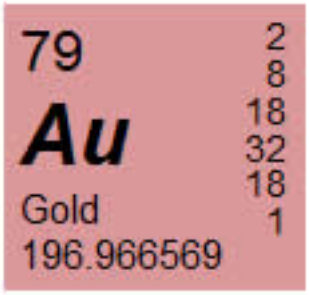
What is the Electronic Configuration of GOLD (Au) Element? ...

Do you know why The Periodic Table have the specific layout ?



This means that Au Configuration is $1s^2$ $2s^2 2p^6$ $3s^2 3p^6 3d^{10}$ $4s^2 4p^6 4d^{10} 4f^{14}$ $5s^2 5p^6 5d^{10}$ $6s^1$

The sum of each level of Energy is **2**, 2+6=**8**, 2+6+10=**18**, 2+6+10+14=**32**, 2+6+10=**18**, 1. This is why we get 2,8,18,32,18, 1.

And so, the Gold have **2** electrons in is level **K**, **8** electrons in the level **L**, **18** electrons in the **M**
,
32
electrons in the level
N
,
18
electrons in the level
O
and one electron in the level
P
.

Like probably you know each atom have an electronic configuration. This is how the electrons are organized inside the atom. In levels of energy.

The Hydrogen for example, H is $1s^1$. The He is $1s^2$ ... The number of electron is the atomic number.

So, the Hydrogen have an atomic number equals 1, because have 1 electron.

The levels of the energy inside any electron are organized according to the following table:

n	l	Orbital	m		
1	0	1s	0		
2	0	2s	0		
2	1	2p	+1,0,1		
3	0	3s	0	+½, -½	2
3	1	3p	+1,0,-1	+½, -½	6
3	2	3d	+2,+1,0,1,2		

+½, -½		10			
4	0		4s		
0					
+½, -½		2			
4	1		4p		
+1,0,-1	+½, -½		6		
4	2		4d		+2,+1,0,-1,-2
+½, -½		10			
4	3		4f		+3,+2,+1,0,-1,-2,-3
+½, -½		14			

So, Basically, each element belong to a level of energy. When an element have its complete configuration is its level, it is a Noble Gas, like He(2), $1s^2$, Ne (10) $1s^2 2p^6$, etc. All the Noble Gas belong to the Level 18.

Then, from Li (3), are completing the level according with the level of Energy. The highest number in the representation is the period that runs on the Rows. So, the Gold have period 6. The maximum exponent in the representation is the Group, that runs on the Columns.

There are another classification for the group. We list here that classification.

- **Group 1** (IA,IA): the alkali metals or hydrogen family/lithium family
- **Group 2** (IIA,IIA): the alkaline earth metals or beryllium family
- Group 3 (IIIA,IIIB): the scandium family
- Group 4 (IVA,IVB): the titanium family
- Group 5 (VA,VB): the vanadium family
- Group 6 (VIA,VIB): the chromium family
- Group 7 (VIIA,VIIB): the manganese family
- Group 8 (VIII, VIIIB): the iron family
- Group 9 (VIII, VIIIB): the cobalt family
- Group 10 (VIII, VIIIB): the nickel family
- **Group 11** (IB,IB): the coinage metals (not an IUPAC -recommended name) or copper family
- Group 12 (IIB,IIB): the zinc family
- Group 13 (IIIB,IIIA): the boron family

- Group 14 (IVB,IVA): the carbon family
- **Group 15** (VB,VA): the pnictogens or nitrogen family
- **Group 16** (VIB,VIA): the chalcogens or oxygen family
- **Group 17** (VIIB,VIIA): the halogens or fluorine family
- **Group 18** (Group 0): the noble gases or helium family/neon family

So, the Gold that ends in "1" belong to IB also called 11.

Here we reproduce the Period Table ... now more clear for you. However, is important to note that there are a rule and a principle. We apply the **Aufbau principle** to build the table and the **Pauli exclusion principle**
that for electrons in a single atom, it states that no two electrons can have the same four quantum numbers
, that is, if
n
,
l
, and
m
$_l$
are the same,
m
$_s$
must be different such that the electrons have opposite spins.

Please note that Gold belong to the expections of the Period 6, because the previous level is not complete. In fact, Gold is [Xe] $6s^1$ $4f^{14}$ $5d^{10}$ *(Not [Xe] $4f^{14}5d^{10}5f^1$)*. Note that the level 5 is not complete. This is due to the Pauli exclusion principle, and this is because matter is more stable in this way. One electron in the latest subshell is more stable than an almost previous sub-shell full. This is common in Metals.