

1 H Hydrogen 1.008	2 He Helium 4.003																	
3 Li Lithium 6.94	4 Be Beryllium 9.012	5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180	11 Na Sodium 22.990	12 Mg Magnesium 24.305	13 Al Aluminum 26.982	14 Si Silicon 28.085	15 P Phosphorus 30.974	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.948			
19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.630	33 As Arsenic 74.922	34 Se Selenium 78.97	35 Br Bromine 79.904	36 Kr Krypton 83.798	
37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.95	43 Tc Technetium [97]	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.414	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.904	54 Xe Xenon 131.293	
55 Cs Cesium 132.905	56 Ba Barium 137.327	57 - 70 * Lanthanum 174.967	71 Lu Lutetium 174.967	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.225	78 Pt Platinum 195.084	79 Au Gold 196.967	80 Hg Mercury 200.592	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium [209]	85 At Astatine [210]	86 Rn Radon [222]
87 Fr Francium [223]	88 Ra Radium [226]	89 - 102 **	103 Lr Lawrencium [262]	104 Rf Rutherfordium [267]	105 Db Dubnium [270]	106 Sg Seaborgium [269]	107 Bh Bohrium [270]	108 Hs Hassium [270]	109 Mt Meitnerium [278]	110 Ds Darmstadtium [281]	111 Rg Roentgenium [281]	112 Cn Copernicium [285]	113 Nh Nihonium [286]	114 Fl Flerovium [289]	115 Mc Moscovium [289]	116 Lv Livermorium [293]	117 Ts Tennessine [293]	118 Og Oganesson [294]

Atomic Number — 6
 Symbol — C
 Name — Carbon
 Average Atomic Mass — 12.011

metals
 nonmetals
 metalloids

*Lanthanide series

**Actinide series

57 La Lanthanum 138.905	58 Ce Cerium 140.116	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.242	61 Pm Promethium [145]	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.500	67 Ho Holmium 164.930	68 Er Erbium 167.259	69 Tm Thulium 168.934	70 Yb Ytterbium 173.045
89 Ac Actinium [227]	90 Th Thorium 232.038	91 Pa Protactinium 231.038	92 U Uranium 238.029	93 Np Neptunium [237]	94 Pu Plutonium [244]	95 Am Americium [243]	96 Cm Curium [247]	97 Bk Berkelium [247]	98 Cf Californium [251]	99 Es Einsteinium [252]	100 Fm Fermium [257]	101 Md Mendelevium [258]	102 No Nobelium [259]

ACTIVITY 1

- 1 In your own words, what is the difference between an element and a compound?
Elements are made up of ONE type of atoms and compounds are made up of two or more different types of atoms/elements. In a compounds the atoms combine in a fixed ratio
- 2 How many elements are in periods 4 and 5? **36**
- 3 In Period 4, there are 18 groups.
 - a) What is the group number for the members of the scandium (Sc) group?
Group 3
 - b) What is the group number for the members of the zinc (Zn) group?
Group 12
- 4 Where are the nonmetals located on the table? **Far right hand side + hydrogen**
- 5 Are there more metals or nonmetals? **Metals** How many of each are there?
Metals nonmetals - 11
- 6 On what basis are the elements on the Periodic table arranged. **Atomic number, number of shells in the atoms and electron configuration**
- 7 What is the name given to the vertical columns on the periodic table.
Groups
- 8 What is the name given to the horizontal rows on the periodic table.
- 9 **Periods**
- 10 How many valence electrons do the following have:
 - a) Alkali metals **1+**
 - b) Potassium **1+**
 - c) Magnesium **2+**
 - d) Oxygen **2-**
- 11 Find the following elements on the periodic table. Give the name and symbol of these elements:
 - a) Group 17; period 2 **Flourine F**
 - b) Group 1; Period 4 **Potassium K**
 - c) Group 15; Period 2 **Nitrogen N**
 - d) Group 18; period 1 **Helium He**
 - e) Group 14; Period 2 **Silicon Si**
 - f) Group 13; Period 2 **Aluminium**

Consider the following element:



Answer the following questions:

- What is the atomic number? **17**
- How many protons does it have? **17**
- What type of element is it? **non-metal**
- What is the mass number? **35**
- How many neutrons does it have? **$35 - 17 = 18$**
- In which group is it found? **Halogen**
- What is this group called? **Group 17 or Group V11**
- How many valence electrons does it have? **2**
- How many energy levels does it have? **3** How can you determine this?
Period three on the periodic table



KEY																			
Alkali metals		Alkali-earth metals		Transition metals		Rare earths		Radioactive rare earths		Other metals		Semimetals		Non-metals		Noble gases		Hydrogen	

1 H Hydrogen 1																	2 He Helium 4
3 Li Lithium 7	4 Be Beryllium 9											5 B Boron 11	6 C Carbon 12	7 N Nitrogen 14	8 O Oxygen 16	9 F Fluorine 19	10 Ne Neon 20
11 Na Sodium 23	12 Mg Magnesium 24											13 Al Aluminum 27	14 Si Silicon 28	15 P Phosphorus 31	16 S Sulphur 32	17 Cl Chlorine 35	18 Ar Argon 40
19 K Potassium 39	20 Ca Calcium 40	21 Sc Scandium 45	22 Ti Titanium 48	23 V Vanadium 51	24 Cr Chromium 52	25 Mn Manganese 55	26 Fe Iron 56	27 Co Cobalt 59	28 Ni Nickel 58	29 Cu Copper 63	30 Zn Zinc 64	31 Ga Gallium 69	32 Ge Germanium 74	33 As Arsenic 75	34 Se Selenium 80	35 Br Bromine 79	36 Kr Krypton 84
37 Rb Rubidium 85	38 Sr Strontium 88	39 Y Yttrium 89	40 Zr Zirconium 90	41 Nb Niobium 93	42 Mo Molybdenum 98	43 Tc Technetium 97	44 Ru Ruthenium 102	45 Rh Rhodium 103	46 Pd Palladium 106	47 Ag Silver 107	48 Cd Cadmium 114	49 In Indium 115	50 Sn Tin 120	51 Sb Antimony 121	52 Te Tellurium 130	53 I Iodine 127	54 Xe Xenon 132
55 Cs Caesium 133	56 Ba Barium 138	57-71	72 Hf Hafnium 180	73 Ta Tantalum 181	74 W Tungsten 184	75 Re Rhenium 187	76 Os Osmium 192	77 Ir Iridium 193	78 Pt Platinum 195	79 Au Gold 197	80 Hg Mercury 202	81 Tl Thallium 205	82 Pb Lead 208	83 Bi Bismuth 209	84 Po Polonium 209	85 At Astatine 210	86 Rn Radon 222
87 Fr Francium 223	88 Ra Radium 226	89-103	104 Unq Unnilquadium 260	105 Unp Unnilpentium 262	106 Unh Unnilhexium 263	107 Uns Unnilseptium 262	108 Uno Unniloctium 265	109 Uue Unnilennium 266									
57 La Lanthanum 139	58 Ce Cerium 140	59 Pr Praseodymium 141	60 Nd Neodymium 142	61 Pm Promethium 145	62 Sm Samarium 152	63 Eu Europium 153	64 Gd Gadolinium 158	65 Tb Terbium 159	66 Dy Dysprosium 164	67 Ho Holmium 165	68 Er Erbium 168	69 Tm Thulium 169	70 Yb Ytterbium 174	71 Lu Lutetium 175			
89 Ac Actinium 227	90 Th Thorium 232	91 Pa Protactinium 231	92 U Uranium 238	93 Np Neptunium 237	94 Pu Plutonium 244	95 Am Americium 243	96 Cm Curium 247	97 Bk Berkelium 247	98 Cf Californium 251	99 Es Einsteinium 254	100 Fm Fermium 257	101 Md Mendelevium 258	102 No Nobelium 255	103 Lr Lawrencium 256			