

Name: _____ Period: _____



Chemistry

Homework: Periodic Table, Flame Test, and Valence Electrons

1. Use the periodic table to fill in the following table:

Element	Chemical Symbol	Atomic Number	Number of Protons	Number of Electrons	Number of Neutrons	Average Atomic Mass
Strontium						
	K					
						58.93
		53				
				2		

2. Which of the following compounds would produce similar flame colors when heated?

Explain.

NaCl

CaCl₂

SrCl₂

Sr(NO₃)₂

Cu(NO₃)₂

3. Would it matter whether you did a flame test with sodium chloride, NaCl, in solid form or sodium chloride as an aqueous solution? **Explain.**
4. Nickel sulfate, NiSO₄(aq), is a green solution. Nickel chloride, NiCl₂(aq), is a yellow solution. Hydrochloric acid, HCl(aq), is a colorless solution. If you add nickel, Ni(s), to hydrochloric acid, HCl(aq), what color do you think the resulting solution will be, green or yellow? Explain your answer.
5. Draw a shell model for boron, B. How many core and valence electrons does B have?

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6. Consider the elements **carbon, C**, and **silicon, Si**.
 - a. How many electrons does an atom of each of these elements have?
 - b. Draw shell models for atoms of each of these elements.
 - c. How many valence electrons do each of these elements have?
 - d. How many core electrons do each of these elements have?
 - e. Why are the properties of carbon and silicon similar?
7. Provide the following information for **element number 17**.
 - a. The elements name, symbol, and group number.
 - b. The number of protons in the nucleus.
 - c. The total number of electrons in a neutral atom.
 - d. The number of valence electrons.
 - e. The number of core electrons.
 - f. The names of three other elements with the same number of valence electrons.
8. Which noble gas is closest to sulfur on the periodic table? What must happen to a sulfur atom for it to have an electron arrangement similar to that of a noble gas?
9. When chlorine gains an electron to become a chloride ion with a -1 charge, it ends up with the same *electron arrangement* as argon. Why doesn't it become an argon atom?