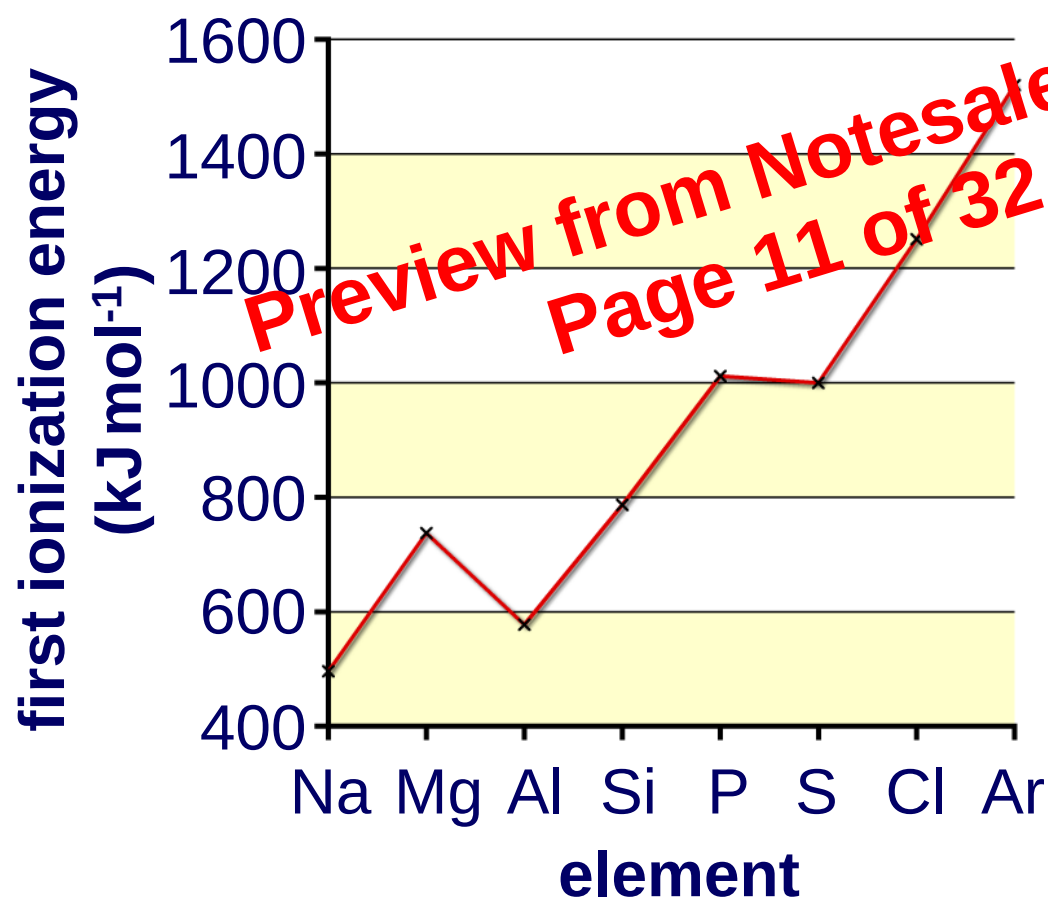


Chemistry Revision

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Unit 1

Evidence for sub-levels



The first ionization energies for the elements in period 3 show a general increase.

However, aluminium's value is below that of magnesium. This suggests that the third principal energy level is not one single energy level.

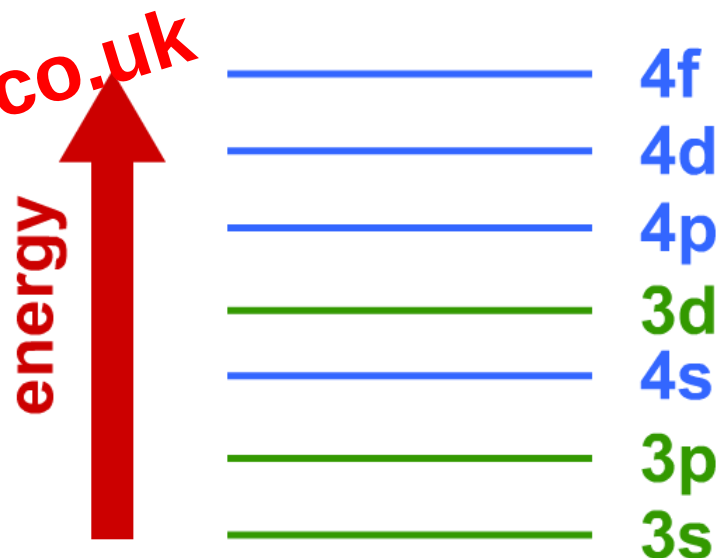
All principal energy levels contain one or more **sub-levels**, with different but exact energy values.



Electron configuration of transition metals

Although the 3d sub-level is in a lower principal energy level than the 4s sub-level, it is actually higher in energy.

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This means that the 4s sub-level is filled before the 3d sub-level.

Example: what is the electron structure of vanadium?

1. Count number of electrons in atom **23**

2. Fill sub-levels, remembering
4s is filled before 3d **$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$**



Electron configuration of atoms

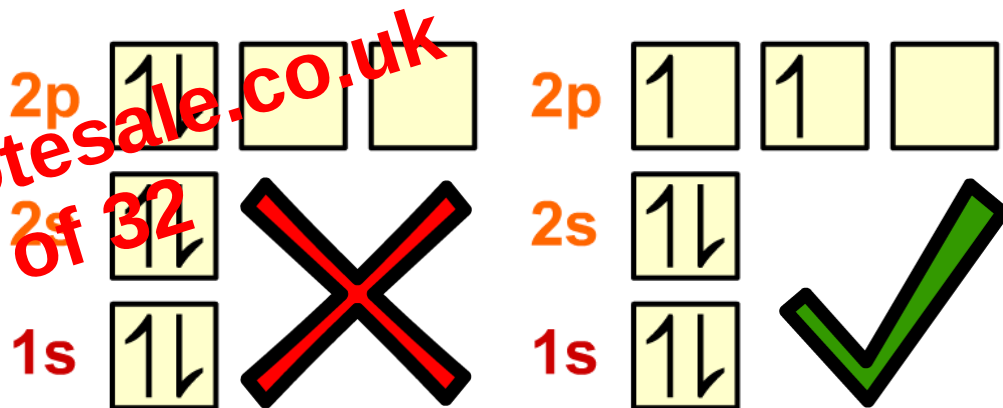
Use the drop-down menus to create the element's electron configuration.

$$1s^2 2s^2 2p^6 3s^2 3p^1$$

no. of
electrons 

Rules for filling electrons

When two electrons occupy a p sub-level, they could either completely fill the same p orbital or half fill two different p orbitals.



Hund's rule states that single electrons occupy all empty orbitals within a sub-level before they start to form pairs in orbitals.

If two electrons enter the same orbital there is repulsion between them due to their negative charges. The most stable configuration is with single electrons in different orbitals.