How many electrons are present in the atom with electronic structure $1s^22s^22p^63s^1$?

A.) 88  
B.) 8  
C.) 6  
**E.) 11**  

The superscripts represent the number of electrons.
Which orbital notation represents a boron atom in the ground state?

(1) 1s \[\rightarrow\] 2s \[\rightarrow\] 2p

(2) 1s \[\rightarrow\] 2s \[\rightarrow\] 2p

(3) 1s \[\rightarrow\] 2s \[\rightarrow\] 2p

(4) 1s \[\rightarrow\] 2s \[\rightarrow\] 2p

Must fill lowest energy levels first.
Assuming that the atom is neutral, identify the element with electronic structure \(1s^22s^22p^63s^23p^64s^2\)

A.) K  
B.) Ar  
C.) Ca  
D.) Mg  
E.) Cr  

The superscripts add up to 20 electrons.
If an atom has 13 electrons, which of the following represent the electron configuration?

A.) $1s^22s^22p^63s^23p^6$

B.) $1s^22s^22p^63s^23p^1$

C.) $1s^22s^22p^63s^23p^4$

D.) $1s^22s^22p^63s^23p^2$


Superscripts must add up to 13
Which one of the following represents the energy level diagram for oxygen?

A. Hund

B. Pauli

C. Aufbau
Which one of the following represents the energy level diagram for carbon?

A) Aufbau / Hund

B) 

C) Aufbau

D) Hund
Rows on table represent energy levels (of outermost electrons).

<table>
<thead>
<tr>
<th>n=1</th>
<th>n=2</th>
<th>n=3</th>
<th>n=4</th>
<th>n=5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 H 1.00797</td>
<td>2 Li 6.939</td>
<td>3 Be 9.0122</td>
<td>4 B 10.81</td>
<td>5 C 12.0112</td>
</tr>
<tr>
<td>19 K 39.102</td>
<td>20 Ca 40.078</td>
<td>21 Sc 44.9559</td>
<td>22 Ti 47.8803</td>
<td>23 V 50.942</td>
</tr>
<tr>
<td>37 Rb 85.47</td>
<td>38 Sr 87.62</td>
<td>39 Yttrium 88.905</td>
<td>40 Zirconium 91.22</td>
<td>41 Nb 92.906</td>
</tr>
<tr>
<td>55 Cs 132.905</td>
<td>56 Ba 137.34</td>
<td>57 Lanthanum 138.91</td>
<td>58 Hf 178.49</td>
<td>59 Ta 180.948</td>
</tr>
</tbody>
</table>

**NOTE:** 4s fills before 3d

- 3D
- 4D
- S
- P
- D
- F

* Lanthanide Series

† Actinide Series
In the electron cloud model, an orbital is a region of space in an atom where there is

★) a high probability of finding an electron

B.) a high probability of finding a neutron

C.) a circular path in which electrons are found

D.) a circular path in which neutrons are found
What is the next atomic orbital in the series 1s, 2s, 2p, 3s, 3p?

A.) 2d
B.) 3d
C.) 3f
D.) 4s
What is the highest energy level assigned to an electron in an atom of zinc in the ground state?

A.) 1
B.) 2
C.) 3

Zinc is in the fourth row and has electrons in four energy levels

★) 4
Locate in the periodic table the element that has the first 4d electron.

A.) Sc
B.) La
C.) Ga
D.) Y
E.) K

★ D.) Y
What is the electron configuration of potassium?

A.) $1s^2 2s^2 2p^2 3s^2 3p^4 4s^1$  
    2p$^2$ and only 11e$^-$

B.) $1s^1 2s^2 2p^{10} 3s^2 3p^3$  
    1s$^1$ and only 18e$^-$

C.) $1s^2 2s^2 3s^2 3p^6 3d^1$  
    No 2p and only 13e$^-$

★) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
What is the electron configuration of a Mn atom in the ground state?

A.) $1s^22s^22p^63s^2$  Only 12e-

★) $1s^22s^22p^63s^23p^64s^23d^5$

C.) $1s^22s^22p^63s^23p^64s^13d^54p^1$  4s$^1$ and 3d$^5$

D.) $1s^22s^22p^63s^23p^63d^7$  4s before 3d