



Elements and Periodic table you have learnt - In Junior Science

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Welcome to the presentation on elements

- **Learn the elements and their properties to begin with.**
- **Every element is made up of its own atoms.**
- **There is a central nucleus and the negatively charged electrons revolve round the nucleus in what are called shells (energy levels).**
- **The nucleus contains the positively charged Protons and neutral Neutrons (no charge).**

Short Periodic table

- Juniors need to know the first 20 elements well to proceed further
- In the given table in “Excel” sheet, there is a freeze pane applied
- I have scrolled horizontally to get the short periodic table as shown in the next slide
- The elements go in the order of increase in atomic number except for the fourth (1st long) period, where the transition (d block elements) come in – which is hidden in the slide shown next.

Short periodic table for Junior Science level

I have produced this periodic table in Excel spreadsheet, applied a freeze pane and scrolled horizontally to get the short periodic table.

	Gr I A	Gr IIA	Gr IIIB	Gr IVB	Gr VB	Gr VIB	Gr VIIB	Gr VIIIB
Short Period 1	H 1							He 2
Short Period 2	Li 3	Be 4	B 5	C 6	N 7	O 8	F 9	Ne 10
Short Period 3	Na 11	Mg 12	Al 13	Si 14	P 15	S 16	Cl 17	Ar 18
Long Period 1	K 19	Ca 20	Ga 31	Ge 32	As 33	Se 34	Br 35	Kr 36
Long period 2	Rb 37	Sr 38	In 49	Sn 50	Sb 51	Te 52	I 53	Xe 54
Long Period 3	Cs 55	Ba 56	Tl 81	Pb 82	Bi 83	Po 84	At 85	Rn 86
Long Period 4	Fr 87	Ra 88						

Please view the next slide for names of different groups of elements.

Groupings of elements

	Hydrogen is unique	It can be a metal as well as a non metal	Can form H^+ and H^- (to behave like He (2))
	Alkali metals	Li, Na, K, Rb, Cs and Fr	Atom loses one e^- and form M^+ ion (to make octet limitation)
	Alkaline earth metals	Be, Mg, Ca, Sr, Ba, Ra	Atom loses 2 e^- and form M^{2+} ion (to make octet limitation)
	A stairway step is drawn to separate the metals from non-metals- leaving Ge	The metals on the left of the steps form many charges. Ge is a metalloid.	They share electrons with other elements to make octet limitation (for covalent bonds)
	Neither metals nor non metals -Metalloids	Si and Ge are the famous semiconductors	They possess unique nature in conducting electricity
	Non metals on the right side of the steps, leaving the metalloids. Gr VI forms the Halogens	C shares 4 e^- to make the octet limitation. N and P share 3-5 electrons, each has 1 lone pair of electrons to donate (for coordinate bonds)	O, S ,Se share 2-6 electrons and each has two lone pairs of electrons to donate. Halogens gain an e^- to form halides, F^- , Cl^- , Br^- , I^-
	Inert gases	They don't react with anything. There are no + or - ions formed	The last shell has 8 electrons- except He. This octet limitation needs to be achieved by other elements to become stable.