

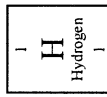


# THE PERIODIC TABLE

Period **1** **2** **3** **4** **5** **6** **7** **0**  
 Group

Period

**1**



|           |           |           |           |          |            |            |           |          |           |        |          |          |           |           |          |         |
|-----------|-----------|-----------|-----------|----------|------------|------------|-----------|----------|-----------|--------|----------|----------|-----------|-----------|----------|---------|
| 7         | 9         |           |           |          |            |            |           |          |           |        |          | 4        |           |           |          |         |
| Li        | Be        |           |           |          |            |            |           |          |           |        |          | He       |           |           |          |         |
| Lithium   | Beryllium |           |           |          |            |            |           |          |           |        |          | Helium   |           |           |          |         |
| 3         | 4         |           |           |          |            |            |           |          |           |        |          | 2        |           |           |          |         |
| 23        | 24        |           |           |          |            |            |           |          |           |        |          | 19       |           |           |          |         |
| Na        | Mg        |           |           |          |            |            |           |          |           |        |          | F        |           |           |          |         |
| Sodium    | Magnesium |           |           |          |            |            |           |          |           |        |          | Fluorine |           |           |          |         |
| 11        | 12        |           |           |          |            |            |           |          |           |        |          | 9        |           |           |          |         |
| 39        | 40        | 45        | 51        | 52       | 55         | 56         | 59        | 59       | 63.5      | 65     | 70       | 73       | 75        | 79        | 80       | 84      |
| K         | Ca        | Sc        | Ti        | V        | Cr         | Mn         | Fe        | Co       | Ni        | Cu     | Zn       | Ga       | Ge        | Se        | Br       | Kr      |
| Potassium | Calcium   | Scandium  | Titanium  | Vanadium | Chromium   | Manganese  | Iron      | Cobalt   | Nickel    | Copper | Zinc     | Gallium  | Germanium | Selenium  | Bromine  | Krypton |
| 19        | 20        | 21        | 22        | 23       | 24         | 25         | 26        | 27       | 28        | 29     | 30       | 31       | 32        | 34        | 35       | 36      |
| 85        | 88        | 89        | 91        | 93       | 96         | 99         | 101       | 103      | 106       | 108    | 112      | 115      | 119       | 128       | 127      | 131     |
| Rb        | Sr        | Y         | Zr        | Nb       | Mo         | Tc         | Ru        | Rh       | Pd        | Ag     | Cd       | In       | Sn        | Te        | I        | Xe      |
| Rubidium  | Strontium | Yttrium   | Zirconium | Niobium  | Molybdenum | Technetium | Ruthenium | Rhodium  | Palladium | Silver | Cadmium  | Indium   | Tin       | Tellurium | Iodine   | Xenon   |
| 37        | 38        | 39        | 40        | 41       | 42         | 43         | 44        | 45       | 46        | 47     | 48       | 49       | 50        | 52        | 53       | 54      |
| 133       | 137       | 139       | 178       | 181      | 184        | 186        | 190       | 192      | 195       | 197    | 201      | 204      | 207       | 210       | 210      | 222     |
| Cs        | Ba        | La        | Hf        | Ta       | W          | Re         | Os        | Ir       | Pt        | Au     | Hg       | Tl       | Pb        | Po        | At       | Rn      |
| Caesium   | Barium    | Lanthanum | Hafnium   | Tantalum | Tungsten   | Rhenium    | Osmium    | Iridium  | Platinum  | Gold   | Mercury  | Thallium | Lead      | Polonium  | Astatine | Radon   |
| 55        | 56        | 57        | 72        | 73       | 74         | 75         | 76        | 77       | 78        | 79     | 80       | 81       | 82        | 84        | 85       | 86      |
| 223       | 226       | 227       | 227       | 227      | 227        | 227        | 227       | 227      | 227       | 227    | 227      | 227      | 227       | 227       | 227      | 227     |
| Fr        | Ra        | Ac        | Fr        | Ra       | Ac         | Fr         | Ra        | Ac       | Fr        | Ra     | Ac       | Fr       | Ra        | Ac        | Fr       | Ra      |
| Francium  | Radium    | Actinium  | Francium  | Radium   | Actinium   | Francium   | Radium    | Actinium | Francium  | Radium | Actinium | Francium | Radium    | Actinium  | Francium | Radium  |
| 87        | 88        | 89        | 87        | 88       | 89         | 87         | 88        | 89       | 87        | 88     | 89       | 87       | 88        | 89        | 87       | 88      |

**Key**

|                      |
|----------------------|
| Relative atomic mass |
| Symbol               |
| Name                 |
| Atomic number        |

Answer ALL the questions. Write your answers in the spaces provided.

1. Draw a straight line from each statement to its explanation.  
One has been done for you.

statement

explanation

fireworks react quickly but milk turns sour slowly

alkalis neutralise acids

powdered coal burns more quickly than lumps of coal

enzymes are produced by microorganisms

when enzymes are used to make cheese the conditions must be carefully controlled

the action of enzymes is affected by temperature and pH

microorganisms are added to milk to make yoghurt

increasing the surface area of a solid increases the rate of reaction

calcium hydroxide is added to acid soil

different chemical reactions happen at different rates

(Total 4 marks)

Q1



Leave blank

2. Mark a cross (☒) next to the correct word(s) to complete each sentence.

**compounds** ☒

(a) Chlorine and bromine are **halogens** ☒

**metals** ☒

(1)

**aluminium sulphate** ☒

(b) The substance added to water supplies to kill bacteria is **chlorine** ☒

**sulphur dioxide** ☒

(1)

(c) Sodium is in group 1 of the periodic table.

**compound** ☒

This shows that sodium is a **metal** ☒

**non-metal** ☒

(1)

**calcium carbonate** ☒

(d) A compound used to produce glass, cement and iron is **sodium chloride** ☒

**sulphur dioxide** ☒

(1)

(Total 4 marks)

Q2

3. Use the periodic table to help you answer this question.

(a) Write down the name of a noble gas and the symbol for its atom.

name .....

symbol .....

(2)

(b) Write down the name of an alkali metal and the symbol for its atom.

name .....

symbol .....

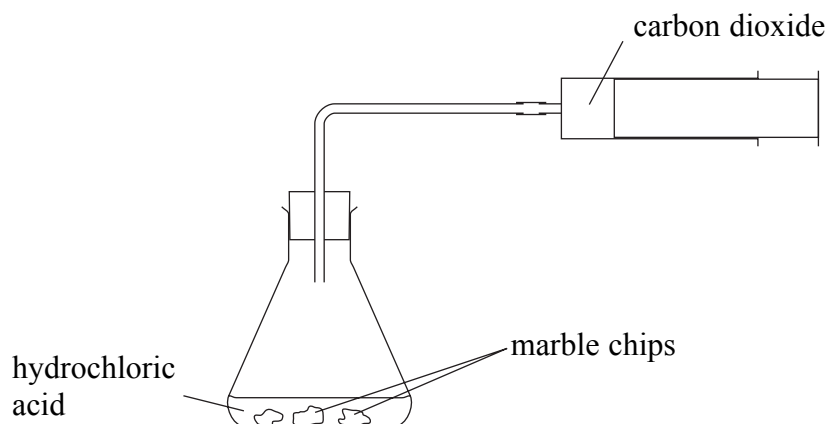
(2)

(Total 4 marks)

Q3



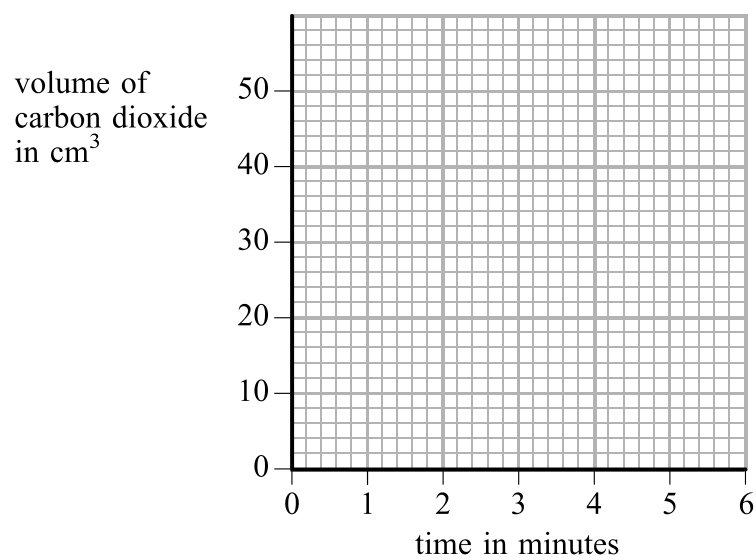
4. John investigated the rate of reaction between hydrochloric acid and marble chips. He used an excess of acid ( $25 \text{ cm}^3$ ). Every minute he recorded the total volume of carbon dioxide collected.



The results are shown in the table.

|  |   |    |    |    |    |    |    |
|--|---|----|----|----|----|----|----|
| <b>time (minutes)</b>                                      | 0 | 1  | 2  | 3  | 4  | 5  | 6  |
| <b>volume of carbon dioxide (<math>\text{cm}^3</math>)</b> | 0 | 14 | 26 | 34 | 40 | 44 | 44 |

- (a) Draw a graph of these results on the grid.



(3)



Leave  
blank

(b) John repeated his experiment under the same conditions but he used 50 cm<sup>3</sup>, instead of 25 cm<sup>3</sup>, of the hydrochloric acid.

What effect, if any, would this have on the rate of reaction?  
Explain your answer.



.....  
.....  
.....

(3)

Q4

(Total 6 marks)

5. Crude oil is a very important raw material.

(a) How was crude oil formed?

.....  
.....  
.....  
.....

(2)

(b) Petrol and kerosene are two products obtained from crude oil.

Give a use for

(i) petrol .....

(1)

(ii) kerosene .....

(1)

Q5

(Total 4 marks)



6. This article is about a village that had to be moved because of a problem caused by methane gas.

### The village that moved

One day a resident in the village noticed a strange blue flame in the fireplace of her home. It was confirmed that methane gas was leaking into homes from an old mine, making the village unsafe. A new village was built nearby and 400 people moved into new homes. A tall chimney marks the site of the old village. At the top of the chimney the methane from the old mine is burned safely.



- (a) (i) What evidence is there in the article that complete combustion of methane was taking place in the fireplace?

.....  
(1)

- (ii) Write the balanced equation for the complete combustion of methane.

.....  
(3)



Leave  
blank

(b) Draw the structure of a methane molecule, showing all bonds.

(1)

(c) Every day, methane from old mines escapes into the atmosphere or is burnt off to form carbon dioxide.

Suggest why some scientists are concerned about this.

.....  
.....

(1)

(d) Incomplete combustion of methane produces carbon monoxide.

(i) What causes incomplete combustion?

.....

(1)

(ii) Why is carbon monoxide dangerous?

.....

(1)

Q6

(Total 8 marks)

**TOTAL FOR PAPER: 30 MARKS**

**END**

