1. Draw an orbital diagram for Sulfur. Give a full set of four quantum numbers for the last electron in the 3rd energy level of the sulfur atom.

The diagram should end with 4 electrons in the 3p sublevel. The last electron would be n= 3, l= 1, m= -1 and s= -1/2

2. Write the electron configurations for Cobalt and Lead.

Cobalt should end in 3d7 and lead should end in 6s2

3. For each of the elements listed in Number 2, complete the following.
   a) How many unpaired electrons are present in each atom?

   Co --- 3 unpaired
   Pb --- 2 unpaired

   b) In what block of the Periodic Table does each reside?
   Co—d
   Pb -- p

4. Quickly explain why one could argue that He should be placed right next to H on the Periodic Table?

Helium has two electrons in its 1s sublevel and could be placed above Be.

5. For a given atom, what is the greatest number of quantum numbers any 2 electrons can share in common?

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6. What is wrong with the following set of quantum numbers?

n = 3 l = 3 m = 3 s = +1/2

l cannot equal 3 if n is 3. l could be 0, 1, or 2