

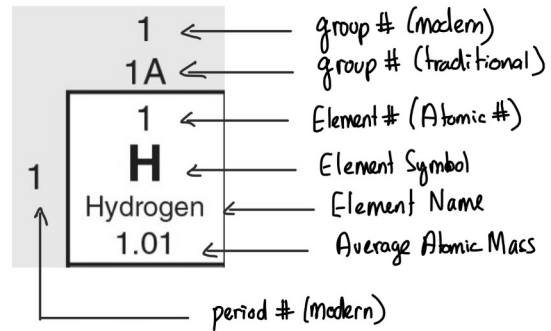
Atomic Elements

An **element** is the most basic form of an atom based on the number of protons (p^+)

The number of p^+ is also known as the **atomic number** of an atom

The **atomic number** is the number of protons (p^+) and electrons (e^-) in atom

The **element** is identified by **element symbol** (H), and **element name** (Hydrogen) as shown in the element



A **periodic square** from a table of elements (*Periodic Table*) showing all the element info

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Periodic Table

The **periodic table** is a chart (*table*) of elements arranged based on their **properties** (*the attributes that make something unique in science*)

Element Arrangements

Elements have **properties** that make them *different from all other elements* but also can be classified (*grouped*) based on structural similarities in protons (p^+), electrons (e^-) and orbital structure

A full periodic table of elements. It includes various groupings and labels: 'The Periodic Table of the Elements' at the top, 'atomic number' and 'atomic weight' for Fe, 'chemical symbol' for Fe, 'electron configuration' for Fe, 'oxidation states' for Fe, 'metals', 'nonmetals', 'metalloids', 'transition metals', 'inner transition metals', 'lanthanides', and 'actinides'. The table is organized into groups and periods, with elements arranged by increasing atomic number.

The **periodic table** shown above illustrates the common *groupings* of elements based on the element characteristics

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Element Arrangement on Periodic Table

Groups are the up and down rows with elements based on the **number of valence electrons** (val. e^-), and are numbered 1 – 18, or 1A – 8A and 1B – 10B

Periods are the left to right rows based on the number of **energy levels**, or the size of the atom, and are numbered 1 – 7.

1	1A		2	2A
1	H Hydrogen 1.01			
2	Li Lithium 6.94		Be Beryllium 9.01	
3	Na Sodium 22.99		Mg Magnesium 24.31	
4	K Potassium 39.10		Ca Calcium 40.08	
5	Rb Rubidium 85.47		Sr Strontium 87.62	
6	Cs Cesium 132.91		Ba Barium 137.33	
7	Fr Francium (223)		Ra Radium (226)	

group $\updownarrow$

					18 8A
13 3A	14 4A	15 5A	16 6A	17 7A	He Helium 4.00
B Boron 10.81	C Carbon 12.01	N Nitrogen 14.01	O Oxygen 16.00	F Fluorine 19.00	Ne Neon 20.18

period $\longleftrightarrow$

Groups: up and down
(18 groups*, 1-18)

* Traditional: 1A-8A, 1B-10B

Periods: left to right
(7 periods, 1-7)