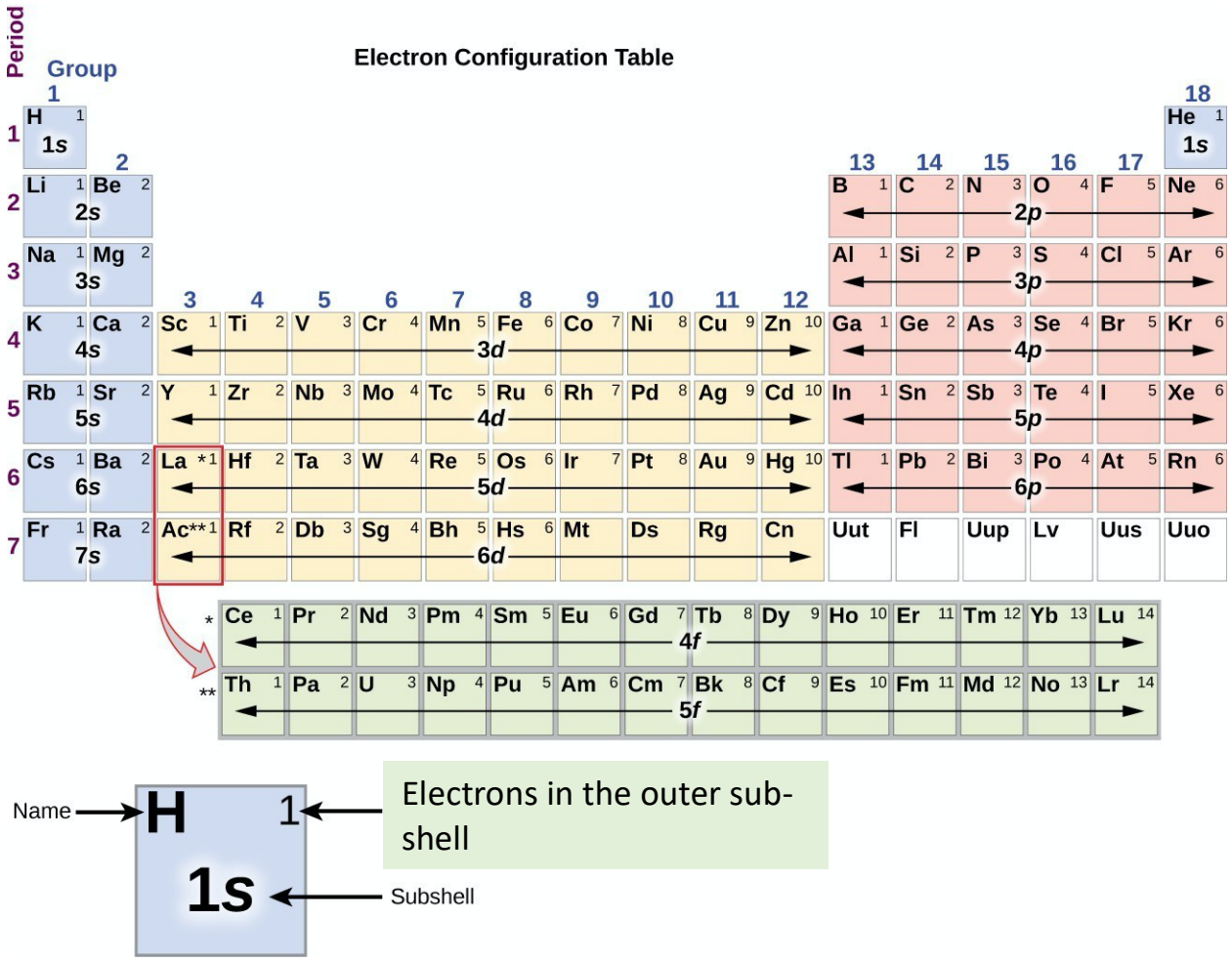
HW 5, periodic table



Electrons in the outer shell (the highest main energy level) of an atom are called VALENCE ELECTRONS. The elements in group 1 have 1 valence electron. The elements in group 2 have two valence electrons. The elements in groups 13-18 have valence electrons = group number – 10. The periodic table is divided into blocks according to the highest energy subshell (sub-level) occupied by electrons. The blue color in this table represents the s block, all the elements in the s block have atoms with ns^1 or ns^2 outer shell electron configuration (n is the energy level number), the yellow color part is the d block (electrons in these elements occupy d sub-levels, and we did not talk about valence electrons for these elements yet), the pink color is p block, in the p block it is the p subshell that is being filled. The green rows represent f elements.

What can we tell about Sulfur ($_{16}$S)?

This element is in period 3 and group 16, and so has three shells (the highest occupied shell is the third) and 16-10=6 electrons in its outer shell. It is in the p block, so its highest energy occupied subshell is a p subshell and the outer shell electron configuration is $3s^2 3p^4$ (six valence electrons).

Answer the following questions:

1. Give the full electron configurations of the following atoms

Si

As

2. What can we tell (Number of valence electrons? Energy level (shell)? Highest energy occupied subshell? Outer shell electron configuration?) about following elements: Ar, Br, K, Ba