Cambridge Assessment International Education

Cambridge IGCSE™ (9–1)

CO-ORDINATED SCIENCES **0973/12**

Paper 1 Multiple Choice (Core) **May/June 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)

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.

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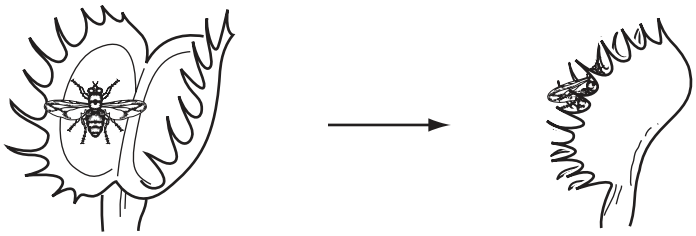
1 The Venus fly trap is a plant that catches insects.



Which characteristic of living organisms is shown in the diagram?

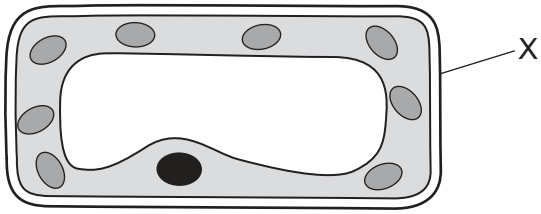
A excretion

B growth

C reproduction

D sensitivity

2 The diagram shows a plant cell.



Which row names X and describes its function?

	name	function
A	cell membrane	controls which substances enter or leave the cell
B	cell membrane	maintains cell shape
C	cell wall	controls which substances enter or leave the cell
D	cell wall	maintains cell shape

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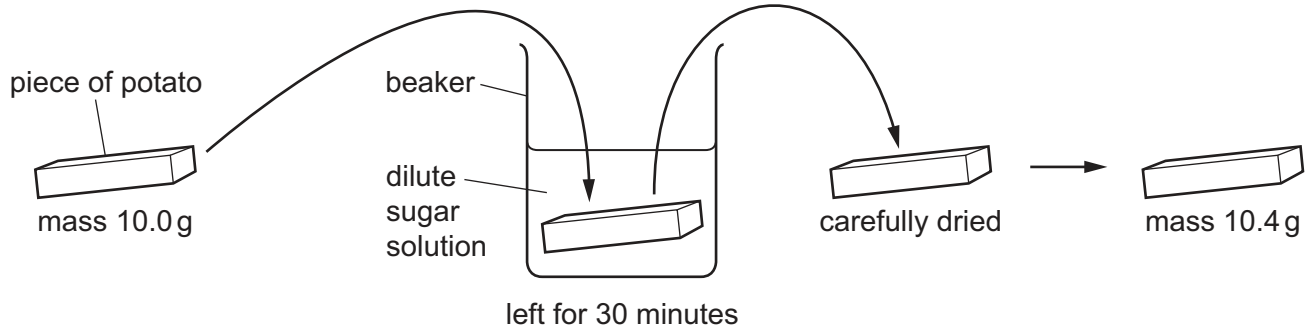
3 The diagram shows the stages of an experiment.



Which statement explains the increase in mass?

A Sugar has moved into the cells of the potato by osmosis.

B Sugar has moved out of the cells of the potato by osmosis.

C Water has moved into the cells of the potato by osmosis.

D Water has moved out of the cells of the potato by osmosis.

4 Which statements about enzymes are correct?

1 Enzymes are biological catalysts.

2 Enzymes are made of fat.

3 Enzymes are made of protein.

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

5 Which statement about photosynthesis is correct?

A A plant uses carbon dioxide and glucose to produce oxygen and water.

B A plant uses carbon dioxide and water to produce glucose and oxygen.

C A plant uses glucose and oxygen to produce carbon dioxide and water.

D A plant uses oxygen and water to produce glucose and carbon dioxide.

6 Which food helps prevent scurvy?

A bread

B cheese

C eggs

D lemons

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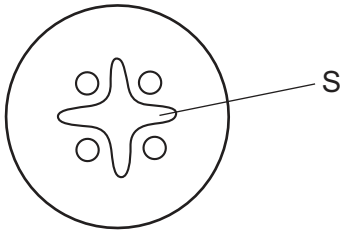
7 The diagram shows a cross-section of a plant root.



Which row is correct for tissue S?

	name of tissue	substance transported
A	phloem	amino acids and sucrose
B	phloem	water
C	xylem	amino acids and sucrose
D	xylem	water

8 What increases the risk of coronary heart disease?

A reduced salt diet

B relaxation therapy

C regular exercise

D smoking tobacco

9 Which row shows the percentages for inspired air and expired air?

	inspired air / %		expired air / %	
	oxygen	carbon dioxide	oxygen	carbon dioxide
A	21	0.04	17	4
B	21	0.04	21	0.04
C	17	4	17	4
D	17	4	21	0.04

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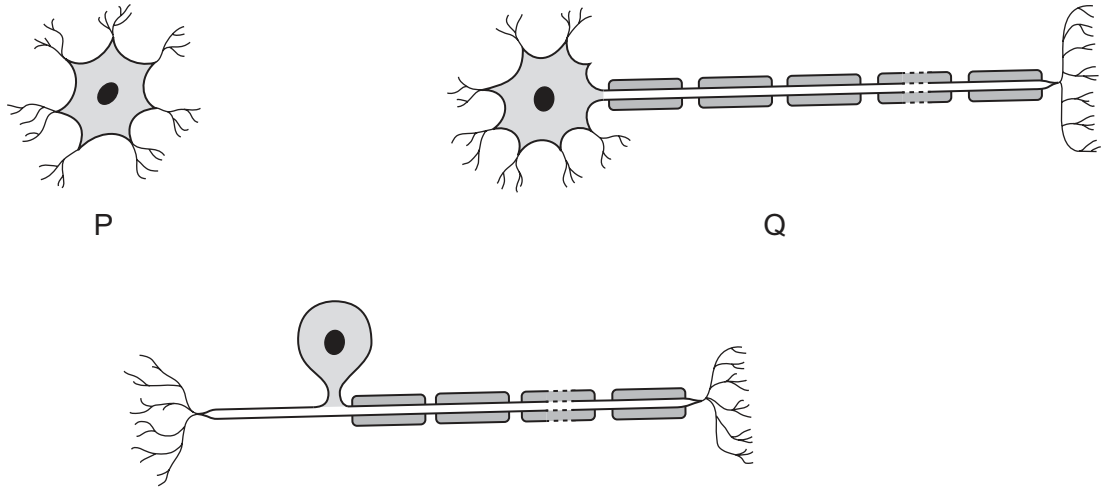
10 The diagram shows three types of neurone.



Which order do impulses pass through the neurones in a reflex action?

A P → R → Q

B Q → P → R

C R → P → Q

D R → Q → P

11 Which statement about reproduction is correct?

A Sexual reproduction involves the fusion of two gamete nuclei.

B Sexual reproduction results in the production of genetically identical offspring.

C Asexual reproduction involves the fusion of two gamete nuclei.

D Asexual reproduction results in the production of genetically different offspring.

12 Which row is correct for a human gamete?

	name of gamete	chromosome carried by gamete	where gamete is produced
A	egg cell	X	testes
B	egg cell	Y	ovaries
C	sperm	X	testes
D	sperm	Y	ovaries

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13 Which statement describes a producer?

A an organism that obtains its energy from dead or waste organic matter

B an organism that makes its own organic nutrients using energy from sunlight

C an organism that obtains its energy from feeding on other organisms

D an animal that obtains its energy from eating plants

14 Which row describes particles present in $^{25}_{12}Mg^{2+}$?

	neutrons	electrons
A	12	10
B	12	12
C	13	12
D	13	10

15 The formula of ethanol is C_2H_5OH.

How many different elements are present in ethanol?

A 1 **B** 3 **C** 4 **D** 9

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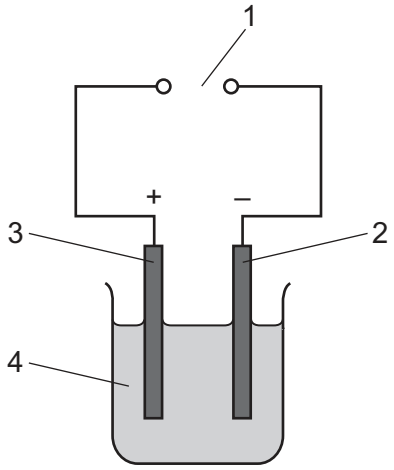
16 The apparatus used in the electrolysis of concentrated aqueous sodium chloride is shown.



Which row identifies the electrolyte and the cathode?

	electrolyte	cathode
A	1	2
B	1	3
C	4	2
D	4	3

17 Which statements about endothermic reactions are correct?

1 Thermal energy is taken in from the surroundings.

2 Thermal energy is released to the surroundings.

3 The temperature of the reaction mixture decreases.

4 The temperature of the reaction mixture increases.

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

18 Which element causes a compound to be coloured?

A a Group I element

B a Group II element

C a Group VIII element

D a transition element

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19 Which property explains why aluminium is used to make food containers?

A low density

B high strength

C resistant to corrosion

D shiny

20 What is an alloy?

A a compound

B a mixture

C a metallic element

D a non-metallic element

21 Which row describes the order of reactivity of the metals?

	most reactive ⟶ least reactive			
A	copper	calcium	zinc	potassium
B	copper	zinc	calcium	potassium
C	potassium	calcium	zinc	copper
D	potassium	zinc	calcium	copper

22 Which row shows the colour of copper(II) sulfate and of cobalt(II) chloride when they are added to water?

	copper(II) sulfate	cobalt(II) chloride
A	blue	blue
B	blue	pink
C	white	blue
D	white	pink

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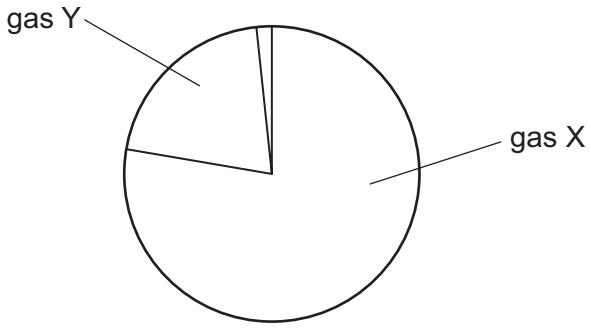
23 The diagram represents the composition of clean, dry air.



Which row identifies gas X and gas Y?

	gas X	gas Y
A	nitrogen	oxygen
B	oxygen	nitrogen
C	oxygen	carbon dioxide
D	carbon dioxide	nitrogen

24 Which property allows petroleum to be separated by fractional distillation?

A boiling point

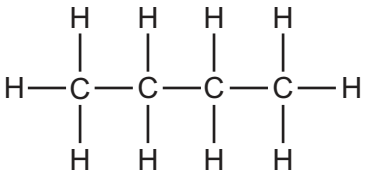
B colour

C density

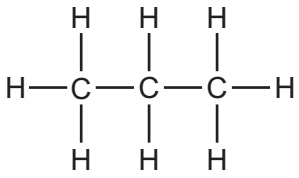
D melting point

25 Which compound is the main constituent of natural gas?

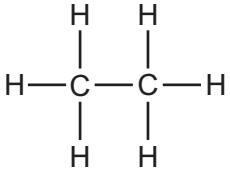
A



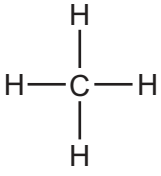
B



C



D



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26 Which statement about alkanes is correct?

A They contain one double covalent bond.

B They contain only single covalent bonds.

C They form polymers.

D They react with aqueous bromine.

27 When aqueous copper(II) sulfate reacts with aqueous sodium hydroxide, a blue precipitate forms.

Which method is used to remove the precipitate from the reaction mixture?

A chromatography

B distillation

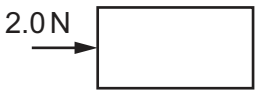
C filtration

D crystallisation

28 The diagrams show the only forces acting on each of four objects moving in a straight line.

Which object is moving at constant speed in a straight line?

A



B

C

D

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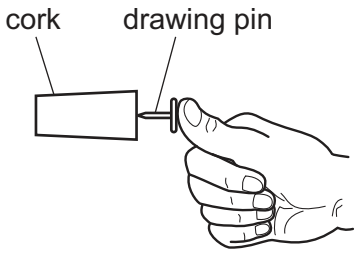
29 A person pushes a drawing pin into a cork with their thumb.



Which statement explains why the pin goes into the cork and **not** into the thumb?

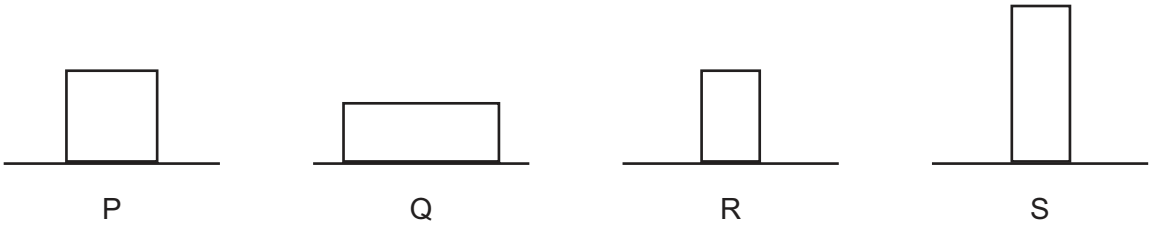
A The force on the cork is greater than the force on the thumb.

B The force on the cork is less than the force on the thumb.

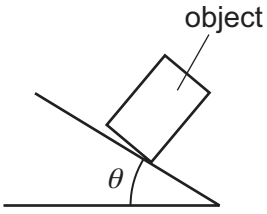
C The pressure on the cork is greater than the pressure on the thumb.

D The pressure on the cork is less than the pressure on the thumb.

30 The diagram shows four objects, P, Q, R and S, with uniform density, resting on different horizontal surfaces. The objects are all drawn to the same scale.



The surfaces are slowly tilted through an angle θ until the object falls over.



For which object is the value of θ the greatest?

A object P

B object Q

C object R

D object S

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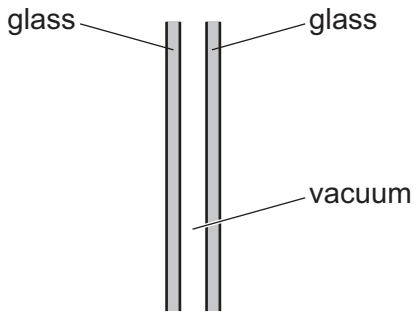
31 Liquid in a beaker evaporates quickly.

Which row shows what happens to the mass and to the temperature of the liquid remaining in the beaker?

	mass	temperature
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

32 The diagram shows a type of double glazing in a window. The double glazing consists of two sheets of glass separated by a vacuum.



Which methods of energy transfer are prevented by the vacuum?

A conduction and convection only

B conduction and radiation only

C convection and radiation only

D conduction, convection and radiation

33 A student investigates the motion of a small ball that is floating on water in a tank. A wave passes along the water surface from left to right.

What happens to the ball?

A It does not move.

B It moves only to the left.

C It moves only to the right.

D It moves up and down.

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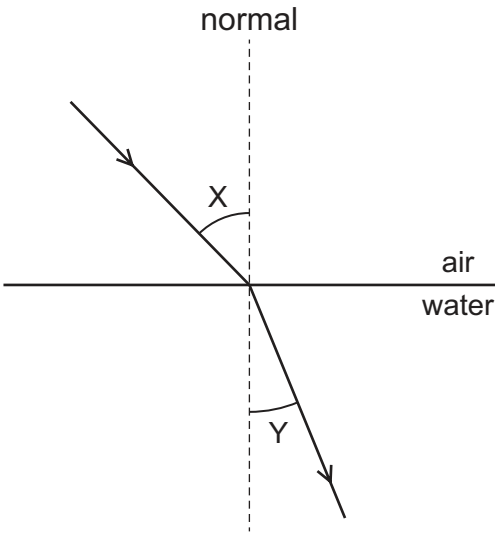
34 Light travels from air into water.



What are the names of angle X and angle Y?

	angle X	angle Y
A	angle of incidence	angle of reflection
B	angle of incidence	angle of refraction
C	angle of refraction	angle of incidence
D	angle of refraction	angle of reflection

35 The table shows the highest frequency of sound heard by different animals.

animal	highest frequency heard / kHz
bat	200
bird	10
cat	79

The highest frequency sound that a healthy human ear can hear is *f*.

Which animals **cannot** hear sound of frequency *f*?

A a bird only

B a bird and a cat only

C a bat, a bird and a cat

D none of the animals in the table

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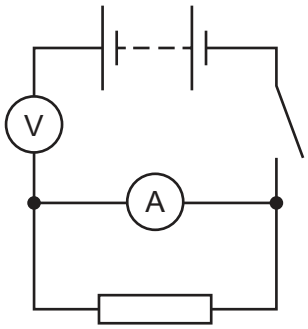
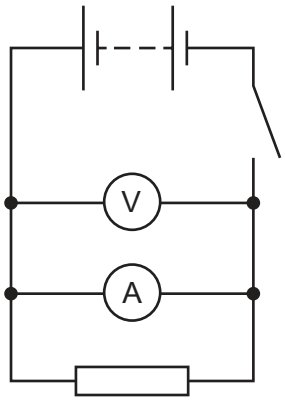
36 Which circuit is suitable for determining the resistance of the fixed resistor?

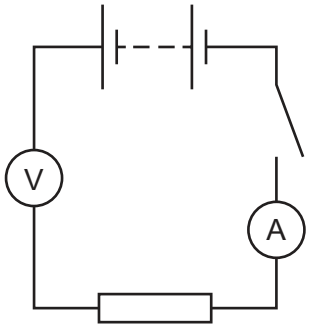
A



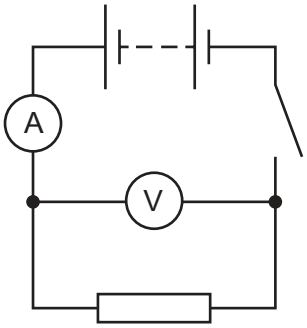
B



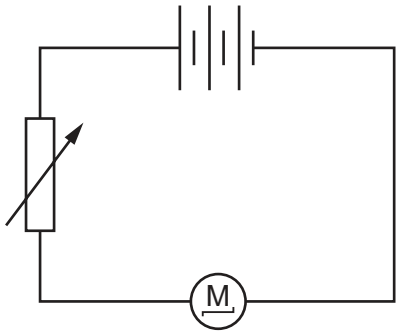
C



D



37 The diagram shows a circuit containing three cells, a variable resistor and an electric motor.



Which actions together **must** increase the speed of the motor?

A decreasing the number of cells and decreasing the resistance of the variable resistor

B decreasing the number of cells and increasing the resistance of the variable resistor

C increasing the number of cells and decreasing the resistance of the variable resistor

D increasing the number of cells and increasing the resistance of the variable resistor

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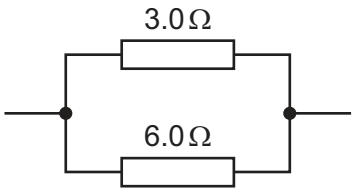
38 The diagram shows a 3.0 Ω resistor connected to a 6.0 Ω resistor.



What is a possible combined resistance of the two resistors?

A 2.0 Ω **B** 3.0 Ω **C** 4.5 Ω **D** 9.0 Ω

39 A scientist works with a radioactive source that emits gamma (γ)-rays. The scientist takes several precautions.

Which precaution does **not** give the scientist any protection?

A Keep a lead screen between the scientist and the source.

B Use a detector to measure the count rate of the source.

C Only use the source for a short period of time.

D Have a large distance between the scientist and the source.

40 The orbit of a planet lies between the orbit of Venus and the orbit of Mars.

What is the planet?

A Saturn

B Jupiter

C Earth

D Uranus

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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.).