



Cambridge International Examinations
Cambridge Ordinary Level

COMBINED SCIENCE

5129/11

Paper 1 Multiple Choice

October/November 2014

1 hour

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)



READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, glue or correction fluid.

Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

DO NOT WRITE IN ANY BARCODES.

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 separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 16.

Electronic calculators may be used.

This document consists of **15** printed pages and **1** blank page.



- 1 Cell P and cell Q are animal cells.

Cell P is placed into a concentrated salt solution.

Cell Q is placed into distilled (pure) water.

What is the appearance of the two cells after ten minutes?

	cell P	cell Q
A	burst	burst
B	burst	shrivelled
C	shrivelled	burst
D	shrivelled	shrivelled

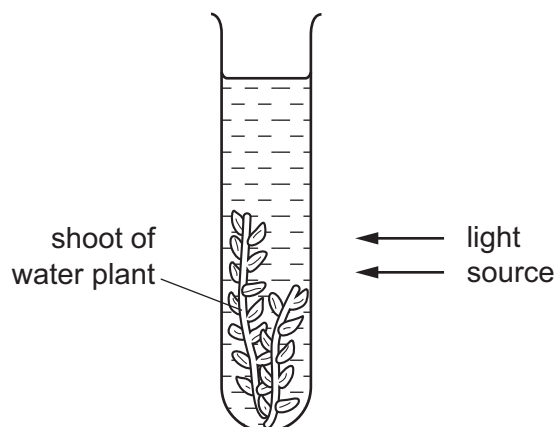
- 2 Every seed contains a food reserve.

What makes this food available to the young plant at germination?

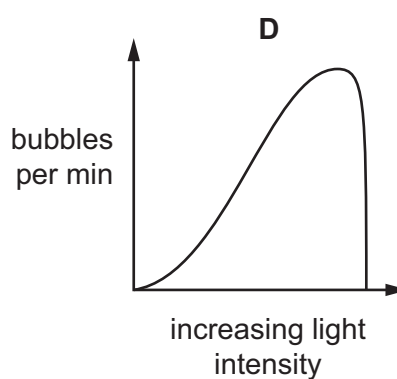
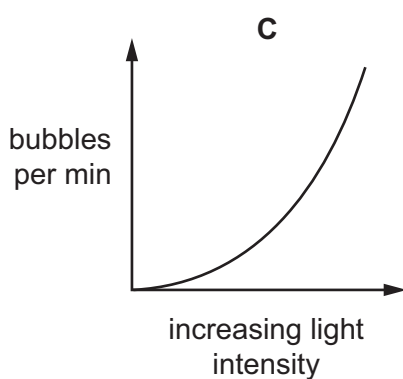
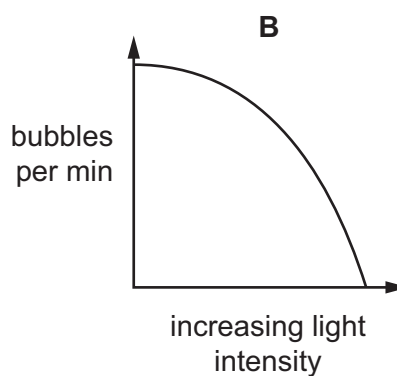
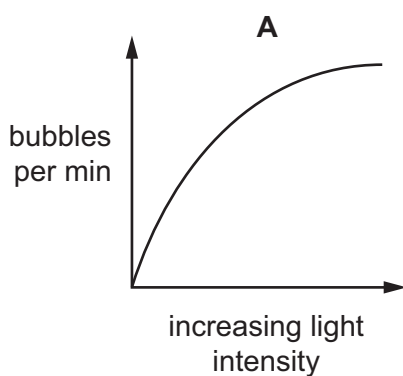
- A** cellulose
- B** chlorophyll
- C** enzymes
- D** lactic acid

- 3 The diagram shows an investigation into the effect of light intensity on the rate of photosynthesis. The rate is measured by counting the number of bubbles released per minute.

The experiment is repeated using different light intensities.



Which graph shows the result of the investigation?



- 4 Which statement describes the effect of a lack of nitrogen on plants?

- A** faster root growth and purple leaves
- B** faster root growth and yellow leaves
- C** poor plant growth and purple leaves
- D** poor plant growth and yellow leaves

- 5 When a child sucks a sweet it may stay in their mouth for some time.

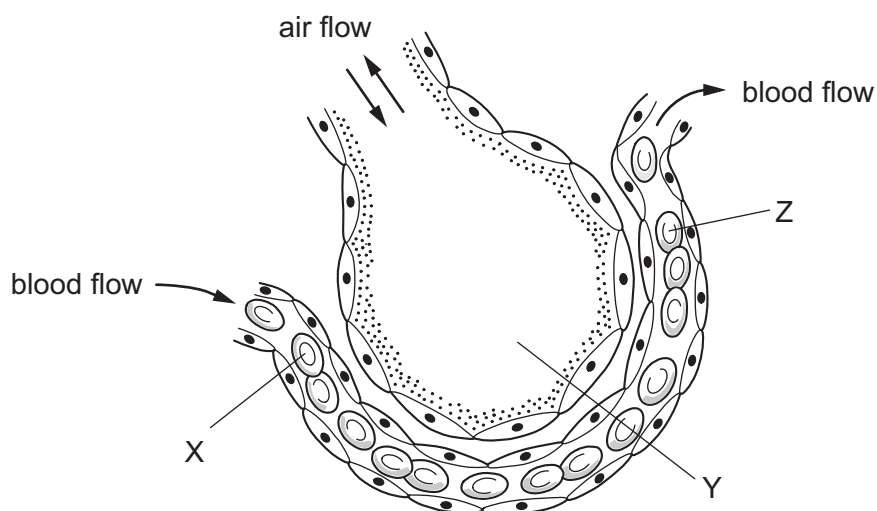
How does this contribute to tooth decay?

- A The sugar in the sweet stops bacteria from growing.
- B The teeth are damaged by acid being produced in the mouth.
- C The teeth are damaged by alkali being produced in the mouth.
- D The teeth are damaged by artificial flavourings in the sweet.

- 6 Which row does **not** correctly link a component of blood and its function?

	component of blood	function
A	plasma	transports urea
B	platelets	blood clotting
C	red blood cells	transport oxygen
D	white blood cells	transport CO ₂

- 7 The diagram shows a section through an alveolus and a blood capillary.



Which row describes the oxygen concentrations at X, Y and Z?

	X	Y	Z
A	high	low	high
B	high	low	low
C	low	high	high
D	low	high	low

8 What is the excretory product in blood that is removed by the lungs?

- A carbon dioxide
- B glucose
- C lactic acid
- D urea

9 Which processes take place in the eye when a person moves into dim light?

	size of pupil	circular muscles of iris	radial muscles of iris
A	enlarges	contract	relax
B	enlarges	relax	contract
C	reduces	contract	relax
D	reduces	relax	contract

10 What is **not** an effect of excessive alcohol consumption?

- A addiction
- B depression
- C lack of self control
- D quicker reaction times

11 What is the main source of energy for food webs?

- A chemical reactions
- B heat from the centre of the Earth
- C heat from the Sun
- D light from the Sun

12 Which are results of deforestation in tropical rainforests?

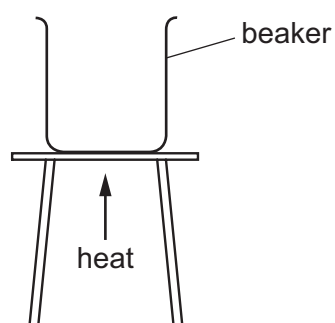
- A increased atmospheric carbon dioxide and decreased biodiversity
- B increased atmospheric carbon dioxide and increased biodiversity
- C increased atmospheric oxygen and decreased biodiversity
- D increased atmospheric oxygen and increased biodiversity

13 Which combination of factors is least likely to stop menstruation?

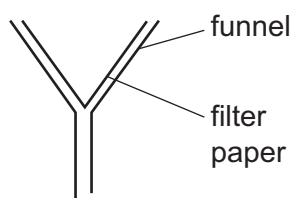
	diet	stress
A	balanced	high
B	balanced	low
C	unbalanced	high
D	unbalanced	low

14 Powdered magnesium carbonate is slowly added to dilute sulfuric acid.

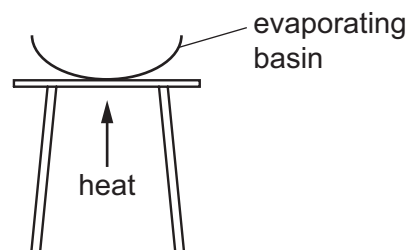
Which pieces of apparatus are needed to continue the experiment to obtain a sample of magnesium sulfate crystals?



1



2



3

A 1 and 3

B 1 only

C 2 and 3

D 3 only

15 An atom of sodium is represented by ${}_{11}^{23}\text{Na}$.

What are the numbers of neutrons and protons in this atom?

	number of neutrons	number of protons
A	11	12
B	12	11
C	23	11
D	23	12

16 Which atom forms an ion with a charge of 2+?

	proton (atomic) number
A	6
B	8
C	12
D	16

17 The table shows the electronic structure of four elements.

element	electronic structure
W	2,6
X	2,8
Y	2,8,1
Z	2,8,7

Which pair of atoms form a covalent molecule?

- A** two atoms of W
- B** two atoms of X
- C** an atom of W and an atom of X
- D** an atom of Y and an atom of Z

18 Which formula has the greatest number of atoms?

- A** $\text{Ca}_3(\text{PO}_4)_2$
- B** $\text{Cu}(\text{CH}_3\text{COO})_2$
- C** $\text{Fe}_2(\text{SO}_4)_3$
- D** $(\text{NH}_4)_2\text{CO}_3$

19 An element forms an amphoteric oxide.

Which substances will react with this amphoteric oxide?

	acids	alkalis
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = reacts

✗ = does not react

- 20 An element X from Period 2 in the Periodic Table is heated in air.

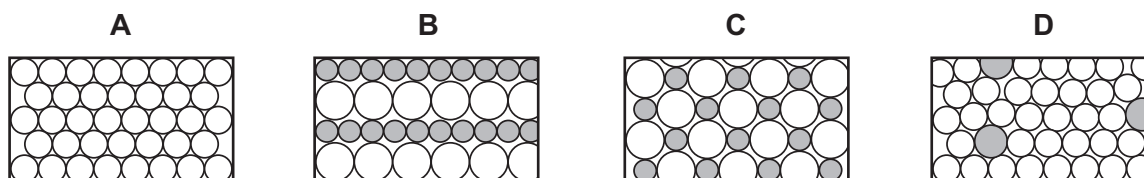
It forms an oxide which dissolves in water.

Universal Indicator added to the solution turns blue.

Which row describes element X?

	metal or non-metal	position in the period
A	metal	on the left side
B	metal	on the right side
C	non-metal	on the left side
D	non-metal	on the right side

- 21 Which diagram represents the structure of an alloy?



- 22 Part of the reactivity series of metals is given below.

barium
calcium
magnesium
chromium
iron
copper
palladium
platinum

Which statement is **not** correct?

- A** Barium will not react with cold water but will react with steam.
B Chromium will react with dilute hydrochloric acid.
C Palladium will not react with cold water or steam.
D Platinum will not react with dilute hydrochloric acid.

23 Which two gases are both pollutants of the atmosphere?

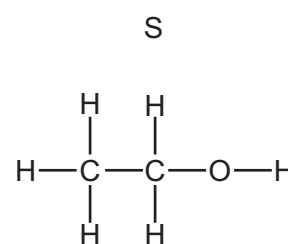
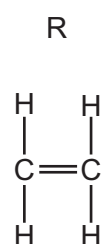
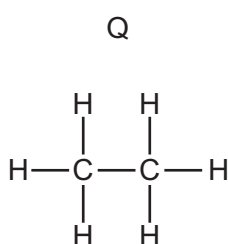
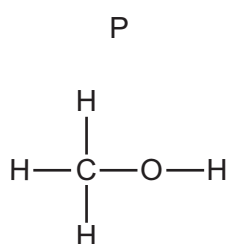
- A carbon monoxide and oxygen
- B carbon monoxide and sulfur dioxide
- C nitrogen and oxygen
- D nitrogen and sulfur dioxide

24 Ammonia is made in the Haber process.

Which conditions are used in the Haber process?

	temperature /°C	pressure /atm	catalyst
A	200	450	aluminium oxide
B	200	450	iron
C	450	200	aluminium oxide
D	450	200	iron

25 The diagrams show the structures of four organic molecules.



Which two are members of the same homologous series?

- A P and R
- B P and S
- C Q and R
- D R and S

26 Which statement about alkenes is **not** correct?

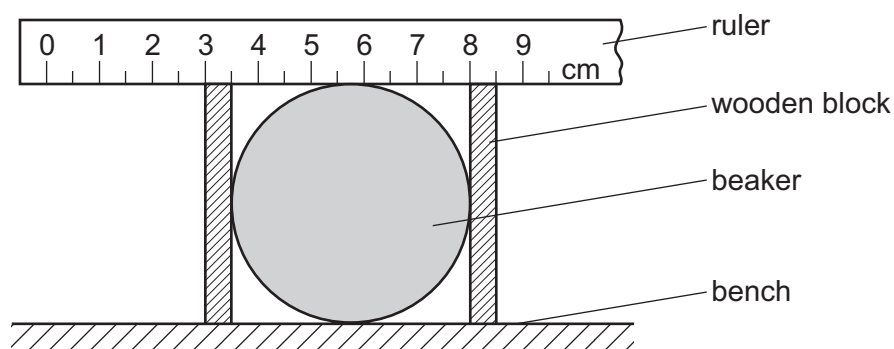
- A Alkenes are made by cracking.
- B Alkenes are saturated compounds.
- C Alkenes contain carbon-carbon double bonds.
- D Alkenes turn bromine water colourless.

27 The properties of ethanol make it a very useful substance.

Which statement is **not** correct?

- A Ethanol burns to form carbon dioxide and water and is often used as a fuel.
- B Ethanol can be formed from sugar and is found in wine.
- C Ethanol is a useful solvent because it is able to dissolve many different substances.
- D Ethanol is very slippery and so is used as a lubricant.

28 The diagram shows a method of measuring the diameter of a beaker.



What is the diameter of the beaker?

- A 4.5 cm
- B 5.0 cm
- C 5.5 cm
- D 8.0 cm

29 The gradient of the line on a graph gives the acceleration of a moving object.

What are the quantities on the horizontal and vertical axes of this graph?

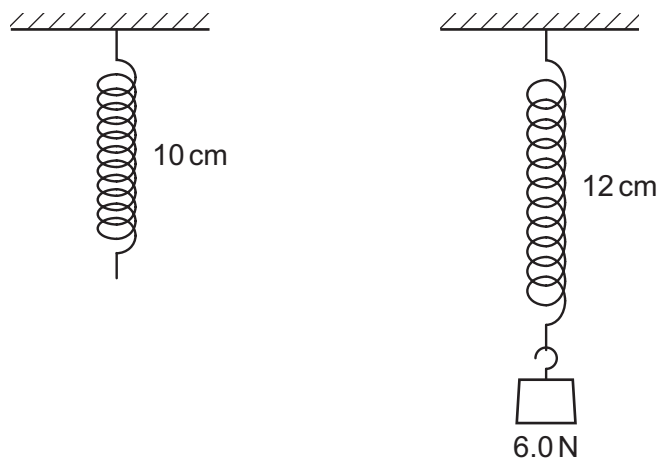
	quantity on horizontal axis	quantity on vertical axis
A	speed	distance
B	speed	time
C	time	distance
D	time	speed

30 An unbalanced force is applied to a moving object.

Which statement does **not** describe the possible motion of the object?

- A the object accelerates
- B the object's direction alters
- C the object's speed decreases
- D the object's velocity remains constant

- 31 The diagrams show how a spring extends when a weight of 6.0 N is hung on it.



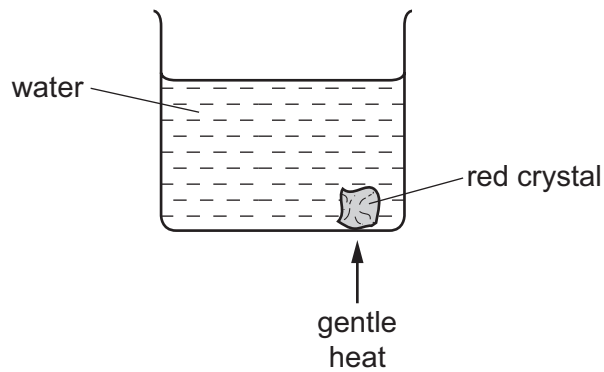
Which weight hanging from the spring causes the length to become 15 cm?

- A** 7.5 N **B** 15 N **C** 30 N **D** 45 N
- 32 Which type of energy is converted to thermal energy when **atoms** combine?

- A** chemical
B kinetic
C nuclear
D solar

- 33 A beaker of water contains a red crystal which is slowly dissolving.

Gentle heat is applied below the crystal.



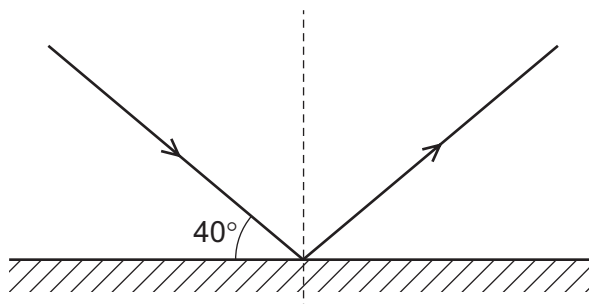
The red colour rises.

What is the name of this process?

- A conduction
 - B convection
 - C evaporation
 - D radiation
- 34 Which line in the table shows examples of transverse and longitudinal waves?

	transverse	longitudinal
A	gamma-rays	light
B	infra-red	sound
C	radio	water waves
D	sound	X-rays

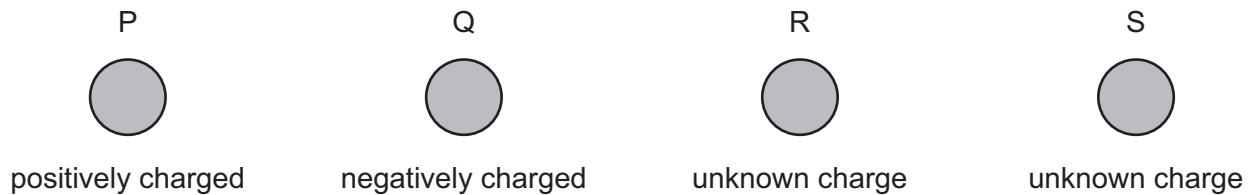
- 35 The ray diagram shows light reflecting off a plane mirror.



What is the angle between the incident and reflected rays?

- A 40°
- B 50°
- C 80°
- D 100°

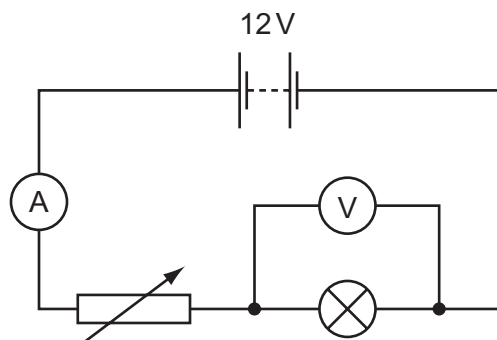
- 36 The diagram shows four charged objects, P, Q, R and S.



It is found that P attracts R but repels S.

Which statement is correct?

- A** Q attracts R.
B Q repels S.
C R attracts S.
D R repels S.
- 37 The circuit shown is used to determine the resistance of a lamp for two different brightness settings.



When the lamp brightness is low, the voltmeter reading is 2 V and the ammeter reading is 2 A.

When the lamp brightness is normal, the readings are 12 V and 4 A.

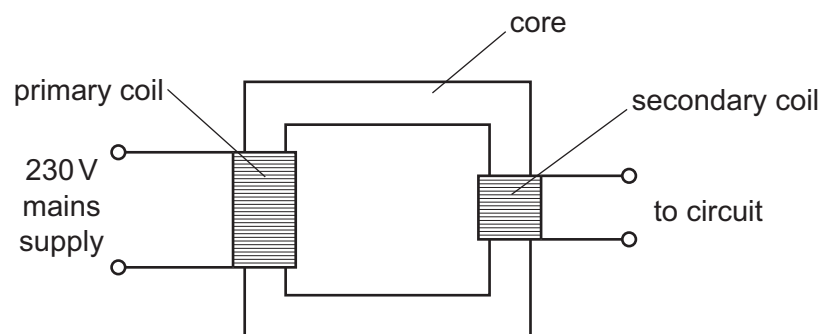
What was the increase in filament resistance?

- A** $1\ \Omega$ **B** $2\ \Omega$ **C** $3\ \Omega$ **D** $4\ \Omega$
- 38 A 750 W microwave oven is used in a house where the mains voltage is 240 V.

Which fuse should be used in the plug?

- A** 3 A **B** 5 A **C** 10 A **D** 13 A

39 The diagram shows a transformer.



There is a current in the primary coil and another current in the secondary coil.

Why is there a current in the secondary coil?

- A because electricity is conducted through the core
 - B because the current in the primary coil does not change
 - C because there are more turns on the primary coil than on the secondary coil
 - D because there is a changing magnetic field in the core
- 40 The count rate produced by a source containing a radioactive nuclide falls from 1200 to 75 in 3 minutes.

What is the half-life of the radioactive nuclide?

- A 0.75 minutes
- B 1.0 minutes
- C 3.0 minutes
- D 12.0 minutes

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DATA SHEET
The Periodic Table of the Elements

Group																	
I	II								III	IV	V	VI	VII	0			
		1 H Hydrogen 1														4 He Helium 2	
7 Li Lithium 3	9 Be Beryllium 4											11 B Boron 5	12 C Carbon 6	14 N Nitrogen 7	16 O Oxygen 8	19 F Fluorine 9	20 Ne Neon 10
23 Na Sodium 11	24 Mg Magnesium 12											27 Al Aluminium 13	28 Si Silicon 14	31 P Phosphorus 15	32 S Sulfur 16	35.5 Cl Chlorine 17	40 Ar Argon 18
39 K Potassium 19	40 Ca Calcium 20	45 Sc Scandium 21	48 Ti Titanium 22	51 V Vanadium 23	52 Cr Chromium 24	55 Mn Manganese 25	56 Fe Iron 26	59 Co Cobalt 27	59 Ni Nickel 28	64 Cu Copper 29	65 Zn Zinc 30	70 Ga Gallium 31	73 Ge Germanium 32	75 As Arsenic 33	79 Se Selenium 34	80 Br Bromine 35	84 Kr Krypton 36
85 Rb Rubidium 37	88 Sr Strontium 38	89 Y Yttrium 39	91 Zr Zirconium 40	93 Nb Niobium 41	96 Mo Molybdenum 42	101 Tc Technetium 43	101 Ru Ruthenium 44	103 Rh Rhodium 45	106 Pd Palladium 46	108 Ag Silver 47	112 Cd Cadmium 48	115 In Indium 49	119 Sn Tin 50	122 Sb Antimony 51	128 Te Tellurium 52	127 I Iodine 53	131 Xe Xenon 54
133 Cs Caesium 55	137 Ba Barium 56	139 La Lanthanum 57	178 Hf Hafnium 72	181 Ta Tantalum 73	184 W Tungsten 74	186 Re Rhenium 75	190 Os Osmium 76	192 Ir Iridium 77	195 Pt Platinum 78	197 Au Gold 79	201 Hg Mercury 80	204 Tl Thallium 81	207 Pb Lead 82	209 Bi Bismuth 83	210 Po Polonium 84	210 At Astatine 85	210 Rn Radon 86
Fr 87	226 Ra Radium 88	227 Ac Actinium 89															
58-71 Lanthanoid series														175 Lu Lutetium 71			
90-103 Actinoid series														169 Tm Thulium 69			
														167 Er Erbium 68			
														165 Ho Holmium 67			
														162 Dy Dysprosium 66			
														159 Tb Terbium 65			
														157 Gd Gadolinium 64			
														152 Eu Europium 63			
														150 Sm Samarium 62			
														144 Nd Neodymium 60			
														141 Pr Praseodymium 59			
														140 Ce Cerium 58			
														238 U Uranium 92			
														232 Th Thorium 90			
														238 Pa Protactinium 91			
														238 Np Neptunium 93			
														238 Pu Plutonium 94			
														238 Am Americium 95			
														238 Cm Curium 96			
														238 Bk Berkelium 97			
														238 Cf Californium 98			
														238 Es Einsteinium 99			
														238 Fm Fermium 100			
														238 Md Mendelevium 101			
														238 No Nobelium 102			
														238 Lr Lawrencium 103			

*58-71 Lanthanoid series
†90-103 Actinoid series

a	X	b
Key		
a = relative atomic mass	X = atomic symbol	b = proton (atomic) number

The volume of one mole of any gas is 24 dm³ at room temperature and pressure (r.t.p.).

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