

## Vocabulary Periodicity

1	affinity	An attractive force between substances or particles that causes them to enter into and remain in chemical combination
2	alkali metals	The Group 1 elements, lithium (Li), sodium (Na), potassium (K), rubidium (Rb), cesium (Cs), and francium (Fr) react with cold water for form strongly alkaline hydroxide solutions, and are referred to as "alkali metals". Hydrogen is <i>not</i> considered an alkali metal, despite its position on some periodic tables.
3	alkaline-earth metals	The Group 2 elements, beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra) form alkaline oxides and hydroxides and are called "alkaline earth metals".
4	atomic radius	One half the distance between nuclei of atoms of the same element, when the atoms are bound by a single covalent bond or are in a metallic crystal. The radius of atoms obtained from covalent bond lengths is called the covalent radius; the radius from interatomic distances in metallic crystals is called the metallic radius.
5	Average atomic mass	Most elements occur in nature as a mixture of <i>isotopes</i> (i.e. populations of atoms with different numbers of neutrons, and therefore, mass). We can calculate the average atomic mass of an element by knowing the relative abundance of each isotope, as well as the mass of each isotope. The average atomic mass of each element (in amu) is also referred to as its <i>atomic weight</i> .
6	Avogadro's number	The number of particles in one mole, equal to $6.02214199 \times 10^{23} \text{ mol}^{-1}$ ( $\pm 0.00000047 \text{ mol}^{-1}$ ) Also called Avogadro constant. ( $N_A$ , L)
7	chemical properties-	Measurement of a chemical property involves a chemical change. Example, determining the flammability of gasoline involves burning it, producing carbon dioxide and water.
8	diatomic element	Consisting of two atoms : having two atoms in the molecule. Naturally occurring diatomic elements are $\text{H}_2$ , $\text{N}_2$ , $\text{O}_2$ , $\text{F}_2$ , $\text{Cl}_2$ , $\text{Br}_2$ , and $\text{I}_2$ .
9	electronegativity	Electronegativity is a measure of the attraction an atom has for bonding electrons. Bonds between atoms with different electronegativities are polar, with the bonding electrons spending more time on average around the atom with higher electronegativity.
10	element	An element is a substance composed of atoms with identical atomic number. The older definition of element ( <i>an element is a pure substance that can't be decomposed chemically</i> ) was made obsolete by the discovery of isotopes.
11	families	A group of elements with similar chemical properties.
12	gram/mole conversions	The formula weight (or molecular weight or molar mass) of a compound tells you how many grams are in one mole of the compound. This gives you a way to convert from grams to moles or moles to grams.
13	Groups	Columns in the periodic table are called groups. For example, all of the elements in the second column are referred to as 'second group elements'.
14	halogens	An element of group VIIA (a. k. a. Group 18). The name means "salt former"; halogens react with metals to form binary ionic compounds. Fluorine (F), chlorine (Cl), bromine (Br), iodine (I), and astatine (At) are known at this time.
15	Inert Gas	see Noble Gas
16	ion size/ion radius relation	A cation is smaller than it's neutral atom because it has lost electrons. An anion is larger than the neutral atom because it has gained an electron.
17	ionization	The formation of or separation into ions by heat, electrical discharge, radiation, or chemical reaction. The state of being ionized.
18	ionization energy	The energy needed to remove an electron from a gaseous atom or ion. It is also called (IE,IP) ionization potential.
19	lanthanides	Elements 57-70 are called lanthanides. Electrons added during the Aufbau construction of lanthanide atoms go into the <i>4f</i> subshell.

20	mass number (M,A)	The total number of protons and neutrons in an atom or ion. In nuclide symbols the mass number is given as a leading superscript. In isotope names (e. g. carbon-14, sodium-23) the mass number is the number following the element name.														
21	Mendeleev	Russian chemist who first devised and published the periodic table of the elements (1869).														
22	metal or metallic	A metal is a substance that conducts heat and electricity, is shiny and reflects many colors of light, and can be hammered into sheets or drawn into wire. Metals lose electrons easily to form cations. About 80% of the known chemical elements are metals														
23	metalloid / semi-metal	An element with both metallic and nonmetallic properties. Examples are silicon, arsenic, and germanium.														
24	molar mass	The mass of one mole of a material. For example, the molar mass of H <sub>2</sub> O is 18.015 g (obtained by adding twice the molar mass of hydrogen to the molar mass of oxygen).														
25	noble gases	Any of the elements in Group 18 of the periodic table; helium, neon, argon, krypton, xenon, and radon, which are monatomic and with limited exceptions chemically inert.														
26	noble-gas configuration	Using a noble gas surrounded by brackets to shorten the writing of a complete electron configuration <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">Noble Gas</th> <th style="text-align: left;">Electronic configuration</th> </tr> </thead> <tbody> <tr> <td>He</td> <td>1s<sup>2</sup></td> </tr> <tr> <td>Ne</td> <td>[He]2s<sup>2</sup> 2p<sup>6</sup></td> </tr> <tr> <td>Ar</td> <td>[Ne]3s<sup>2</sup> 3p<sup>6</sup></td> </tr> <tr> <td>Kr</td> <td>[Ar]3d<sup>10</sup> 4s<sup>2</sup> 4p<sup>6</sup></td> </tr> <tr> <td>Xe</td> <td>[Kr]4d<sup>10</sup> 5s<sup>2</sup> 5p<sup>6</sup></td> </tr> <tr> <td>Rn</td> <td>[Xe]4f<sup>14</sup> 5d<sup>10</sup> 6s<sup>2</sup> 6p<sup>6</sup></td> </tr> </tbody> </table>	Noble Gas	Electronic configuration	He	1s <sup>2</sup>	Ne	[He]2s <sup>2</sup> 2p <sup>6</sup>	Ar	[Ne]3s <sup>2</sup> 3p <sup>6</sup>	Kr	[Ar]3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>6</sup>	Xe	[Kr]4d <sup>10</sup> 5s <sup>2</sup> 5p <sup>6</sup>	Rn	[Xe]4f <sup>14</sup> 5d <sup>10</sup> 6s <sup>2</sup> 6p <sup>6</sup>
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27	nonmetal	A nonmetal is a substance that conducts heat and electricity poorly, is brittle or waxy or gaseous, and cannot be hammered into sheets or drawn into wire. Nonmetals gain electrons easily to form anions. About 20% of the chemical elements are nonmetals.														
28	Periods	Rows in the periodic table are called periods. For example, all of the elements in the second row are referred to as 'second period elements'.														
29	period trends	A regular variation in element properties with increasing atomic number that is ultimately due to regular variations in atomic structure.														
30	periodic law	The periodic law states that physical and chemical properties of the elements recur in a regular way when the elements are arranged in order of increasing atomic number.														
31	periodic table	An arrangement of the elements according to increasing atomic number that shows relationships between element properties.														
32	periodicity	The quality or state of being periodic; recurrence at regular intervals. The repetition of similar properties in chemical elements, as indicated by their positioning in the periodic table.														
35	s, p, d, and f blocks	s block - groups 1 and 2 ; p block - groups 13 through 18 ; d block groups 3 through 12 ; f block - the actinide and lanthanide series														
36	transition elements	An element with an incomplete <i>d</i> subshell. Elements which have common cations with incomplete <i>d</i> subshells are also considered transition metals. Elements with incomplete <i>f</i> subshells are sometimes called "inner transition elements".														
37	valence electrons	Electrons that can be actively involved in chemical change; usually electrons in the shell with the highest value of <i>n</i> . Example, Germanium (Ge) has the electron configuration 1s <sup>2</sup> 2s <sup>2</sup> 2p <sup>6</sup> 3s <sup>2</sup> 3p <sup>6</sup> 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>2</sup> ; the 4s and 4p electrons are the valence electrons.														
38	valence shell	The shell corresponding to the highest value of principal quantum number in the atom. The valence electrons in this shell are on average farther from the nucleus than other electrons; they are often directly involved in chemical reaction.														