

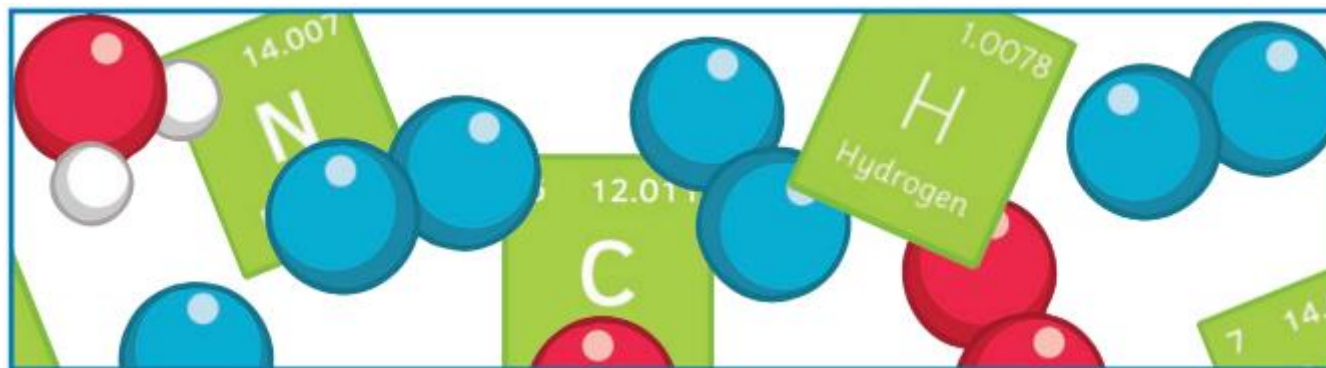


The National
Orthodox School
Shmaisani

Science summary sheet #4

Grade 8 National

Reviewing the Periodic table, Acids and Alkalis



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Learning Objectives:

- Understand that the periodic table is a way to sort elements.
- Identify different groups in the periodic table.
- Describe Acids , Bases and Alkalis.

Key words:

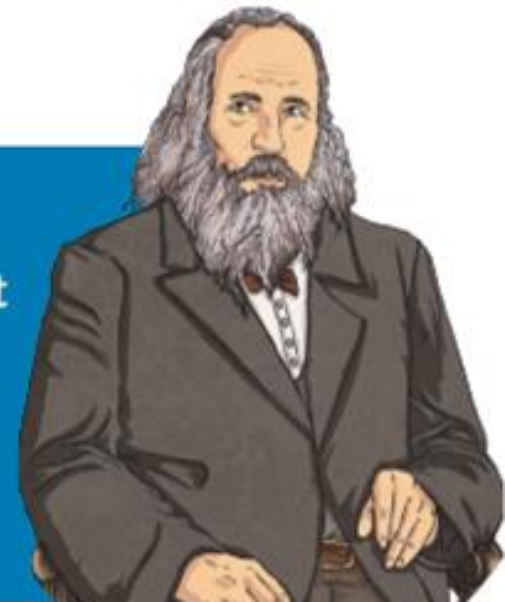
- ❖ Atom
- ❖ Element
- ❖ Compound
- ❖ Chemical Symbol
- ❖ Chemical formula
- ❖ pH indicator
- ❖ Neutralization

Dmitri Mendeleev

A Russian scientist born in 1834. He created the Periodic Table almost 150 years ago.

When creating the Periodic Table, Mendeleev even predicted elements would be discovered in the future. Those elements have, in fact, been discovered in recent years

As a reminder of the importance of Mendeleev's great work, element number 101 was named after him. It is appropriately named "Mendelevium!"



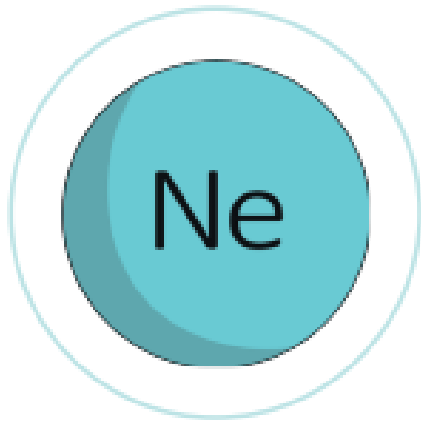
The Periodic Table

A column in the periodic table is called a **group**.

The groups are numbered along the top, from Group 1 to Group 7, with Group 8 on the end.

The middle section is not included in this group system because the elements here behave differently to those in the labelled groups.

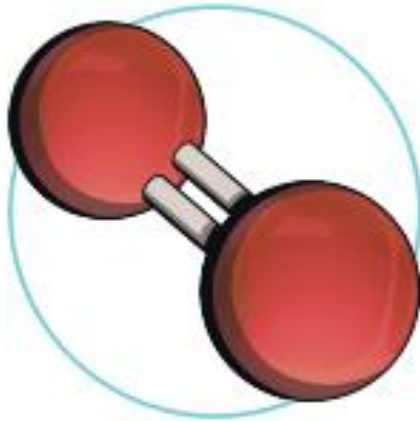
		1	2											3	4	5	6	7	8																			
				<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">1 H Hydrogen 1</td> <td colspan="19"></td> <td style="text-align: center;">4 He Helium 2</td> </tr> </table>										1 H Hydrogen 1																				4 He Helium 2				
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7 Li Lithium 3	9 Be Beryllium 4											11 B Boron 5	12 C Carbon 6	14 N Nitrogen 7	16 O Oxygen 8	19 F Fluorine 9	20 Ne Neon 10																					
23 Na Sodium 11	24 Mg Magnesium 12											27 Al Aluminium 13	28 Si Silicon 14	31 P Phosphorus 15	32 S Sulfur 16	35.5 Cl Chlorine 17	40 Ar Argon 18																					
39 K Potassium 19	40 Ca Calcium 20	45 Sc Scandium 21	48 Ti Titanium 22	51 V Vanadium 23	52 Cr Chromium 24	55 Mn Manganese 25	56 Fe Iron 26	59 Co Cobalt 27	59 Ni Nickel 28	63.5 Cu Copper 29	65 Zn Zinc 30	70 Ga Gallium 31	73 Ge Germanium 32	75 As Arsenic 33	79 Se Selenium 34	80 Br Bromine 35	84 Kr Krypton 36																					
85 Rb Rubidium 37	88 Sr Strontium 38	89 Y Yttrium 39	91 Zr Zirconium 40	93 Nb Niobium 41	96 Mo Molybdenum 42	99 Tc Technetium 43	101 Ru Ruthenium 44	103 Rh Rhodium 45	106 Pd Palladium 46	108 Ag Silver 47	112 Cd Cadmium 48	115 In Indium 49	119 Sn Tin 50	122 Sb Antimony 51	128 Te Tellurium 52	127 I Iodine 53	131 Xe Xenon 54																					
133 Cs Caesium 55	137 Ba Barium 56	57-71	72 Hf Hafnium 72	73 Ta Tantalum 73	74 W Tungsten 74	75 Re Rhenium 75	76 Os Osmium 76	77 Ir Iridium 77	78 Pt Platinum 78	79 Au Gold 79	80 Hg Mercury 80	81 Tl Thallium 81	82 Pb Lead 82	83 Bi Bismuth 83	(209) Po Polonium 84	(210) At Astatine 85	(222) Rn Radon 86																					
(223) Fr Francium 87	(226) Ra Radium 88	89-103	(261) Rf Rutherfordium 104	(262) Db Dubnium 105	(266) Sg Seaborgium 106	(264) Bh Bohrium 107	(269) Hs Hassium 108	(268) Mt Meitnerium 109	(269) Ds Darmstadtium 110	(285) Rg Roentgenium 111	(272) Cn Copernicium 112	(286) Nh Nihonium 113	(289) Fl Flerovium 114	(289) Mc Moscovium 115	(293) Lv Livermorium 116	(294) Ts Tennessine 117	(294) Og Oganesson 118																					
Lanthanide Series	139 La Lanthanum 57	140 Ce Cerium 58	141 Pr Praseodymium 59	144 Nd Neodymium 60	(145) Pm Promethium 61	(150) Sm Samarium 62	152 Eu Europium 63	157 Gd Gadolinium 64	159 Tb Terbium 65	163 Dy Dysprosium 66	165 Ho Holmium 67	167 Er Erbium 68	169 Tm Thulium 69	173 Yb Ytterbium 70	175 Lu Lutetium 71																							
Actinide Series	(227) Ac Actinium 89	232 Th Thorium 90	231 Pa Protactinium 91	238 U Uranium 92	(237) Np Neptunium 93	(244) Pu Plutonium 94	(243) Am Americium 95	(247) Cm Curium 96	(247) Bk Berkelium 97	(251) Cf Californium 98	(252) Es Einsteinium 99	(257) Fm Fermium 100	(258) Md Mendelevium 101	(259) No Nobelium 102	(266) Lr Lawrencium 103																							



atom

The smallest particle of a chemical element.

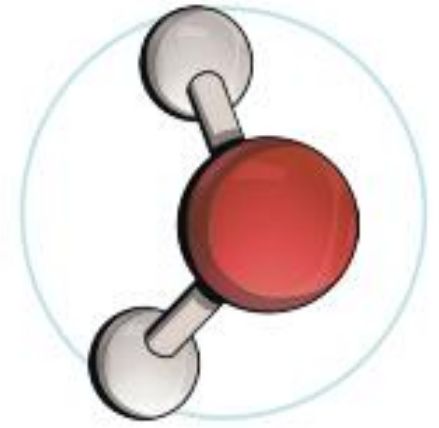
Contains electrons, protons and neutrons.



element

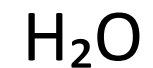
A substance that cannot be broken down into another substance.

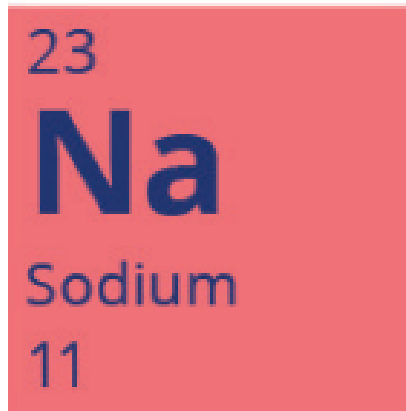
Each element is made up of its own type of atom.



compound

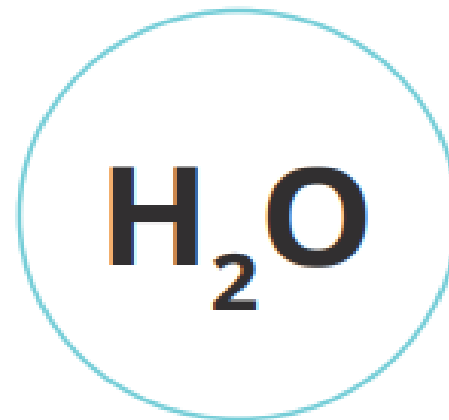
A substance made from two or more different elements that have been chemically joined.
Example:





chemical symbol

Most chemical elements are **represented symbolically by two letters**, generally the first two in their name.

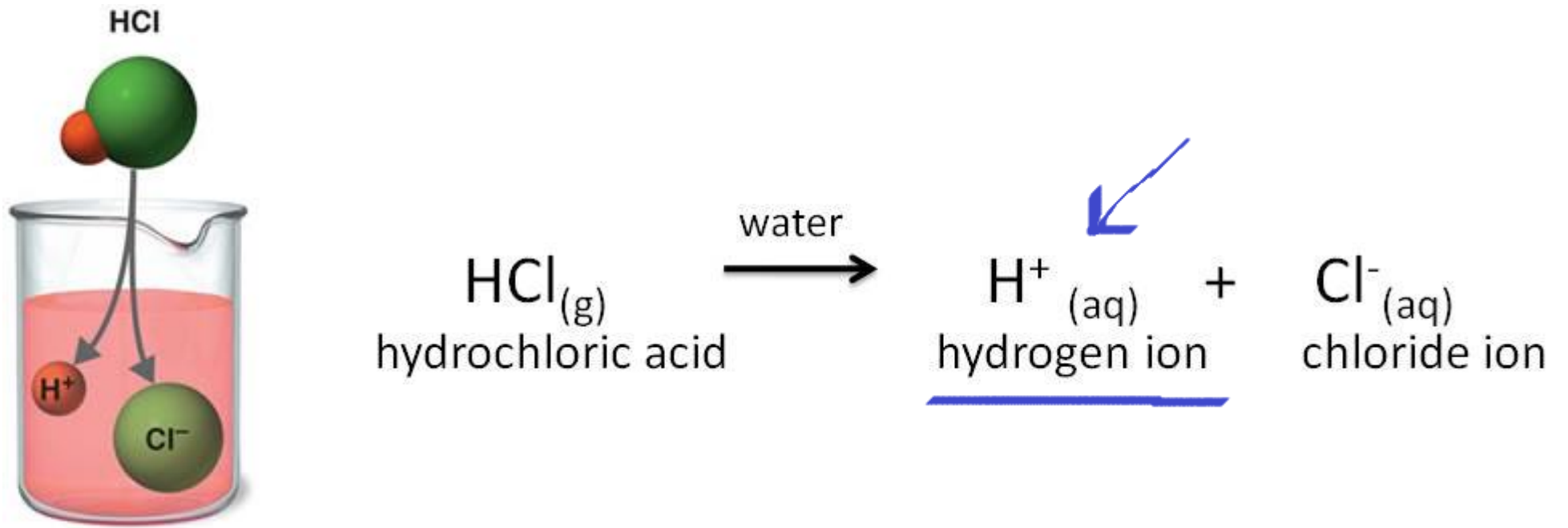


chemical formula

Tells us the number of each element in a compound.
It contains the symbols of the elements present in the compound.

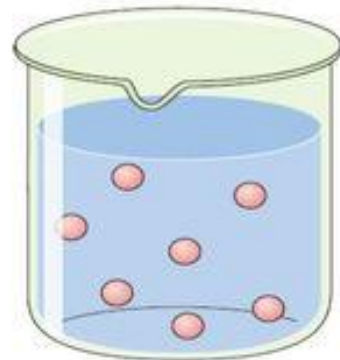
Acids

- Substances that donate hydrogen ions, H^{+1} , when **dissolved in water**.
- Acids conduct electricity well, due to the positive and negative ions in the solution. Acids turn blue litmus paper into red
- Corrosive: Can burn skin and react with metals. (stored in glass containers)
- All acids contain the element Hydrogen.
- Acids have a pH ranging from 0-6

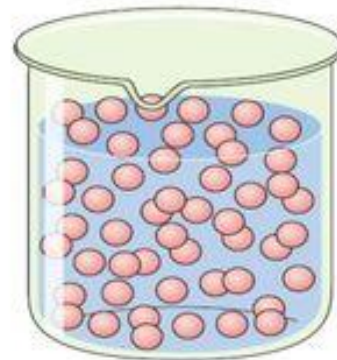


According to concentration acids are classified into :

- **A- Concentrated acids:** more number of acid particles dissolved in water, so more H^{+1} ions present. (corrosive – can destroy skin and attack metals)
- **B- Diluted acids:** low number of acid particles dissolved in water, so less H^{+1} ions present. (irritant – skin may become red and blistered)



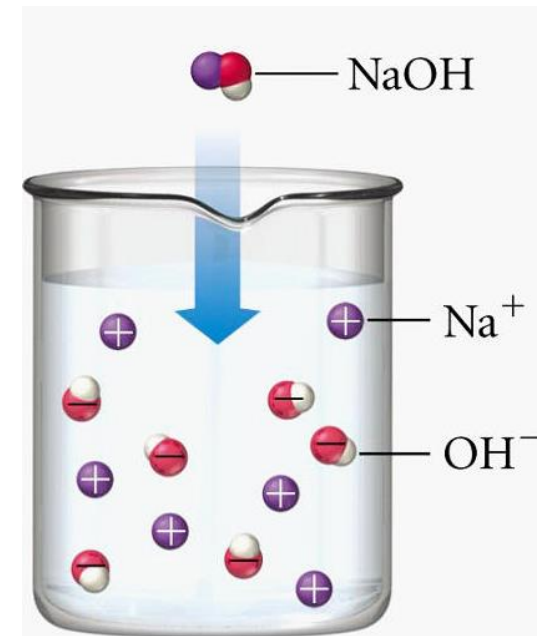
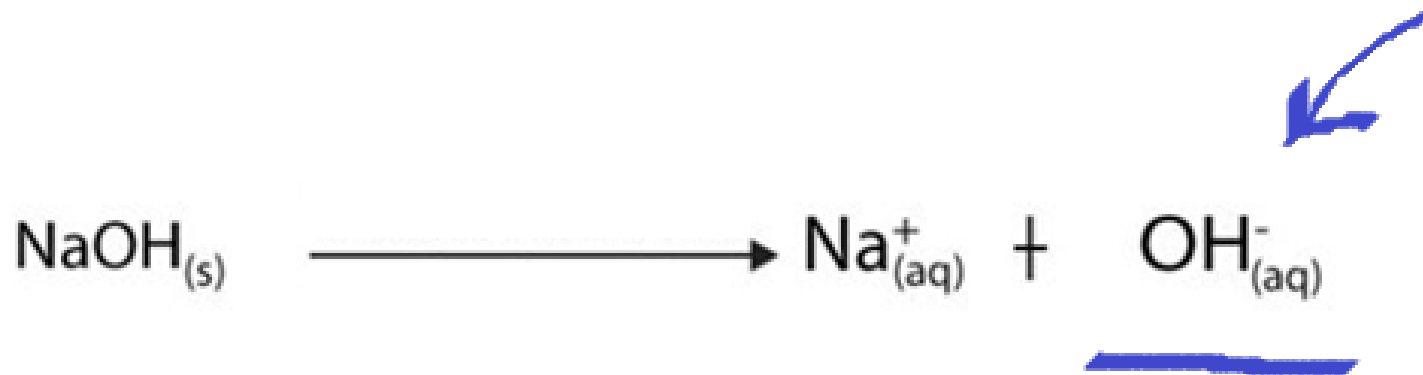
Dilute solution



Concentrated solution

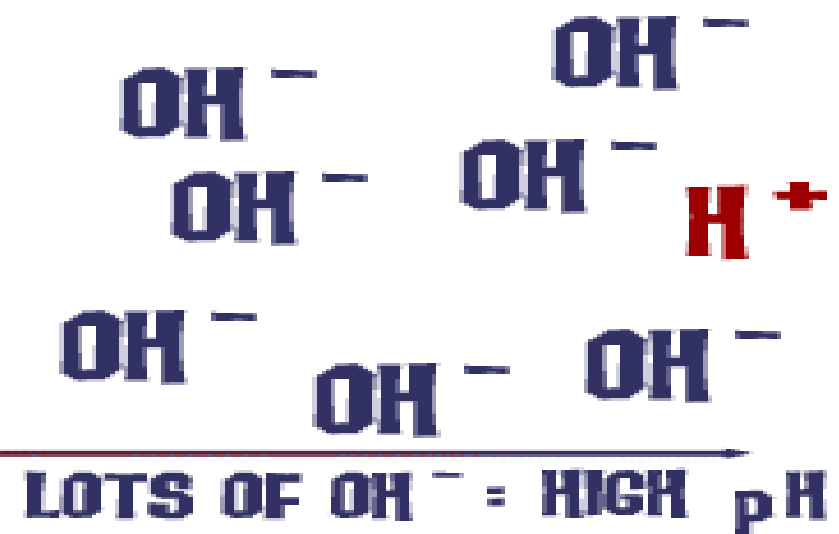
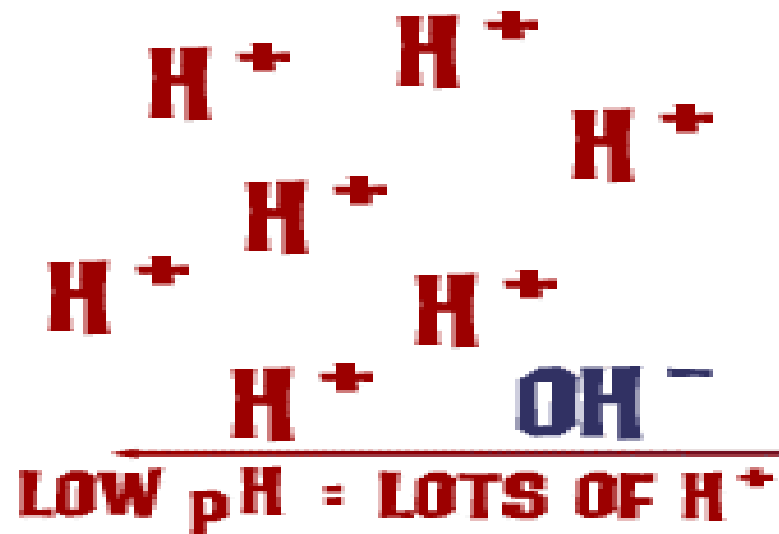
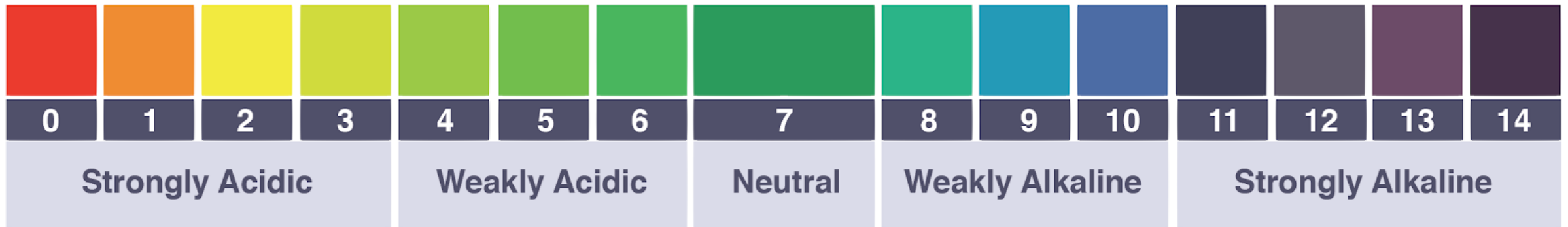
Bases and Alkalis

- Substances that form hydroxide ions (OH^{-1}) ions when dissolved in water
- Not all bases dissolve in Water. When a Base dissolves in water, the solution is called Alkali.
- Taste bitter
- Can burn skin (caustic).
- Alkaline solutions conduct electricity well.
- Alkalis turn red litmus paper into blue
- Have a pH ranging from 8-14



Universal Indicator

A mixture of indicators that give range of colors, used to show how strong or weak an acid or an alkali is.



Neutralization

- It is a chemical reaction between an acid and an alkali to form water and salt.
- Water is neutral (pH=7) , therefore, the pH changes when we mix acids and alkalis.

