

Modified Enlarged 18pt

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

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

J260 04/08

Data Sheet (Insert)

June 2019

INSTRUCTIONS

Do not send this Data Sheet for marking; it should be retained in the centre or destroyed.

INFORMATION

The information in this Data Sheet is for the use of candidates following GCSE (9–1) Combined Science B (Combined Science) (J260 04/08).



The Periodic Table of the Elements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(0)
1	2	<div>Key atomic number Symbol name relative atomic mass</div>					
1 H hydrogen 1.0							18
3 Li lithium 6.9	4 Be beryllium 9.0						
11 Na sodium 23.0	12 Mg magnesium 24.3						
19 K potassium 39.1	20 Ca calcium 40.1	3	4	5	6	7	8
37 Rb rubidium 85.5	38 Sr strontium 87.6	39 Y yttrium 88.9	40 Zr zirconium 91.2	41 Nb niobium 92.9	42 Mo molybdenum 95.9	43 Tc technetium	44 Ru ruthenium 101.1
55 Cs caesium 132.9	56 Ba barium 137.3	57–71 lanthanoids	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2
87 Fr francium	88 Ra radium	89–103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium
						109 Mt meitnerium	110 Ds darmstadtium
						111 Rg roentgenium	112 Cn copernicium
						119 Au gold	120 Hg mercury
						127 Ir iridium	128 Pt platinum
						145 Rh rhodium	146 Pd palladium
						153 Co cobalt	154 Ni nickel
						161 Mn manganese	162 Fe iron
						173 Cr chromium	174 Mn manganese
						181 V vanadium	182 Cr chromium
						189 Ti titanium	190 V vanadium
						197 Sc scandium	198 Ti titanium
						201 Y yttrium	202 Zr zirconium
						209 La lanthanum	210 Ce cerium
						217 Pr praseodymium	218 Nd neodymium
						225 Pm promethium	226 Sm samarium
						232 Eu europium	233 Gd gadolinium
						247 Tm thulium	248 Yb ytterbium
						255 Lu lutetium	256 Hf hafnium
						262 Er erbium	263 Ta tantalum
						271 Ho holmium	272 W tungsten
						279 Dy dysprosium	280 Re rhenium
						287 Tb terbium	288 Os osmium
						295 Gd gadolinium	296 Ir iridium
						303 Eu europium	304 Pt platinum
						311 Sm samarium	312 Au gold
						319 La lanthanum	320 Hg mercury
						327 Pr praseodymium	328 Tl thallium
						335 Nd neodymium	336 Pb lead
						343 Eu europium	344 Bi bismuth
						351 Gd gadolinium	352 Po polonium
						359 Tb terbium	360 At astatine
						367 Dy dysprosium	368 Rn radon
						375 Ho holmium	
						383 Er erbium	
						391 Tm thulium	
						399 Yb ytterbium	
						407 Lu lutetium	
						415 Hf hafnium	
						423 Ta tantalum	
						431 W tungsten	
						439 Re rhenium	
						447 Os osmium	
						455 Ir iridium	
						463 Pt platinum	
						471 Au gold	
						479 Hg mercury	
						487 Tl thallium	
						495 Pb lead	
						503 Bi bismuth	
						511 Po polonium	
						519 At astatine	
						527 Rn radon	
						535 Fr francium	
						543 Ra radium	
						551 Ac actinium	
						559 Th thorium	
						567 Pa protactinium	
						575 U uranium	
						583 Np neptunium	
						591 Pu plutonium	
						599 Am americium	
						607 Cm curium	
						615 Bk berkelium	
						623 Cf californium	
						631 Es einsteinium	
						639 Fm fermium	
						647 Md mendelevium	
						655 No nobelium	
						663 Lr lawrencium	
						671 101 unnilunium	
						679 102 ununbium	
						687 103 ununtrium	
						695 104 ununquadium	
						703 105 ununpentium	
						711 106 ununhexium	
						719 107 ununseptium	
						727 108 ununoctium	
						735 109 ununennium	
						743 110 ununnium	
						751 111 ununnunium	
						759 112 ununbium	
						767 113 ununtrium	
						775 114 ununquadium	
						783 115 ununpentium	
						791 116 ununhexium	
						799 117 ununseptium	
						807 118 ununoctium	
						815 119 ununennium	
						823 120 ununnium	
						831 121 ununbium	
						839 122 ununtrium	
						847 123 ununquadium	
						855 124 ununpentium	
						863 125 ununhexium	
						871 126 ununseptium	
						879 127 ununoctium	
						887 128 ununennium	
						895 129 ununnium	
						903 130 ununbium	
						911 131 ununtrium	
						919 132 ununquadium	
						927 133 ununpentium	
						935 134 ununhexium	
						943 135 ununseptium	
						951 136 ununoctium	
						959 137 ununennium	
						967 138 ununnium	
						975 139 ununbium	
						983 140 ununtrium	
						991 141 ununquadium	
						999 142 ununpentium	
						1007 143 ununhexium	
						1015 144 ununseptium	
						1023 145 ununoctium	
						1031 146 ununennium	
						1039 147 ununnium	
						1047 148 ununbium	
						1055 149 ununtrium	
						1063 150 ununquadium	
						1071 151 ununpentium	
						1079 152 ununhexium	
						1087 153 ununseptium	
						1095 154 ununoctium	
						1103 155 ununennium	
						1111 156 ununnium	
						1119 157 ununbium	
						1127 158 ununtrium	
						1135 159 ununquadium	
						1143 160 ununpentium	
						1151 161 ununhexium	
						1159 162 ununseptium	
						1167 163 ununoctium	
						1175 164 ununennium	
						1183 165 ununnium	
						1191 166 ununbium	
						1199 167 ununtrium	
						1207 168 ununquadium	
						1215 169 ununpentium	
						1223 170 ununhexium	
						1231 171 ununseptium	
						1239 172 ununoctium	
						1247 173 ununennium	
						1255 174 ununnium	
						1263 175 ununbium	
						1271 176 ununtrium	
						1279 177 ununquadium	
						1287 178 ununpentium	
						1295 179 ununhexium	
						1303 180 ununseptium	
						1311 181 ununoctium	
						1319 182 ununennium	
						1327 183 ununnium	
						1335 184 ununbium	
						1343 185 ununtrium	
						1351 186 ununquadium	
						1359 187 ununpentium	
						1367 188 ununhexium	
						1375 189 ununseptium	
						1383 190 ununoctium	
						1391 191 ununennium	
						1399 192 ununnium	
						1407 193 ununbium	
						1415 194 ununtrium	
						1423 195 ununquadium	
						1431 196 ununpentium	
						1439 197 ununhexium	
						1447 198 ununseptium	
						1455 199 ununoctium	
						1463 200 ununennium	
						1471 201 ununnium	
						1479 202 ununbium	
						1487 203 ununtrium	
						1495 204 ununquadium	
						1503 205 ununpentium	
						1511 206 ununhexium	
						1519 207 ununseptium	
						1527 208 ununoctium	
						1535 209 ununennium	
						1543 210 ununnium	
						1551 211 ununbium	
						1559 212 ununtrium	
						1567 213 ununquadium	
						1575 214 ununpentium	
						1583 215 ununhexium	
						1591 216 ununseptium	
						1599 217 ununoctium	
						1607 218 ununennium	
						1615 219 ununnium	
						1623 220 ununbium	
						1631 221 ununtrium	
						1639 222 ununquadium	
						1647 223 ununpentium	
						1655 224 ununhexium	
						1663 225 ununseptium	
						1671 226 ununoctium	
						1679 227 ununennium	
						1687 228 ununnium	
						1695 229 ununbium	
						1703 230 ununtrium	
						1711 231 ununquadium	
						1719 232 ununpentium	
						1727 233 ununhexium	
						1735 234 ununseptium	
						1743 235 ununoctium	
						1751 236 ununennium	
						1759 237 ununnium	
						1767 238 ununbium	
						1775 239 ununtrium	
						1783 240 ununquadium	
						1791 241 ununpentium	
						1799 242 ununhexium	
						1807 243 ununseptium	
						1815 244 ununoctium	
						1823 245 ununennium	
						1831 246 ununnium	
						1839 247 ununbium	
						1847 248 ununtrium	
						1855 249 ununquadium	
						1863 250 ununpentium	
						1871 251 ununhexium	

ELEMENTS LISTED IN NUMERICAL ORDER:

1	Hydrogen	H	29	Copper	Cu	72	Hafnium	Hf
2	Helium	He	30	Zinc	Zn	73	Tantalum	Ta
3	Lithium	Li	31	Gallium	Ga	74	Tungsten	W
4	Beryllium	Be	32	Germanium	Ge	75	Rhenium	Re
5	Boron	B	33	Arsenic	As	76	Osmium	Os
6	Carbon	C	34	Selenium	Se	77	Iridium	Ir
7	Nitrogen	N	35	Bromine	Br	78	Platinum	Pt
8	Oxygen	O	36	Krypton	Kr	79	Gold	Au
9	Fluorine	F	37	Rubidium	Rb	80	Mercury	Hg
10	Neon	Ne	38	Strontium	Sr	81	Thallium	Tl
11	Sodium	Na	39	Yttrium	Y	82	Lead	Pb
12	Magnesium	Mg	40	Zirconium	Zr	83	Bismuth	Bi
13	Aluminum	Al	41	Niobium	Nb	84	Polonium	Po
14	Silicon	Si	42	Molybdenum	Mo	85	Astatine	At
15	Phosphorus	P	43	Technetium	Tc	86	Radon	Rn
16	Sulfur	S	44	Ruthenium	Ru	87	Francium	Fr
17	Chlorine	Cl	45	Rhodium	Rh	88	Radium	Ra
18	Argon	Ar	46	Palladium	Pd	104	Rutherfordium	Rf
19	Potassium	K	47	Silver	Ag	105	Dubnium	Db
20	Calcium	Ca	48	Cadmium	Cd	106	Seaborgium	Sg
21	Scandium	Sc	49	Indium	In	107	Bohrium	Bh
22	Titanium	Ti	50	Tin	Sn	108	Hassium	Hs
23	Vanadium	V	51	Antimony	Sb	109	Meitnerium	Mt
24	Chromium	Cr	52	Tellurium	Te	110	Darmstadtium	Ds
25	Manganese	Mn	53	Iodine	I	111	Roentgenium	Rg
26	Iron	Fe	54	Xenon	Xe	112	Copernicium	Cn
27	Cobalt	Co	55	Caesium	Cs	114	Flerovium	Fl
28	Nickel	Ni	56	Barium	Ba	116	Livermorium	Lv

Equations in physics

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

$$\text{change in internal energy} = \text{mass} \times \text{specific heat capacity} \times \text{change in temperature}$$

$$\text{energy for a change of state} = \text{mass} \times \text{specific latent heat}$$

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

$$\begin{aligned} &\text{potential difference across primary coil} \times \text{current in primary coil} = \\ &\text{potential difference across secondary coil} \times \text{current in secondary coil} \end{aligned}$$

HIGHER TIER ONLY –

$$\text{force} = \text{magnetic flux density} \times \text{current} \times \text{length of conductor}$$

$$\text{change in momentum} = \text{resultant force} \times \text{time for which it acts}$$

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.