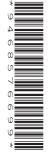


June 2022 only

GCSE (9–1) Combined Science B (Twenty First Century Science)

J260 04/08

Data Sheet



INSTRUCTIONS

• Do not send this Data Sheet for marking. Keep it in the centre or recycle it.

INFORMATION

- This Data Sheet is for the June 2022 examination series only.
- This Data Sheet has 4 pages.

The Periodic Table of the Elements

													_								
(0)	18	2	helium 4.0	10	Se	neon 20.2	18	Ą	argon 39.9	36	첫	krypton 83.8	54	Xe	xenon 131.3	98	R	radon			
(7)			17	6	ш	fluorine 19.0	17	Cl	chlorine 35.5	35	Ā	bromine 79.9	23	П	iodine 126.9	85	Αt	astatine			
(9)			16	8	0	oxygen 16.0	16	တ	sulfur 32.1	34	Se	selenium 79.0	52	Te	tellurium 127.6	84	Ро	polonium	116	^	livermorium
(2)			15	7	z	nitrogen 14.0	15	۵	phosphorus 31.0	33	As	arsenic 74.9	51	Sb	antimony 121.8	83	Ξ	bismuth 209.0			
(4)			14	9	ပ	carbon 12.0	14	Si	silicon 28.1	32	Ge	germanium 72.6	20	Sn	tin 118.7	82	Pb	lead 207.2	114	Εl	flerovium
(3)			13	2	Ω	10.8	13	Ν	aluminium 27.0	31	Ga	gallium 69.7	49	In	indium 114.8	81	11	thallium 204.4			
			!						12	30	Zu	zinc 65.4	48	ပ္ပ	cadmium 112.4	80	Нg	mercury 200.6	112	ű	copernicium
									7	59	Cn	copper 63.5	47	Ag	silver 107.9	26	Αn	gold 197.0	111	Rg	roentgenium
									10	28	Z	nickel 58.7	46	Pd	palladium 106.4	78	풉	platinum 195.1	110	Ds	darmstadtium
									၈	27	ဝိ	cobalt 58.9	45	R	rhodium 102.9	77	ī	iridium 192.2	109	¥	meitnerium
									œ	56	Ъе	iron 55.8	44	Ru	nuthenium 101.1	92	SO.	osmium 190.2	108	Hs	hassium
									7	25	M	manganese 54.9	43	ဥ	technetium	75	Re	rhenium 186.2	107	Bh	pohrium
	er nass								9	24	ပ်	chromium 52.0	42	Mo	molybdenum 95.9	74	>	tungsten 183.8	106	Sg	seaborgium
	Key	Key atomic number Symbol name relative atomic mass							2	23	>	vanadium 50.9	41	Q N	niobium 92.9	73	Та	tantalum 180.9	105	op C	dubnium
		ato	relativ						4						14			hafnium 178.5			rutherfordium
!				1					က	21	လွ	scandium 45.0	39	>	yttrium 88.9	ì	27-71	lanthanoids		89–103	actinoids
(2)			2	4	Be	beryllium 9.0	12	Mg	magnesium 24.3	20	Ca	calcium 40.1	38	လွ	strontium 87.6	99	Ba	barium 137.3	88	Ra	radium
(1)	7	- 3	hydrogen	3	=	lithium 6.9	11	Na	sodium 23.0	19	¥	potassium 39.1	37	Rb	rubidium 85.5	22	S	caesium 132.9	28	ቷ	francium
		_																_			

Equations in physics

Key:
HT = Higher Tier only

P1 Radiation and waves

wave speed = frequency × wavelength

P2 Sustainable energy

energy transferred = power \times time efficiency = $\frac{\text{useful energy transferred}}{\text{total energy transferred}}$

P3 Electric circuits

energy transferred (work done) = charge flow × potential difference

power = potential difference × current

power = $(current)^2 \times resistance$

potential difference across primary coil × current in primary coil = potential difference across secondary coil × current in secondary coil

HT force = magnetic flux density × current × length of conductor

P4 Explaining motion

weight = mass × gravitational field strength, g

average speed =
$$\frac{\text{distance}}{\text{time}}$$

$$acceleration = \frac{change in speed}{time taken}$$

 $(\text{final speed})^2 - (\text{initial speed})^2 = 2 \times \text{acceleration} \times \text{distance}$

HT momentum = mass × velocity

HT change in momentum = resultant force × time for which it acts

force = mass × acceleration

work done = force × distance (along the line of action of the force)

kinetic energy = $0.5 \times \text{mass} \times (\text{speed})^2$

(in a gravity field) gravitational potential energy = mass × gravitational field strength, g × height

$$power = \frac{energy\ transferred}{time}$$

P6 Matter – models and explanations

density =
$$\frac{\text{mass}}{\text{volume}}$$

change in internal energy = mass × specific heat capacity × change in temperature

energy to cause a change of state = mass x specific latent heat

force exerted by a spring = extension × spring constant

energy stored in a stretched spring = $\frac{1}{2}$ × spring constant × (extension)²



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