CATHOLIC SECONDARY SCHOOLS ASSOCIATION CHEMISTRY DATA SHEET

Avogadro's constant, N A		$6.022 \times 10^{23} \text{ mol}^{-1}$
Volume of 1 mole ideal gas: at		
_	at 0°C (273 K)	22.71 L
	at 25°C (298 K)	24.79 L
Ionisation constant for water at	t 25°C (298.15 K), K w	1.0×10^{-14}
Specific heat capacity of water		$4.18 \times 10^3 \text{ J kg}^{-1} \text{ K}^{-1}$

Some useful formulae

 $pH = -log_{10} [H^{+}]$ $\Delta H = -mC\Delta T$

Some standard potentials

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$K^+ + e^-$	\rightleftharpoons	$K_{(s)}$	-2.94 V
$Ba^{2+} + 2e^{-}$	\rightleftharpoons	$Ba_{(s)}$	-2.91 V
$Ca^{2+} + 2e^{-}$	\rightleftharpoons	$Ca_{(s)}$	-2.87 V
$Na^+ + e^-$	\rightleftharpoons	$Na_{(s)}$	-2.71 V
$Mg^{2+} + 2e^{-}$	\rightleftharpoons	$Mg_{(s)}$	-2.36 V
$A1^{3+} + 3e^{-}$	\rightleftharpoons	$Al_{(s)}$	-1.68 V
$Mn^{2+} + 2e^{-}$	\rightleftharpoons	$Mn_{(s)}$	-1.18 V
$H_2O + e^-$	\rightleftharpoons	$^{1}/_{2}$ $H_{2(g)} + OH^{-}$	-0.83 V
$Zn^{2+} + 2e^{-}$	\rightleftharpoons	$Zn_{(s)}$	-0.76 V
$Fe^{2+} + 2e^{-}$	\rightleftharpoons	$Fe_{(s)}$	$-0.44~{ m V}$
$Ni^{2+} + 2e^{-}$	\rightleftharpoons	Ni _(s)	-0.24 V
$Sn^{2+} + 2e^{-}$	\rightleftharpoons	$\operatorname{Sn}_{(s)}$	-0.14 V
$Pb^{2+} + 2e^{-}$	\rightleftharpoons	$Pb_{(s)}$	-0.13 V
$H^+ + e^-$	\rightleftharpoons	½ H _{2(g)}	$0.00 \mathrm{~V}$
$SO_4^{2-} + 4H^+ + 2e^-$	\rightleftharpoons	$SO_{2(aq)} + 2H_2O$	0.16 V
$Cu^{2+} + 2e^{-}$	\rightleftharpoons	$Cu_{(s)}$	0.34 V
$^{1}/_{2} O_{2(g)} + H_{2}O + 2e^{-}$	\Rightarrow	2OH ⁻	0.40 V
$Cu^+ + e^-$	\rightleftharpoons	$Cu_{(s)}$	0.52 V
$^{1}/_{2} I_{2(s)} + e^{-}$	\rightleftharpoons	I ⁻	0.54 V
$^{1}/_{2} I_{2(aq)} + e^{-}$	\rightleftharpoons	Ι_	0.62 V
$Fe^{3+} + e^{-}$	\rightleftharpoons	Fe^{2+}	0.77 V
$Ag^+ + e^-$	\rightleftharpoons	$Ag_{(s)}$	0.80 V
$^{1}/_{2} Br_{2(l)} + e^{-}$	\rightleftharpoons	Br ⁻	1.08 V
$^{1}/_{2} Br_{2(aq)} + e^{-}$	\rightleftharpoons	Br ⁻	1.10 V
$^{1}/_{2} O_{2(g)} + 2H^{+} + 2e^{-}$	\rightleftharpoons	H_2O	1.23 V
$^{1}/_{2} \text{Cl}_{2(g)} + e^{-}$	\rightleftharpoons	Cl ⁻	1.36 V
$^{1}/_{2} \operatorname{Cr}_{2} \operatorname{O}_{7}^{2-} + 7 \operatorname{H}^{+} + 3 \operatorname{G}_{2}^{-}$	e ⁻ ==	$Cr^{3+} + \frac{7}{2}H_2O$	1.36 V
$^{1}/_{2} \text{Cl}_{2(aq)} + e^{-}$	\rightleftharpoons		1.40 V
$MnO_4^{-1} + 8H^+ + 5e^-$			1.51 V
$^{1}/_{2} F_{2(g)} + e^{-}$	\rightleftharpoons	F^-	2.89 V

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2 He	4.003 Helium	25			18 Ar	39.95	Argon	36	83.80	Krypton	\$5	1313	Xcnon	98			_	118 Uuo	١	Ununoctium
		9 F	19.00	Fluorine	17 Ci	35.45	Chlorine	35 Br	79.90	Bromine	53	126.0	lodine	85	Αt	[210.0]	Astatinc	117		
			16.00	Oxygen	16 S	32.07	Sulfur	34	78.96	Selenium	52 T	127 6	Tellurium	8	S.	[210.0]	Polonium	116 Ush	I	Ununhexium
		7 N	14.01	Nitrogen	15 p	30.97	Phosphorus	33	74.92	Arsenic	51 St	121.8	Antimony	83	Bi	209.0	Bismuth	115		
		9	12.01	Carbon	14 Si	28.09	Silicon	32	72.61	Germanium	50	118.7	II.	82	Pb	207.2	Lcad	114 Uuq	1	Ununquadium
		5 B	10.81	Boron	13 A1	26.98	Aluminium	31	69.72	Gallium	49	114.8	Indium	81	Ξ	204.4	Thallium	113		
								30	65.39	Zinc	85	12.	Cadmium	08	Hg	500.6	Mercury	112 Uub	1	Ununbium
闰		ncnt		Je.				29	63.55	Copper	47	107.0	Silver	6/	Αn	197.0	Gold	111 Uuu		Unununium
THE PERIODIC TABLE		Symbol of clement		Name of element				28	58.69	Nickel	46	106 A	Palladium	78	굺	195.1	Platinum	110 Uun	١	Ununnilium
RIODIC	KEY	79 Au	197.0	Gold				27	58.93	Cobalt	45	10.0	Rhodium	77	j	192.2	Iridium	109 Mt	[568]	Meitnerium
HE PE		Atomic Number	Atomic Weight					26 E	55.85	lron	4.	1 2	Ruthenium	9/	ő	190.2	Osmium	801 801	[265.1]	Hassium
I		Ā	∢					25	54 94	Manganese	43	10	Tochnetium	75	æ	186.2	Rhenium	107 Bh	[264.1]	Bohrium
								75	52 62	Chromium	42	04 04	Molybdenum	74	≱	183.8	Tungsten	106 Sg	[263.1]	Scaborgium
								23	50 94	Vanadium	4.	02 0	Niobium	73	Ta	180.9	Tantalum	105 D	[262.1]	Dubnium
								75 175	47.87	Titanium	40	1,5	Zirconium	72	H	178.5	Hafnium	104 Rf	[261.1]	Rutherfordium
								21	3c 44 96	Scandium	39	Y 00 01	Yttrium	57-71			Lanthanides	89-103		Actinides
		4 %	9.012	Beryllium	12	24.31	Magnesium	50	40 08	Calcium	38	or 63	Strontium	99	Ba	137.3	Barium	&2	[226.0]	Radium
-H	1.008 Hydrogen	3	6.941	Lithium	12	22.99	Sodium	61	30 10	Potassium	37	0X 0	Rubidium	55	ర	132.9	Cacsium	87 Fr	[223.0]	Francium

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57	58	59	09	19	62	63	2	65	99	29	89	69	70	7
Z a	ප	<u>.</u> 4	PR	Pm	Sm	En	B	£	Ą	Ho	Ħ	TH	Ą.	ŗ
138.9	140.1	140.9	144.2	[146.9]	150.4	152.0	157.3	158.9	162.5	164.9	167.3	168.9	173.0	175.0
Lanthanum	Cerium	Prascodymium	Neodymium	Promothium	Samanium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Yttcrbium	Lutctium

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	8	91	92	93	96	95	1	16	86	66			102	103
Ac	Η	Pa	Þ	å	2	Am		BK	Ü	Es			°Z	ä
[227.0]	232.0	231.0	238.0	[237.0]	[239.1]	[241.1]	[244.1]	[249.1]	[252.1]	[252.1]	[257.1]	[258.1]	[259.1]	[262.1]
Ē	Thorium	Protactinium	Uranium	Neptunium	Plutonium	Americiam		Berkelium	Californium	Einsteinium			Nobelium	Lawrencium