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Cambridge Assessment International Education

# Cambridge IGCSE™

**COMBINED SCIENCE** **0653/11**

Paper 1 Multiple Choice (Core) **October/November 2025**

**45 minutes**

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

*7715970189*

**INSTRUCTIONS**

- There are **forty** questions on this paper. Answer **all** questions.
- For each question there are four possible answers **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in soft pencil on the multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- Take the weight of 1.0 kg to be 9.8 N (acceleration of free fall = 9.8 m / $s^2$).

**INFORMATION**

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.
- The Periodic Table is printed in the question paper.

This document has **16** pages. Any blank pages are indicated.


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**[Turn over**

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**1** One characteristic of living organisms is to detect and respond to changes in the environment.

What is this characteristic?

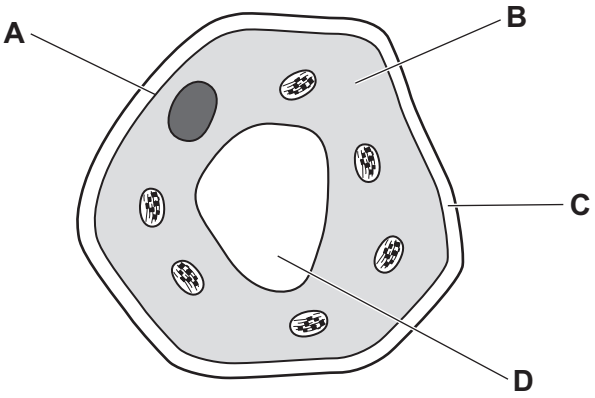
**A** growth

**B** movement

**C** reproduction

**D** sensitivity

**2** Which structure stops the cell from bursting when the cell is placed in distilled water?




**3** A sample of food turns Benedict's solution brick-red.

Which row shows the molecule the food contains and all the chemical elements in the molecule?

| | molecule | chemical elements |
|---|---|---|
| **A** | protein | carbon, nitrogen and oxygen |
| **B** | glucose | hydrogen, carbon and nitrogen |
| **C** | glucose | hydrogen, carbon and oxygen |
| **D** | protein | hydrogen, nitrogen and oxygen |

**4** Which statement about biological catalysts is correct?

**A** They are proteins that increase the rate of a reaction.

**B** They are **not** affected by changes in pH.

**C** They can only function outside animal cells.

**D** They work fastest at very high temperatures.

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**5** Which process do plants use to manufacture carbohydrates using light energy?

**A** absorption

**B** photosynthesis

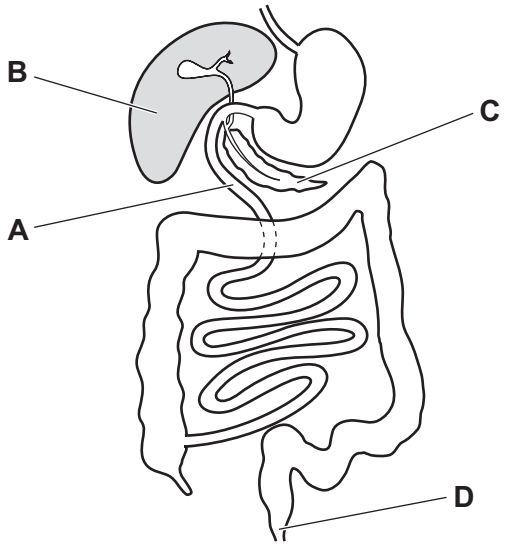
**C** respiration

**D** transpiration

**6** Which row matches the type of nutrient with its food source and use in the body?

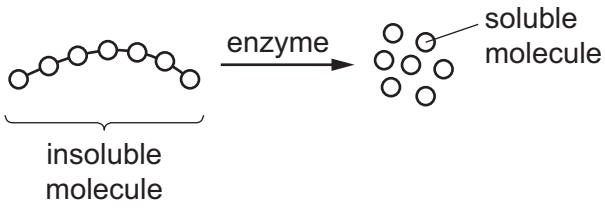
| | nutrient | food source | use |
|---|---|---|---|
| **A** | calcium | butter | for energy |
| **B** | iron | red meat | to make red blood cells |
| **C** | vitamin C | milk | to make bones and teeth |
| **D** | vitamin D | citrus fruit | for healthy gums |

**7** Which part of the digestive system carries out both digestion **and** absorption?

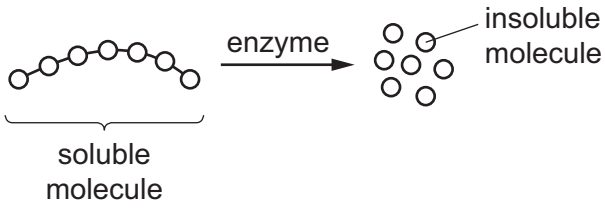


**8** Which diagram shows the correctly labelled molecules in chemical digestion?

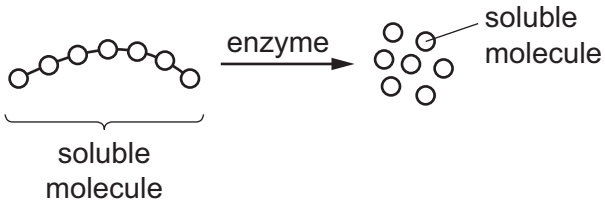
**A**



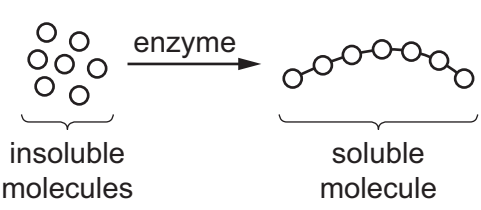

**B**



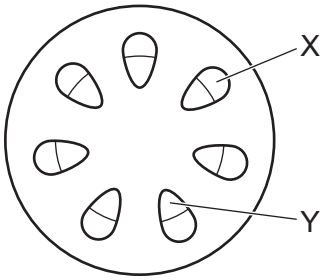

**C**




**D**




**9** The diagram shows a section through part of a plant.




Which row shows where the section is taken from and which substances are transported by the labelled areas?

| | section | X | Y |
|---|---|---|---|
| **A** | root | sucrose | water |
| **B** | root | water | sucrose |
| **C** | stem | sucrose | water |
| **D** | stem | water | sucrose |

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**10** The equation represents aerobic respiration.

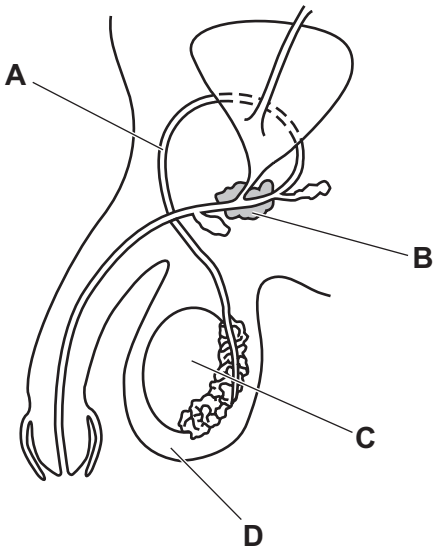
$$1 + 2 \rightarrow 3 + 4$$

Which row shows the correct equation?

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **A** | carbon dioxide | glucose | oxygen | water |
| **B** | glucose | oxygen | water | carbon dioxide |
| **C** | oxygen | water | carbon dioxide | glucose |
| **D** | water | carbon dioxide | glucose | oxygen |

**11** The diagram shows the male reproductive system.

Which structure is the scrotum?




**12** In which part of the human female reproductive system does fertilisation normally take place?

**A** ovary

**B** oviduct

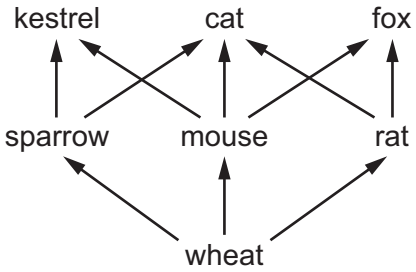
**C** uterus

**D** vagina

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**13** The diagram shows a food web.




Which statement describes an organism in the food web?

**A** The cat is a herbivore and a consumer.

**B** The sparrow is a carnivore and a consumer.

**C** The mouse is a herbivore and a producer.

**D** The kestrel is a carnivore and a consumer.

**14** What is the nucleon number of an atom?

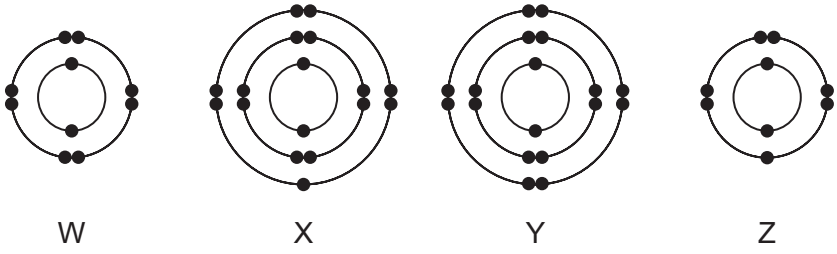
**A** the total number of protons, neutrons and electrons

**B** the total number of protons and neutrons

**C** the number of protons only

**D** the number of neutrons only

**15** Which electronic configurations represent noble gases?




**A** W and Y **B** W and Z **C** X and Y **D** X and Z

**16** Which process involves a chemical change?

**A** condensation

**B** evaporation

**C** melting

**D** oxidation

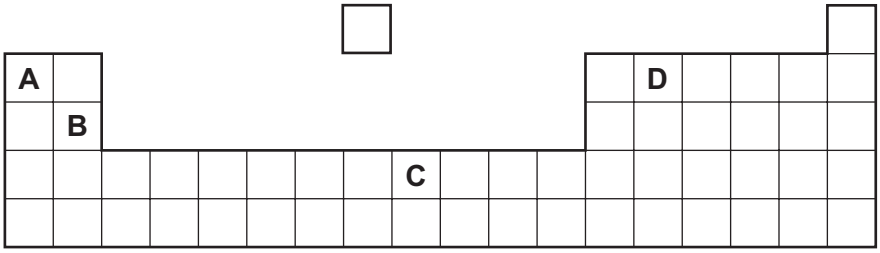
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**17** The diagram shows part of the Periodic Table.

Which element is a non-metal?




**18** Which statement describes properties of a transition element?

**A** It has a high melting point, a high density and forms a blue-green chloride.

**B** It has a high melting point, a low density and forms a white chloride.

**C** It has a low melting point, a low density and forms a green chloride.

**D** It has a low melting point, a high density and forms a white chloride.

**19** Sodium is added to a container of water and a reaction occurs.

What remains in the container after this reaction has finished?

**A** solid sodium hydroxide

**B** solid sodium oxide

**C** aqueous sodium hydroxide

**D** aqueous sodium oxide

**20** Which statements about alloys are correct?

1 Alloys are mixtures of non-metals only.

2 Alloys are mixtures of a metal with other elements.

3 Brass is an alloy.

4 Bauxite is an alloy.

**A** 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

**21** Which element is less reactive than hydrogen?

**A** copper

**B** iron

**C** magnesium

**D** zinc

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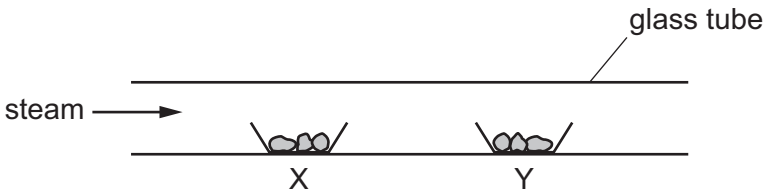
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**22** The diagram shows two open containers, X and Y, inside a glass tube.

Steam passes over the solids in X and Y.




X contains anhydrous copper(II) sulfate.

Y contains anhydrous cobalt(II) chloride.

What is observed?

**A** The solid in X remains blue.

**B** The solid in X turns from white to blue.

**C** The solid in Y turns from pink to blue.

**D** The solid in Y turns from pink to white.

**23** Which volume of air contains about 20 $cm^3$ of oxygen?

**A** 20 $cm^3$ **B** 50 $cm^3$ **C** 80 $cm^3$ **D** 100 $cm^3$

**24** What is the main constituent of natural gas?

**A** ethane

**B** nitrogen

**C** methane

**D** oxygen

**25** Pentane is a hydrocarbon.

The word equation for the complete combustion of pentane is shown.

pentane + oxygen → carbon dioxide + substance W

What is substance W?

**A** carbon monoxide

**B** ethane

**C** hydrogen

**D** water

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**26** Which statement about alkenes is correct?

**A** They are less reactive than alkanes.

**B** They are unsaturated compounds.

**C** They are polymers.

**D** They turn aqueous bromine orange-brown.

**27** Which method is used to obtain a sample of pure, solid salt from an aqueous solution of the salt?

**A** chromatography

**B** crystallisation

**C** filtration

**D** fractional distillation

**28** A student does an experiment to determine the density of an irregularly shaped solid.

Which apparatus is used in the experiment?

**A** balance, beaker of water, measuring cylinder

**B** balance, beaker of water, thermometer

**C** balance, measuring cylinder, thermometer

**D** beaker of water, measuring cylinder, stop-watch

**29** The gravitational field strength *g* on the Moon is 1.6 N / kg.

A rock has a mass of 2.0 kg.

What is the weight of the rock on the Moon?

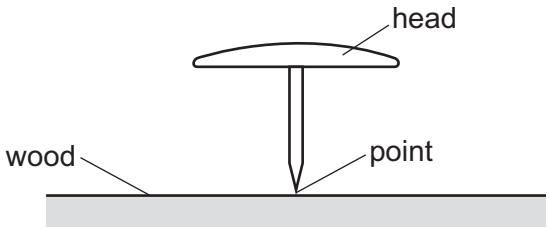
**A** 0 N **B** 0.80 N **C** 1.6 N **D** 3.2 N

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**[Turn over**

**30** The diagram shows a drawing pin (thumb tack) with the head and the point labelled.




The point is placed against a piece of wood. A thumb presses down on the head.

The point goes into the wood. The head does **not** go into the thumb.

Which statement is correct?

**A** The force on the wood is greater than the force on the thumb.

**B** The force on the wood is smaller than the force on the thumb.

**C** The pressure on the wood is greater than the pressure on the thumb.

**D** The pressure on the wood is smaller than the pressure on the thumb.

**31** What is a property of a liquid?

**A** It always fills the container it is in.

**B** It is always more dense than a solid.

**C** It has a fixed volume.

**D** It has a fixed shape.

**32** Which materials are both bad thermal conductors?

**A** copper and iron

**B** plastic and aluminium

**C** rubber and gold

**D** wood and plastic

**33** In which states of matter does convection occur?

**A** liquid only

**B** liquid and gas

**C** solid and gas

**D** solid and liquid

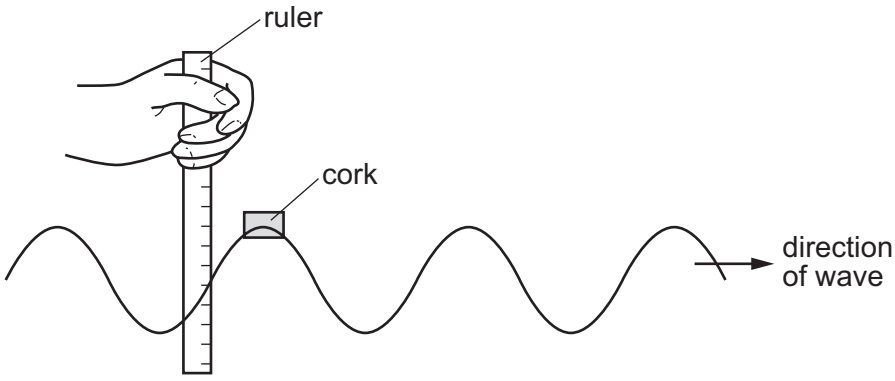
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**34** A cork moves up and down on a wave in a tank of water.

A student measures the distance moved up and down by the cork.




Which quantity can be determined using only this measurement?

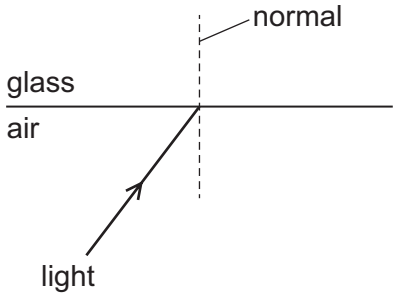
**A** amplitude

**B** frequency

**C** speed

**D** wavelength

**35** Light passes from air into glass.




As it enters the glass, the light changes direction.

Which row shows the change in direction of the light and the name of this process?

| | change in direction | process |
|---|---|---|
| **A** | away from the normal | dispersion |
| **B** | away from the normal | refraction |
| **C** | towards the normal | dispersion |
| **D** | towards the normal | refraction |

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**[Turn over**

**36** Which row shows the region of the electromagnetic spectrum with the smallest wavelength and the region with the greatest frequency?

| | smallest wavelength | greatest frequency |
|---|---|---|
| **A** | radio waves | gamma rays |
| **B** | microwaves | microwaves |
| **C** | gamma rays | gamma rays |
| **D** | microwaves | radio waves |

**37** Which statement about the current in a resistor, the voltage across the resistor and the resistance of the resistor is correct?

**A** The current in a resistor decreases as the voltage across the resistor increases.

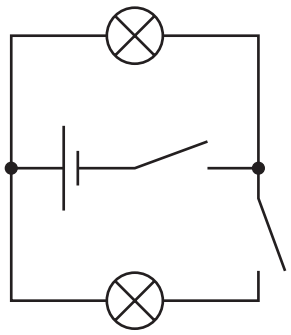
**B** The current in a resistor increases as the voltage across the resistor increases.

**C** The resistance of a resistor is given by the expression: current × voltage.

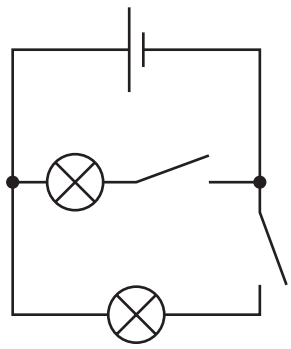
**D** The resistance of a resistor is given by the expression: $\frac{\text{current}}{\text{voltage}}$.

**38** Which circuit allows the lamps to be switched on and off separately?

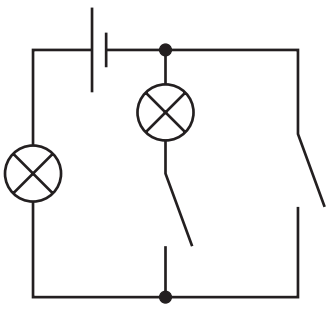
**A**



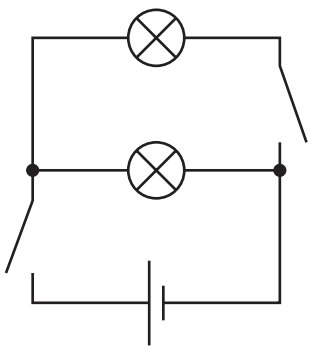
**B**



**C**



**D**



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**39** What is **not** a possible hazard when using mains electrical equipment?

**A** a fuse in a circuit

**B** damaged electrical insulation

**C** damp conditions

**D** overheating of cables in a circuit

**40** The speed of light in a vacuum is $3.0 \times 10^{8}\,\text{m/s}$.

The time taken for light to travel between two objects in space is 50 years.

What is the distance travelled by the light in this time?

**A** $6.0 \times 10^{6}\,\text{m}$ **B** $1.5 \times 10^{10}\,\text{m}$ **C** $5.5 \times 10^{12}\,\text{m}$ **D** $4.7 \times 10^{17}\,\text{m}$

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## The Periodic Table of Elements

| Group | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | II | | | | | | | | | | | III | IV | V | VI | VII | VIII |
| | | | | | | | 1 H hydrogen 1 | | | | | | | | | | 2 He helium 4 |
| 3 Li lithium 7 | 4 Be beryllium 9 | | | | | | | | | | | 5 B boron 11 | 6 C carbon 12 | 7 N nitrogen 14 | 8 O oxygen 16 | 9 F fluorine 19 | 10 Ne neon 20 |
| 11 Na sodium 23 | 12 Mg magnesium 24 | | | | | | | | | | | 13 Al aluminium 27 | 14 Si silicon 28 | 15 P phosphorus 31 | 16 S sulfur 32 | 17 Cl chlorine 35.5 | 18 Ar argon 40 |
| 19 K potassium 39 | 20 Ca calcium 40 | 21 Sc scandium 45 | 22 Ti titanium 48 | 23 V vanadium 51 | 24 Cr chromium 52 | 25 Mn manganese 55 | 26 Fe iron 56 | 27 Co cobalt 59 | 28 Ni nickel 59 | 29 Cu copper 64 | 30 Zn zinc 65 | 31 Ga gallium 70 | 32 Ge germanium 73 | 33 As arsenic 75 | 34 Se selenium 79 | 35 Br bromine 80 | 36 Kr krypton 84 |
| 37 Rb rubidium 85 | 38 Sr strontium 88 | 39 Y yttrium 89 | 40 Zr zirconium 91 | 41 Nb niobium 93 | 42 Mo molybdenum 96 | 43 Tc technetium – | 44 Ru ruthenium 101 | 45 Rh rhodium 103 | 46 Pd palladium 106 | 47 Ag silver 108 | 48 Cd cadmium 112 | 49 In indium 115 | 50 Sn tin 119 | 51 Sb antimony 122 | 52 Te tellurium 128 | 53 I iodine 127 | 54 Xe xenon 131 |
| 55 Cs caesium 133 | 56 Ba barium 137 | 57–71 lanthanoids | 72 Hf hafnium 178 | 73 Ta tantalum 181 | 74 W tungsten 184 | 75 Re rhenium 186 | 76 Os osmium 190 | 77 Ir iridium 192 | 78 Pt platinum 195 | 79 Au gold 197 | 80 Hg mercury 201 | 81 Tl thallium 204 | 82 Pb lead 207 | 83 Bi bismuth 209 | 84 Po polonium – | 85 At astatine – | 86 Rn radon – |
| 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 – | 113 Nh nihonium – | 114 Fl flerovium – | 115 Mc moscovium – | 116 Lv livermorium – | 117 Ts tennessine – | 118 Og oganesson – |

**Key**

atomic number
atomic symbol
name
relative atomic mass

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| lanthanoids | 57 La lanthanum 139 | 58 Ce cerium 140 | 59 Pr praseodymium 141 | 60 Nd neodymium 144 | 61 Pm promethium – | 62 Sm samarium 150 | 63 Eu europium 152 | 64 Gd gadolinium 157 | 65 Tb terbium 159 | 66 Dy dysprosium 163 | 67 Ho holmium 165 | 68 Er erbium 167 | 69 Tm thulium 169 | 70 Yb ytterbium 173 | 71 Lu lutetium 175 |
| actinoids | 89 Ac actinium – | 90 Th thorium 232 | 91 Pa protactinium 231 | 92 U uranium 238 | 93 Np neptunium – | 94 Pu plutonium – | 95 Am americium – | 96 Cm curium – | 97 Bk berkelium – | 98 Cf californium – | 99 Es einsteinium – | 100 Fm fermium – | 101 Md mendelevium – | 102 No nobelium – | 103 Lr lawrencium – |

The volume of one mole of any gas is 24 $dm^3$ at room temperature and pressure (r.t.p.).



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