

# Data Sheet

**GCSE (9–1) Combined Science B**

**(Twenty First Century Science)**

**Combined Science**

**J260/04, J260/08**

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

A copy of this sheet will be provided as an insert within the question paper for each component.

Copies of this sheet may be used for teaching.

## The Periodic Table of the Elements

| (1)                          | (2)                           |                                                                |                               |                               |                                |                              |                                |                              |                                |                             |                              | (3)                           | (4)                           | (5)                           | (6)                            | (7)                          | (0)                         |                          |
|------------------------------|-------------------------------|----------------------------------------------------------------|-------------------------------|-------------------------------|--------------------------------|------------------------------|--------------------------------|------------------------------|--------------------------------|-----------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|------------------------------|-----------------------------|--------------------------|
| 1                            |                               | Key<br>atomic number<br>Symbol<br>name<br>relative atomic mass |                               |                               |                                |                              |                                |                              |                                |                             |                              |                               |                               |                               |                                |                              |                             | 18                       |
| 1<br>H<br>hydrogen<br>1.0    | 2                             |                                                                |                               |                               |                                |                              |                                |                              |                                |                             |                              | 13                            | 14                            | 15                            | 16                             | 17                           |                             | 2<br>He<br>helium<br>4.0 |
| 3<br>Li<br>lithium<br>6.9    | 4<br>Be<br>beryllium<br>9.0   |                                                                |                               |                               |                                |                              |                                |                              |                                |                             |                              | 5<br>B<br>boron<br>10.8       | 6<br>C<br>carbon<br>12.0      | 7<br>N<br>nitrogen<br>14.0    | 8<br>O<br>oxygen<br>16.0       | 9<br>F<br>fluorine<br>19.0   | 10<br>Ne<br>neon<br>20.2    |                          |
| 11<br>Na<br>sodium<br>23.0   | 12<br>Mg<br>magnesium<br>24.3 |                                                                |                               |                               |                                |                              |                                |                              |                                |                             |                              | 13<br>Al<br>aluminium<br>27.0 | 14<br>Si<br>silicon<br>28.1   | 15<br>P<br>phosphorus<br>31.0 | 16<br>S<br>sulfur<br>32.1      | 17<br>Cl<br>chlorine<br>35.5 | 18<br>Ar<br>argon<br>39.9   |                          |
| 19<br>K<br>potassium<br>39.1 | 20<br>Ca<br>calcium<br>40.1   | 3                                                              | 4                             | 5                             | 6                              | 7                            | 8                              | 9                            | 10                             | 11                          | 12                           | 31<br>Ga<br>gallium<br>69.7   | 32<br>Ge<br>germanium<br>72.6 | 33<br>As<br>arsenic<br>74.9   | 34<br>Se<br>selenium<br>79.0   | 35<br>Br<br>bromine<br>79.9  | 36<br>Kr<br>krypton<br>83.8 |                          |
| 37<br>Rb<br>rubidium<br>85.5 | 38<br>Sr<br>strontium<br>87.6 | 39<br>Y<br>yttrium<br>88.9                                     | 40<br>Zr<br>zirconium<br>91.2 | 41<br>Nb<br>niobium<br>92.9   | 42<br>Mo<br>molybdenum<br>95.9 | 43<br>Tc<br>technetium       | 44<br>Ru<br>ruthenium<br>101.1 | 45<br>Rh<br>rhodium<br>102.9 | 46<br>Pd<br>palladium<br>106.4 | 47<br>Ag<br>silver<br>107.9 | 48<br>Cd<br>cadmium<br>112.4 | 49<br>In<br>indium<br>114.8   | 50<br>Sn<br>tin<br>118.7      | 51<br>Sb<br>antimony<br>121.8 | 52<br>Te<br>tellurium<br>127.6 | 53<br>I<br>iodine<br>126.9   | 54<br>Xe<br>xenon<br>131.3  |                          |
| 55<br>Cs<br>caesium<br>132.9 | 56<br>Ba<br>barium<br>137.3   | ● 57–71<br>lanthanoids                                         | 72<br>Hf<br>hafnium<br>178.5  | 73<br>Ta<br>tantalum<br>180.9 | 74<br>W<br>tungsten<br>183.8   | 75<br>Re<br>rhenium<br>186.2 | 76<br>Os<br>osmium<br>190.2    | 77<br>Ir<br>iridium<br>192.2 | 78<br>Pt<br>platinum<br>195.1  | 79<br>Au<br>gold<br>197.0   | 80<br>Hg<br>mercury<br>200.6 | 81<br>Tl<br>thallium<br>204.4 | 82<br>Pb<br>lead<br>207.2     | 83<br>Bi<br>bismuth<br>209.0  | 84<br>Po<br>polonium           | 85<br>At<br>astatine         | 86<br>Rn<br>radon           |                          |
| 87<br>Fr<br>francium         | 88<br>Ra<br>radium            | ● 89–103<br>actinoids                                          | 104<br>Rf<br>rutherfordium    | 105<br>Db<br>dubnium          | 106<br>Sg<br>seaborgium        | 107<br>Bh<br>bohrium         | 108<br>Hs<br>hassium           | 109<br>Mt<br>meitnerium      | 110<br>Ds<br>darmstadtium      | 111<br>Rg<br>roentgenium    | 112<br>Cn<br>copernicium     |                               | 114<br>Fl<br>flerovium        |                               | 116<br>Lv<br>livermorium       |                              |                             |                          |

## Equations in physics

|                                                                                                                                                           |                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| potential difference across primary coil $\times$ current in primary coil = potential difference across secondary coil $\times$ current in secondary coil | $V_p I_p = V_s I_s$            |
| $(\text{final speed})^2 - (\text{initial speed})^2 = 2 \times \text{acceleration} \times \text{distance}$                                                 | $v^2 - u^2 = 2 a s$            |
| change in internal energy = mass $\times$ specific heat capacity $\times$ change in temperature                                                           | $\Delta E = m c \Delta \theta$ |
| energy to cause a change of state = mass $\times$ specific latent heat                                                                                    | $E = m l$                      |
| energy stored in a stretched spring = $\frac{1}{2} \times \text{spring constant} \times (\text{extension})^2$                                             | $E = \frac{1}{2} k x^2$        |

### Higher tier only

|                                                                             |                  |
|-----------------------------------------------------------------------------|------------------|
| force = magnetic flux density $\times$ current $\times$ length of conductor | $F = B I l$      |
| change in momentum = resultant force $\times$ time for which it acts        | $\Delta p = F t$ |

## Summary of updates

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| Date     | Version | Details                                                                                                       |
|----------|---------|---------------------------------------------------------------------------------------------------------------|
| May 2022 | 2.0     | Word equations are presented in a table with the symbol equations.<br>0.5 is now represented as $\frac{1}{2}$ |