**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |
| --- | --- | --- | --- |
| Electron Configuration – an “address” for the electrons in an atom | | | |
| **An Orbital is:** | | 1. **How do we tell someone where an electron is?**with a number 2. with a letter (s, p, d, f) 3. with a superscript | |
| **The Number**  Tells you the ***energy level***  ***Numbers 1 – 7***  Look at the orbital Diagram | | **The Letter  *s, p, d or f***  Tells you the  ***shape of the orbital***  Each letter has a different number of boxes  **s has 1 box**  **p has 3 boxes**  **d has 5 boxes**  **f has 7 boxes** | |
| **The Superscript**  The number after the letter tells ***how many electrons*** are in all the boxes of that letter  **Examples**  **s2  = 2 e**  **p5 = 5 e**  **d8 = 8 e**  **f13 = 13** | | **Boxes**   1. Each box can have zero, one or two electrons. TWO IS THE MAXIMUM! 2. We use one arrow for an electron. 3. We use an up arrow and a down arrow in each box. | |
| **FINDING the location of the electrons**   1. Pick an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. Find the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   *(remember # p = # e, atomic number)*   1. Start putting electrons (arrows)  into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | **DESCRIBING where ALL the electrons are**  **Shrink it down and only list:**  **Example:** | |
| **Rules for putting electrons in an orbital diagram:** | | | |
| **RULE 1**  *An electron occupies the lowest energy orbital that it can. This rule overrides the other two.* | **RULE 2**  *Electrons in the same box must have one up arrow and one down arrow.* | | **RULE 3**  *If you have more than one box at the same amount of energy - You must put 1 arrow in each box before you add a second arrow to that box.* |
| ***For example:*** | ***For example:*** | | ***For example:*** |

A group of black squares with letters and numbers

Description automatically generated

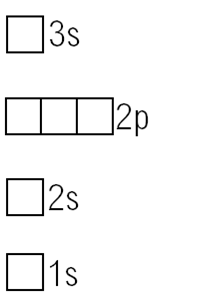
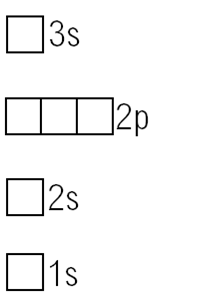
**3rd Electron**

**4th Electron**

**2nd Electron**

**1st Electron**

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**9th Electron**

**10th Electron**

**8th Electron**

**7th Electron**

**6th Electron**

**5th Electron**

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**11th Electron**

**12th Electron**