



Chemistry: **Transition from GCSE to AS level**

Part 12 - Practice

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The Periodic Table of the Elements

1	2											3	4	5	6	7	0	
																		(18)
																		4.0 He helium 2
(1)	(2)	Key										(13)	(14)	(15)	(16)	(17)		
6.9 Li lithium 3	9.0 Be beryllium 4	relative atomic mass symbol name atomic (proton) number										10.8 B boron 5	12.0 C carbon 6	14.0 N nitrogen 7	16.0 O oxygen 8	19.0 F fluorine 9	20.2 Ne neon 10	
23.0 Na sodium 11	24.3 Mg magnesium 12	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	27.0 Al aluminium 13	28.1 Si silicon 14	31.0 P phosphorus 15	32.1 S sulfur 16	35.5 Cl chlorine 17	39.9 Ar argon 18	
39.1 K potassium 19	40.1 Ca calcium 20	45.0 Sc scandium 21	47.9 Ti titanium 22	50.9 V vanadium 23	52.0 Cr chromium 24	54.9 Mn manganese 25	55.8 Fe iron 26	58.9 Co cobalt 27	58.7 Ni nickel 28	63.5 Cu copper 29	65.4 Zn zinc 30	69.7 Ga gallium 31	72.6 Ge germanium 32	74.9 As arsenic 33	79.0 Se selenium 34	79.9 Br bromine 35	83.8 Kr krypton 36	
85.5 Rb rubidium 37	87.6 Sr strontium 38	88.9 Y yttrium 39	91.2 Zr zirconium 40	92.9 Nb niobium 41	96.0 Mo molybdenum 42	[97] Tc technetium 43	101.1 Ru ruthenium 44	102.9 Rh rhodium 45	106.4 Pd palladium 46	107.9 Ag silver 47	112.4 Cd cadmium 48	114.8 In indium 49	118.7 Sn tin 50	121.8 Sb antimony 51	127.6 Te tellurium 52	126.9 I iodine 53	131.3 Xe xenon 54	
132.9 Cs caesium 55	137.3 Ba barium 56	138.9 La * lanthanum 57	178.5 Hf hafnium 72	180.9 Ta tantalum 73	183.8 W tungsten 74	186.2 Re rhenium 75	190.2 Os osmium 76	192.2 Ir iridium 77	195.1 Pt platinum 78	197.0 Au gold 79	200.6 Hg mercury 80	204.4 Tl thallium 81	207.2 Pb lead 82	209.0 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86	
[223] Fr francium 87	[226] Ra radium 88	[227] Ac † actinium 89	[267] Rf rutherfordium 104	[270] Db dubnium 105	[269] Sg seaborgium 106	[270] Bh bohrium 107	[270] Hs hassium 108	[278] Mt meitnerium 109	[281] Ds darmstadtium 110	[281] Rg roentgenium 111	[285] 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 oganeson 118	

* 58 – 71 Lanthanides

† 90 – 103 Actinides

140.1 Ce cerium 58	140.9 Pr praseodymium 59	144.2 Nd neodymium 60	[145] Pm promethium 61	150.4 Sm samarium 62	152.0 Eu europium 63	157.3 Gd gadolinium 64	158.9 Tb terbium 65	162.5 Dy dysprosium 66	164.9 Ho holmium 67	167.3 Er erbium 68	168.9 Tm thulium 69	173.0 Yb ytterbium 70	175.0 Lu lutetium 71
232.0 Th thorium 90	231.0 Pa protactinium 91	238.0 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	[262] Lr lawrencium 103

Use this for the task on the next page

Use the AQA A level periodic table when you answer the following questions.

Don't forget : 3 significant figures unless A_r M_r (both 1 dp); titre (2 dp) or

Laying the Foundation:

1. Define relative atomic mass.
2. What is the relative atomic mass of magnesium?
3. What are the relative molecular masses (M_r) of (i) methane (ii) NH_4NO_3 (iii) $\text{Al}_2(\text{SO}_4)_3$
4. What is the Avogadro number (not required for AQA)?
5. How do you calculate number of moles when the mass is given?
6. How many moles in 3.20 g of methane?
7. Find the mass of 0.100 mol sodium carbonate.
8. How many moles are in 24.5 g of sulphuric acid?
9. Explain what empirical and molecular formulae are.
10. Find the empirical formula of a compound which contains 70.0 % iron and 30.0 % oxygen by mass.
11. Find the molecular formula of a compound which contains 38.7 % carbon, 9.68 % hydrogen and the rest is oxygen. The M_r of the compound is 62.0.
12. What is the ideal gas equation? State each term and give its units.
13. How do we convert dm^3 or cm^3 into m^3 ?
14. Find the number of moles of 200 cm^3 of hydrogen at 25.0 °C and 100 kPa
15. Find the M_r of a gas when: 0.123 g of gas has volume 65.5 cm^3 (measured at 99.0 °C and 100 kPa).
16. Find the volume of 0.100 mol of carbon dioxide at 25.0 °C and 100 kPa
17. How do you calculate number of moles of a solution?
18. Find the number of moles of sodium hydroxide in 200 cm^3 of 0.400 mol dm^{-3} solution.
19. Find the concentration of a solution of 7.30 g hydrogen chloride in 250 cm^3 solution.

More difficult (don't forget to write a balanced symbol equation!):

20. What volume of $0.100 \text{ mol dm}^{-3}$ sulphuric acid neutralises 20.0 cm^3 of $0.300 \text{ mol dm}^{-3}$ potassium hydroxide?
21. What volume of carbon dioxide (measured at 25.0°C and 100 kPa) is formed 50.0 cm^3 of $0.500 \text{ mol dm}^{-3}$ hydrochloric acid reacts with excess calcium carbonate?
22. What mass of calcium carbonate is used in Q.21?
23. What mass of magnesium chloride is formed when 6.80 g magnesium react with excess hydrochloric acid?
24. If the actual mass of MgCl_2 obtained in Q.23 is 19.5 g , calculate the percentage yield.
25. How is percentage atom economy calculated?
26. Calculate the percentage atom economy for the production of magnesium hydroxide by the reaction of magnesium chloride with sodium hydroxide.

Pause this presentation while you complete the exercise on the previous page.

When complete move to the next page where you can check your answers.

When you're confident with this
topic move onto part 13:

More practice !