d^5$ or Cr $[Ar]\ 3d^5\ 4s^1$

Shade in the six elements that do not follow the Aufbau Principle:

Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd
La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg

Fill in the orbitals that are filled by these elements.

1s		1s
2s		2p
3s		3p
4s	3d	4p
5s	4d	5p
6s	5d	6p
7s	6d	7p
	4f	
	5f	

10. Write the orbital occupied by the last electron of each of the following elements:

As	W	Li	U	O	Rn	V
4p	5d	2s	5f	2p	6p	3d