Which of the following is an element?

A Water

B Methane

C Fluorine

D Ammonia

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Identify the hydrocarbon with six carbon atoms in the molecule.

A Ethene

B Hexane

C Butene

D Pentane

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Identify the two hydrocarbons which are alkenes.

A Ethene

B Hexane

C Butene

D Pentane

E Propane

Identify the two hydrocarbons which are alkenes.

A Ethene

B Hexane

C Butene

D Pentane

E Propane

Identify the compound which could be used as a fertiliser.

A Copper carbonate

B Sodium fluoride

C Potassium sulphite

D Calcium sulphide

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Identify the two compounds which contain oxygen

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A student made the following statements about chemical reactions.

Identify the statement which is true for all chemical reactions.

A A solid is always formed.

B A gas is always produced.

C There is always a colour change.

D A new substance is always formed.

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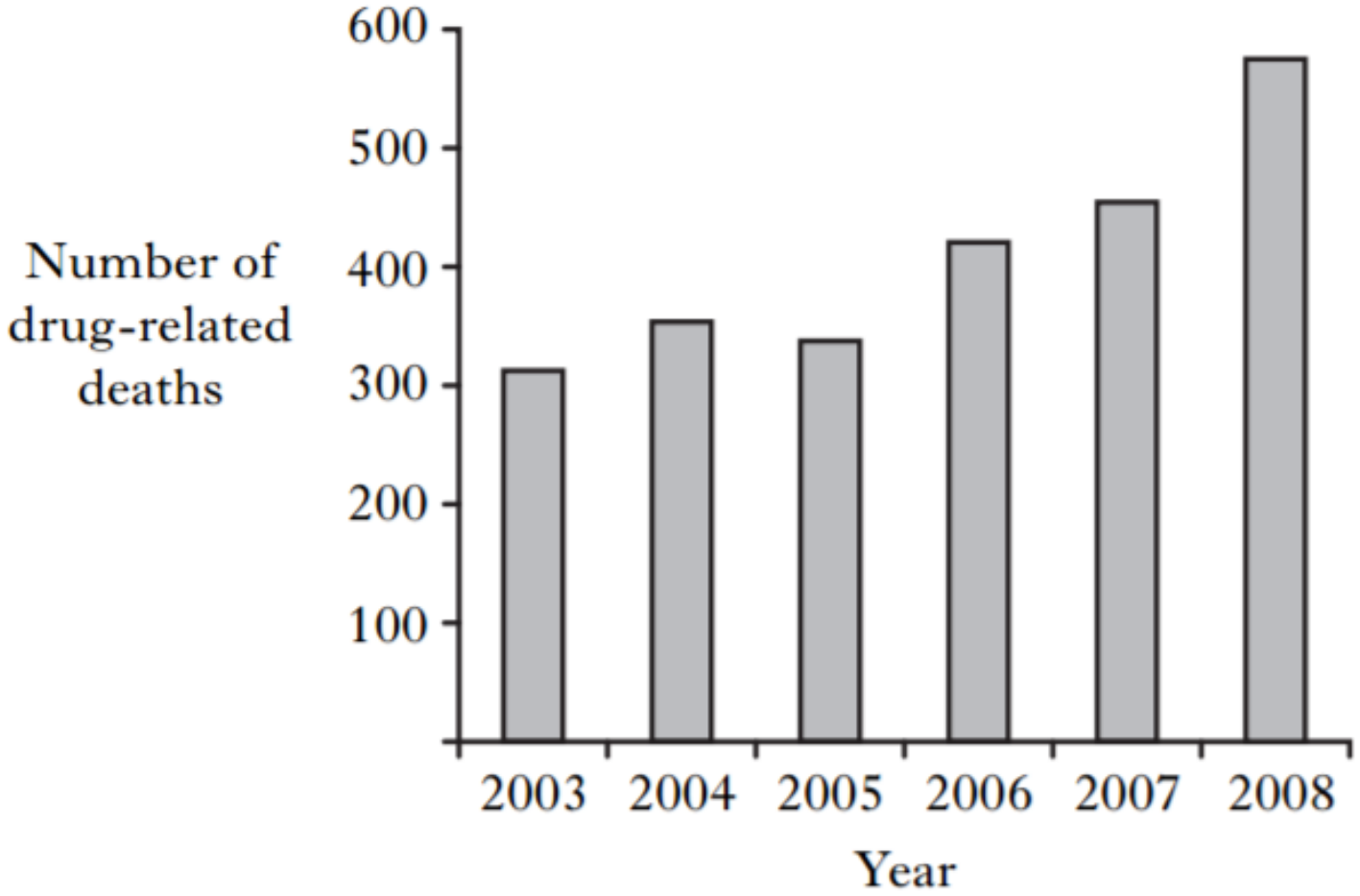
The bar graph shows the number of drug-related deaths in Scotland over a six-year period.



In general, over the six-year period, what is the trend in the number of drug related deaths?

The number of drug-related deaths increases

Ibuprofen is the active ingredient in Paineeze.

10 grams of Paineeze contains 1 gram of Ibuprofen.

Using the equation below, calculate the percentage of Ibuprofen in 10 grams of Paineeze.

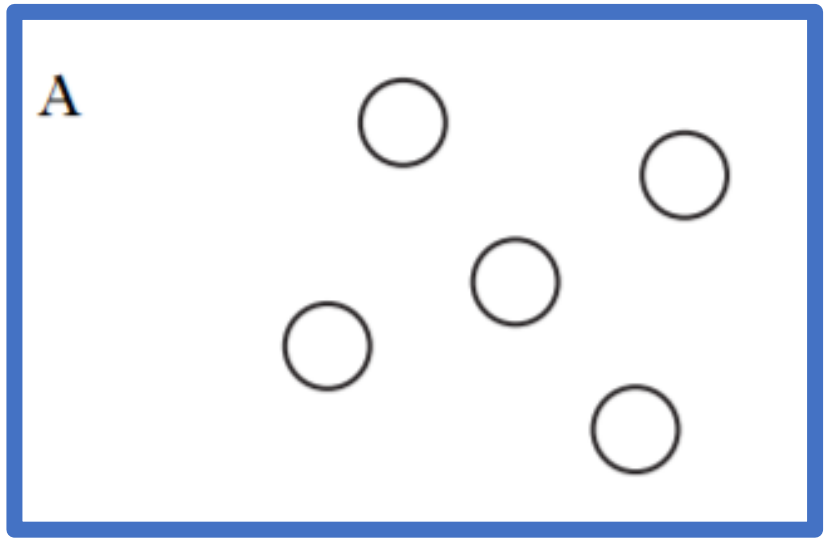
$$\text{percentage Ibuprofen} = \frac{\text{mass of Ibuprofen}}{\text{mass of Paineeze}} \times 100$$

Percentage Ibuprofen = 10%

The structures of substances can be represented by models.

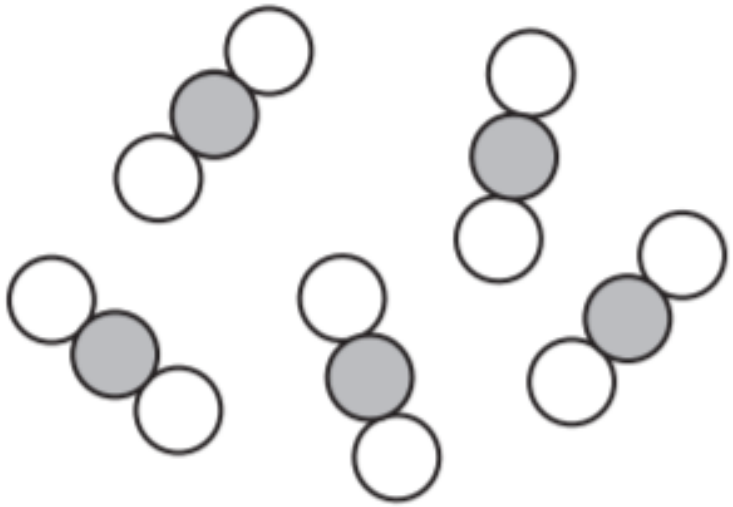
Which of the following models shows an element?

A

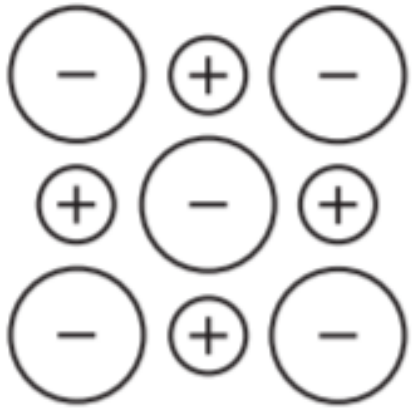


B

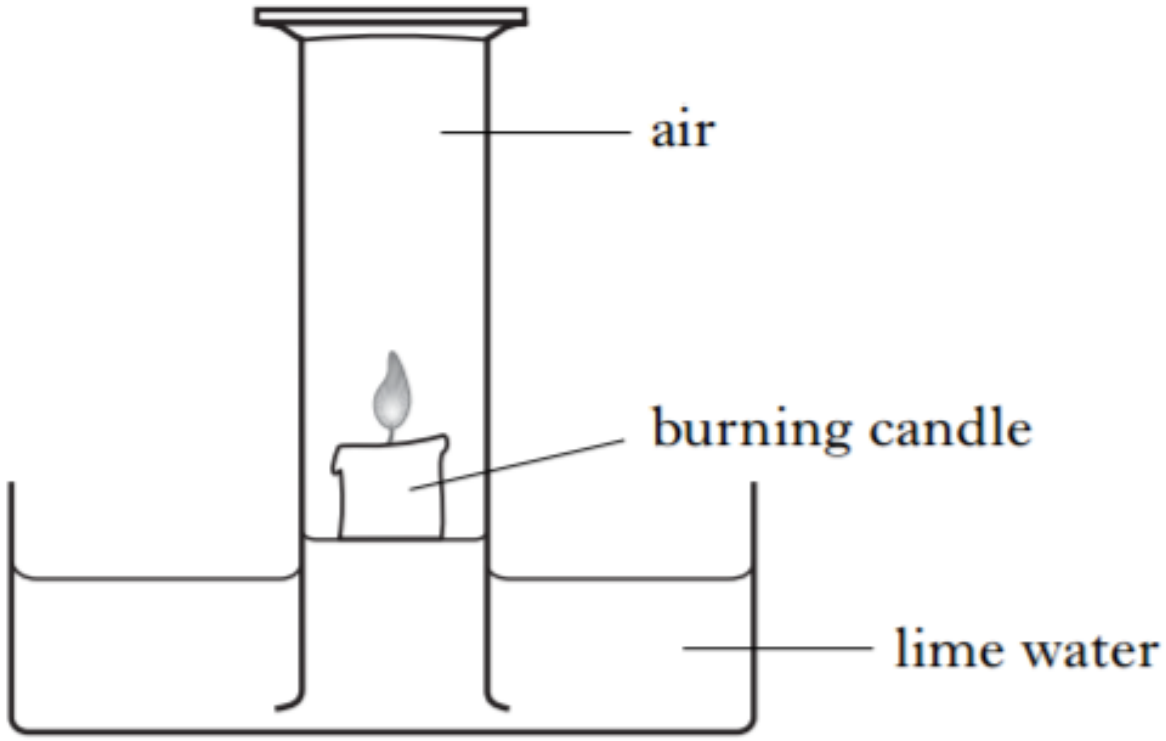
C



D



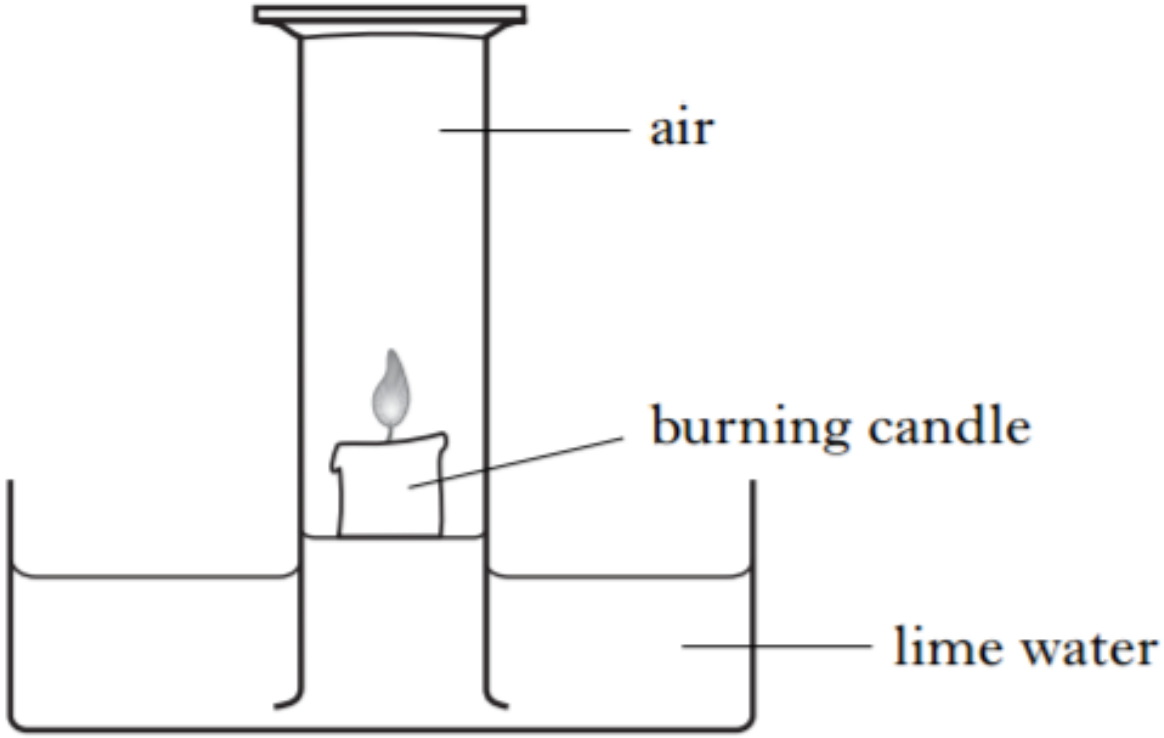
A student carried out the following experiment.



Which gas is used up when a candle burns?

Oxygen

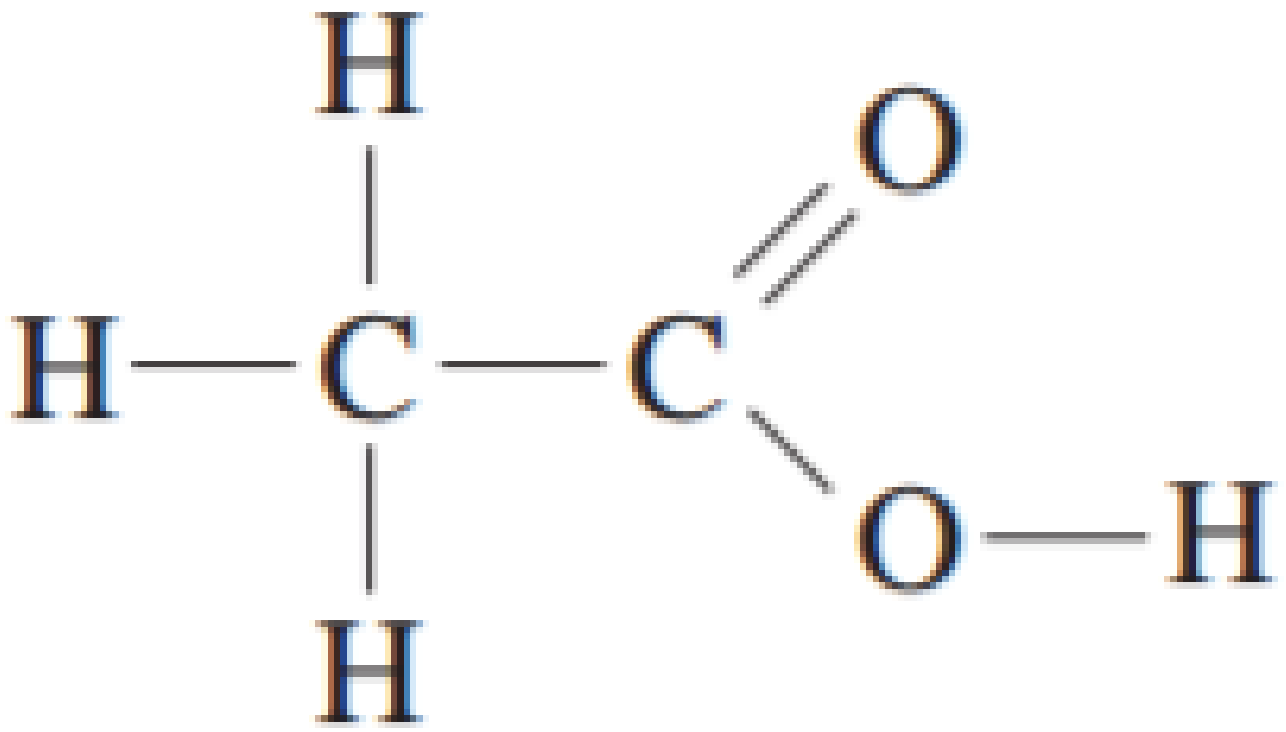
A student carried out the following experiment.



In the experiment, a gas was produced which turned the lime water milky. Name the gas produced.

Carbon Dioxide

Write the molecular formula for ethanoic acid.

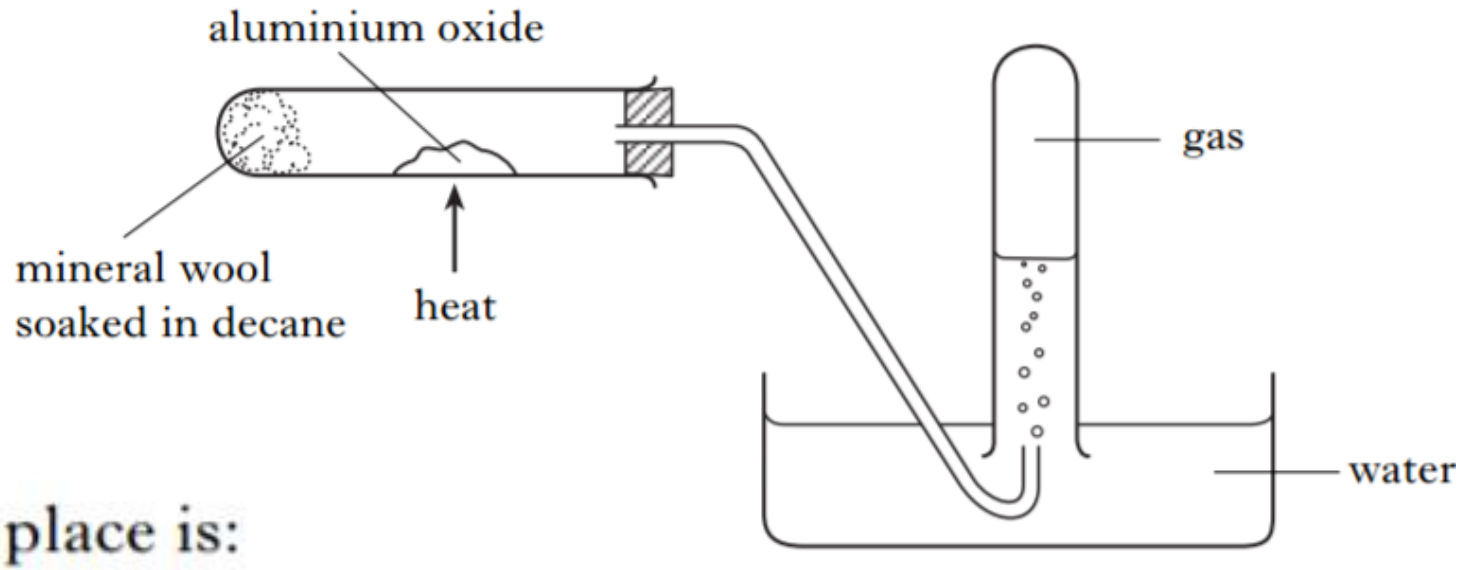


$C_2H_4O_2$

Name the ion present in all acidic solutions

Hydrogen ions

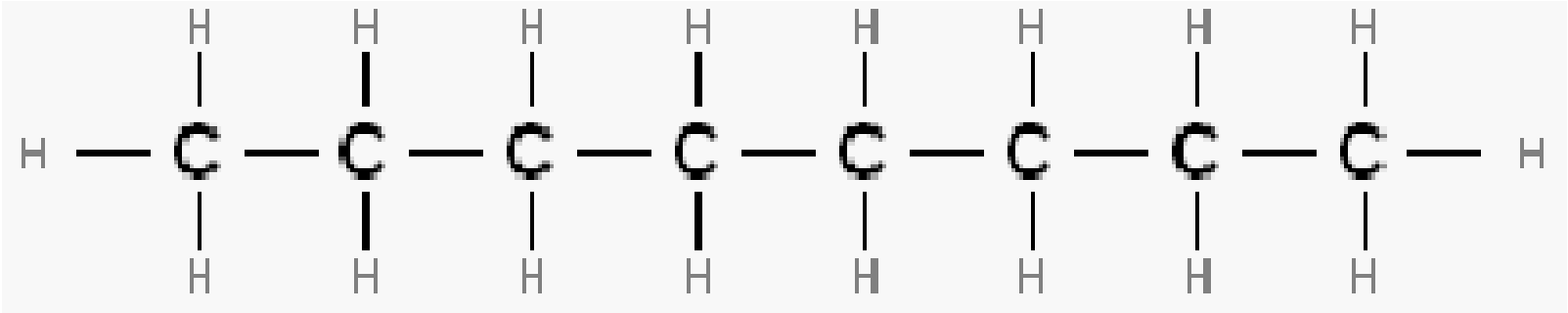
Cracking long-chain hydrocarbons produces smaller, more useful molecules.



One of the reactions taking place is:

$$\underset{\text{decane}}{C_{10}H_{22}} \longrightarrow \underset{\text{octane}}{C_8H_{18}} + \mathbf{X}$$

Draw a structural formula for octane.



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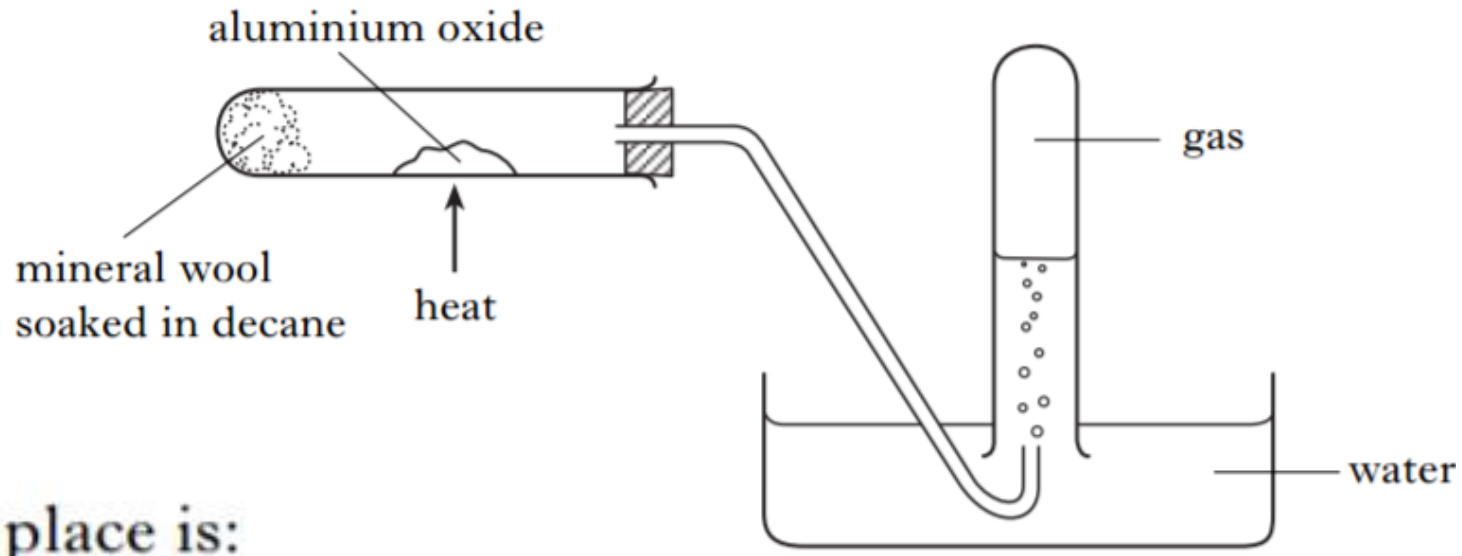

One of the reactions taking place is:

$$\underset{\text{decane}}{C_{10}H_{22}} \longrightarrow \underset{\text{octane}}{C_8H_{18}} + \mathbf{X}$$

Write the molecular formula for X

C_2H_4

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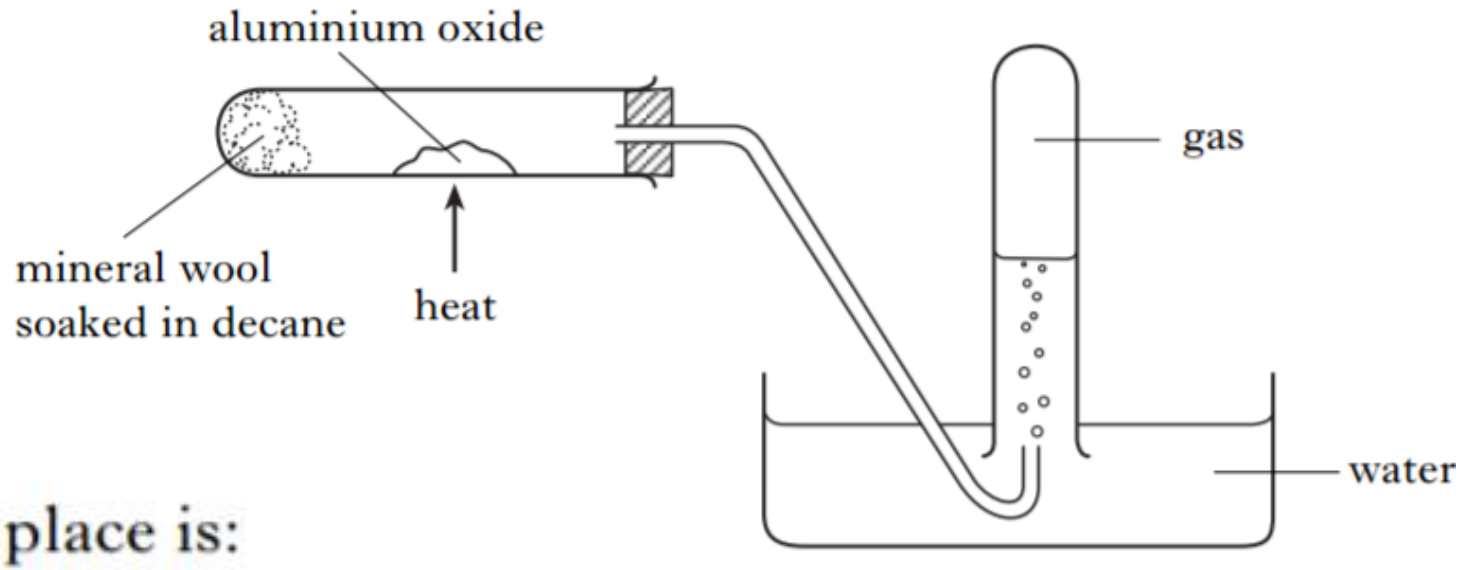

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X decolourises bromine solution.
What does this indicate about X?

X contains a C=C double bond / is unsaturated / is an alkene.

Why do ionic compounds, like lead iodide, not conduct electricity when solid?

Ionic compounds can only *conduct* electricity if their ions are free to move

When calcium hydroxide reacts with hydrochloric acid a salt is produced.

Name the salt produced.

Calcium Chloride

When calcium hydroxide reacts with hydrochloric acid a salt is produced. The salt produced is calcium chloride.

Name the type of reaction and write a word equation for the above reaction.

Neutralisation reaction

calcium hydroxide + hydrochloric acid → calcium chloride + water

Which sort of elements form covalent bonds?

Non-metal atoms

What does a covalent bond involve?

A Sharing electrons between atoms
B Moving electrons between atoms
C Forming free electrons

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A bottle of methylated spirits is labelled with two hazard symbols

What do the symbols tell you about methylated spirits?

Toxic and Flammable

Identify the two elements which exist as diatomic molecules

A Hydrogen

B Helium

C Oxygen

D Silicon

E Carbon

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Identify the hydrocarbon with molecular formula C_4H_8

A butene
B hexene
C ethene
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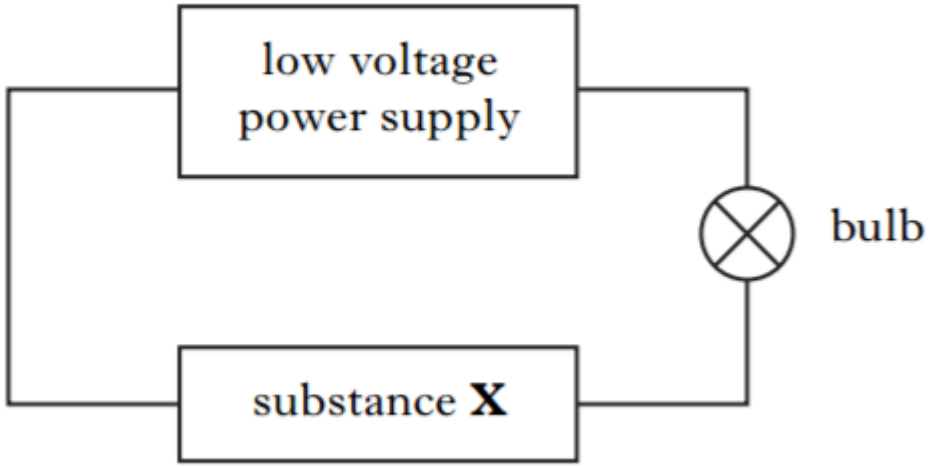
A technician set up an experiment to investigate electrical conductivity



Identify the two experiments in which the bulb would not light

Substance X

A molten metal

B covalent liquid

C ionic solution

D ionic solid

E solid metal

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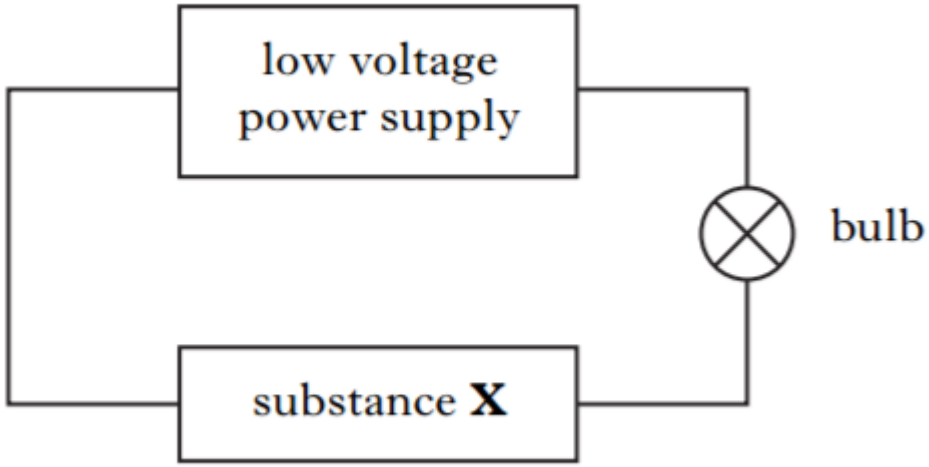

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An atom is neutral because

A the number of electrons equals the total number of protons plus neutrons.

B the number of neutrons equals the total number of electrons plus protons.

C the number of protons equals the number of neutrons.

D the number of electrons equals the number of protons.

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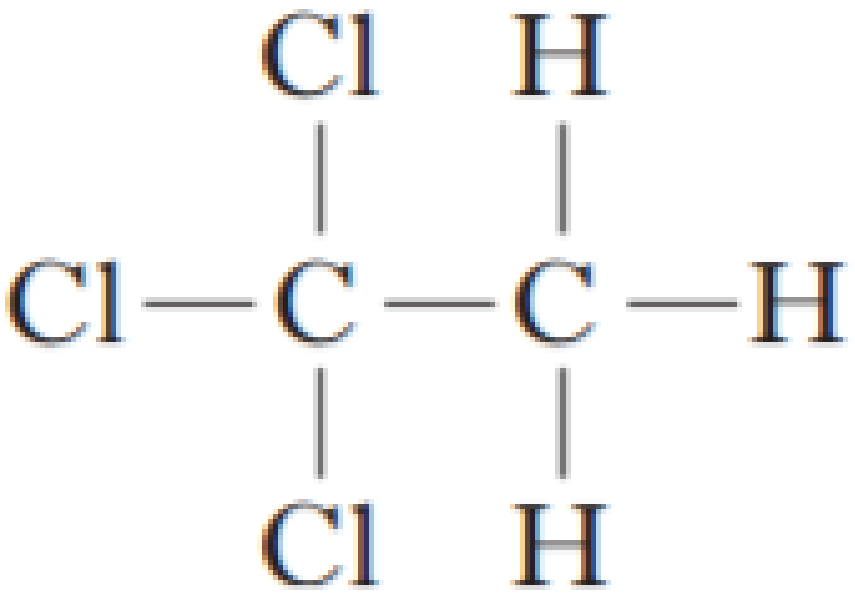
B the number of neutrons equals the total number of electrons plus protons.

C the number of protons equals the number of neutrons.

D **the number of electrons equals the number of protons.**

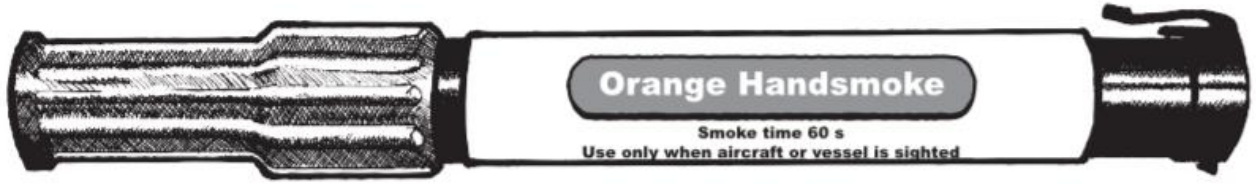
The diagram shows the structure of trichloroethane



What is the molecular formula of trichloroethane?

$C_2H_3Cl_3$

Diphosphane is used in self-igniting flares.

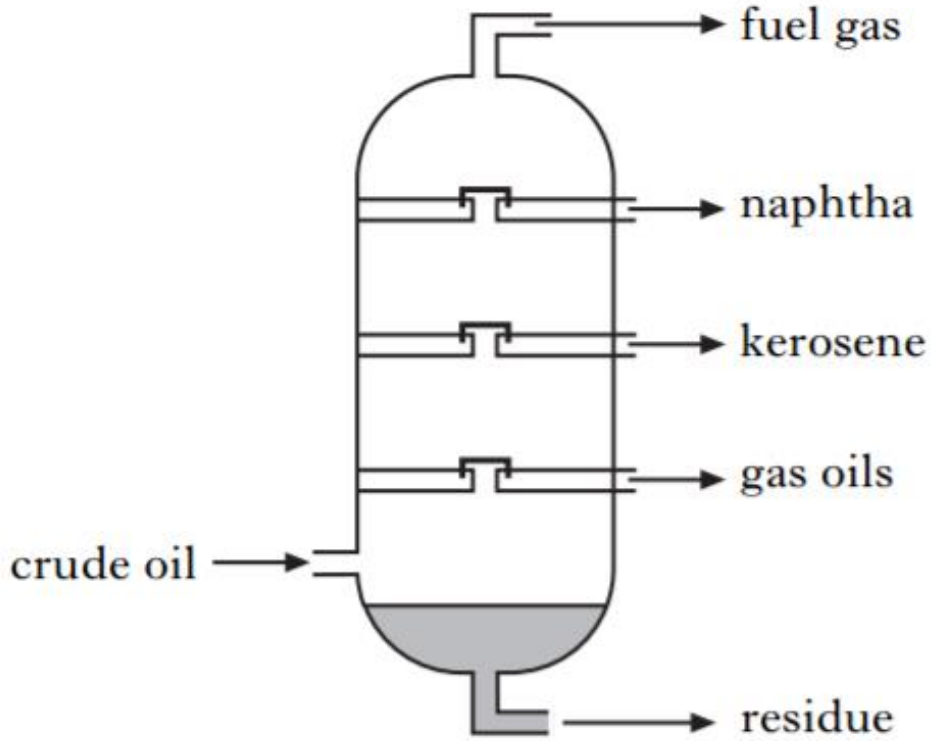


It is made in a chemical reaction in which water is added to calcium phosphide. This produces calcium hydroxide, hydrogen and diphosphane.

Write a word equation for the reaction

Calcium Phosphide + **Water** → **Calcium Hydroxide** + **Hydrogen** + **Diphosphane**

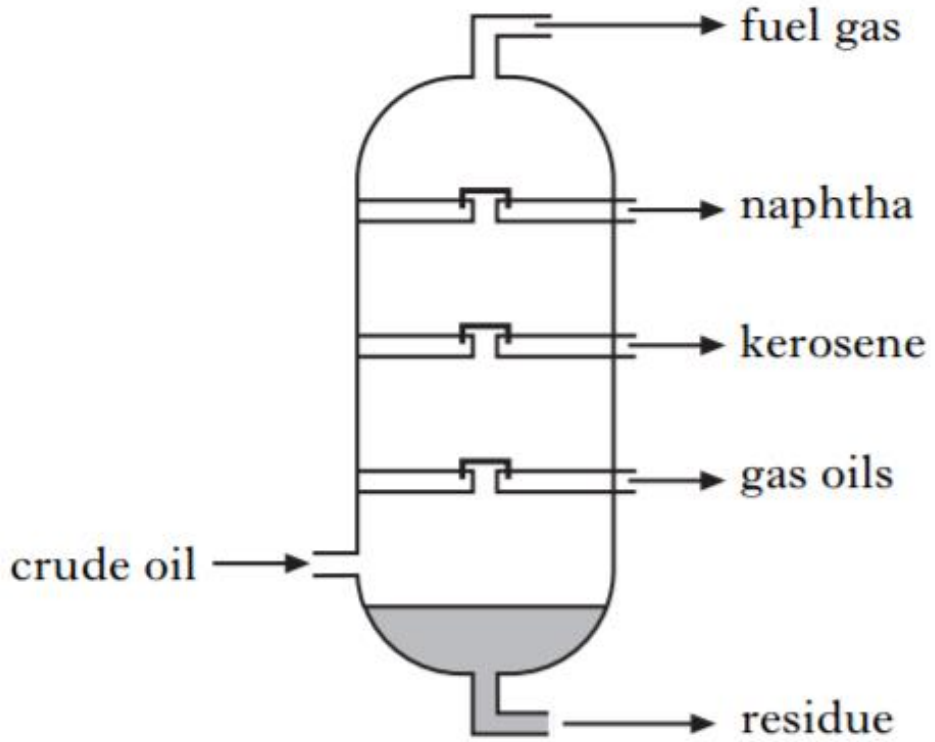
The diagram shows a tower in which crude oil is separated.



Name the process used to separate crude oil.

Fractional Distillation

The diagram shows a tower in which crude oil is separated.



In industry the catalyst used to crack naphtha is zeolite.
Zeolite is a substance that contains aluminium silicate.
Name the elements present in **aluminium silicate**.

Aluminium, Silicon and Oxygen

Flowers produce a sweet-tasting liquid called nectar.

Nectar contains a mixture of sugars such as glucose and sucrose.

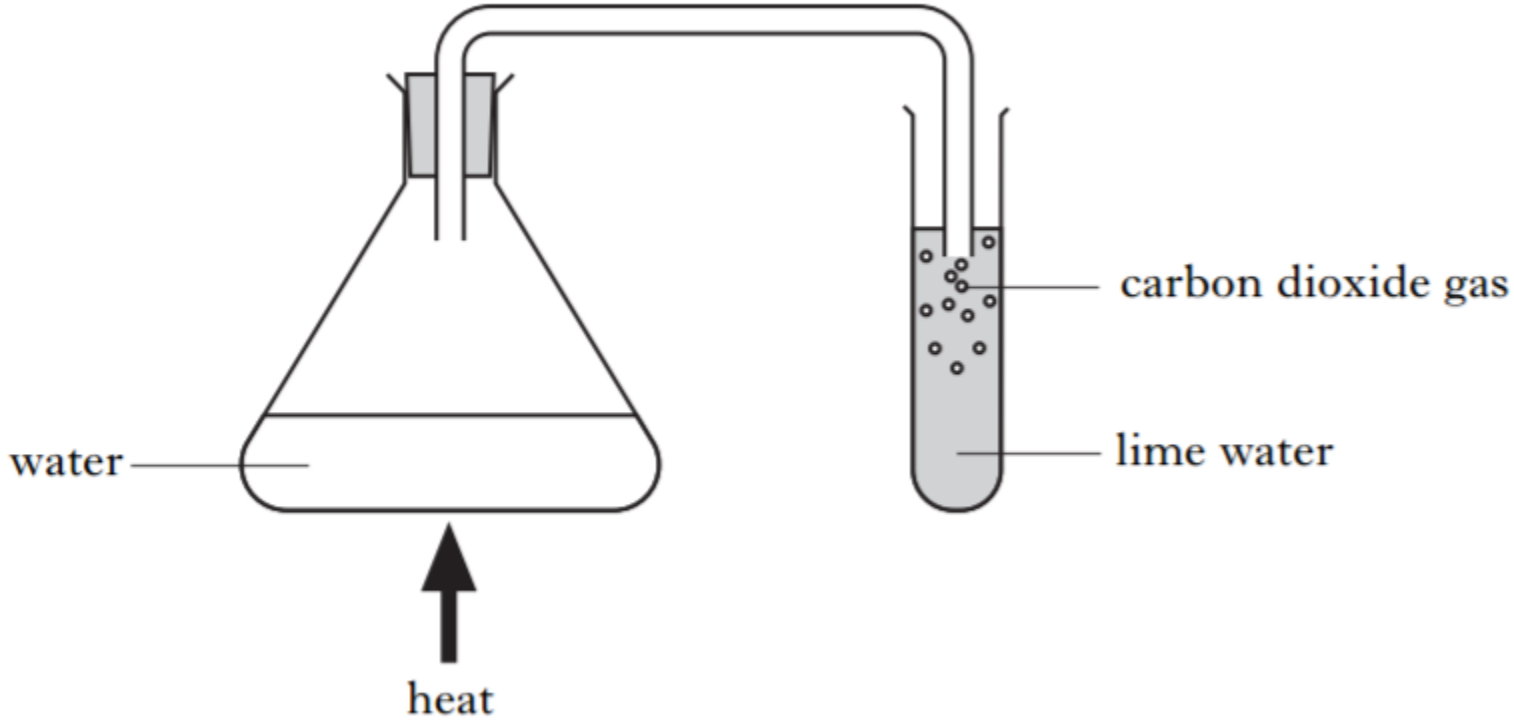
To which family of compounds do glucose and sucrose belong?

Carbohydrates

Glucose can be broken down to produce alcohol.

Name this type of chemical reaction

Fermentation



Describe what would be seen when carbon dioxide gas is bubbled through lime water

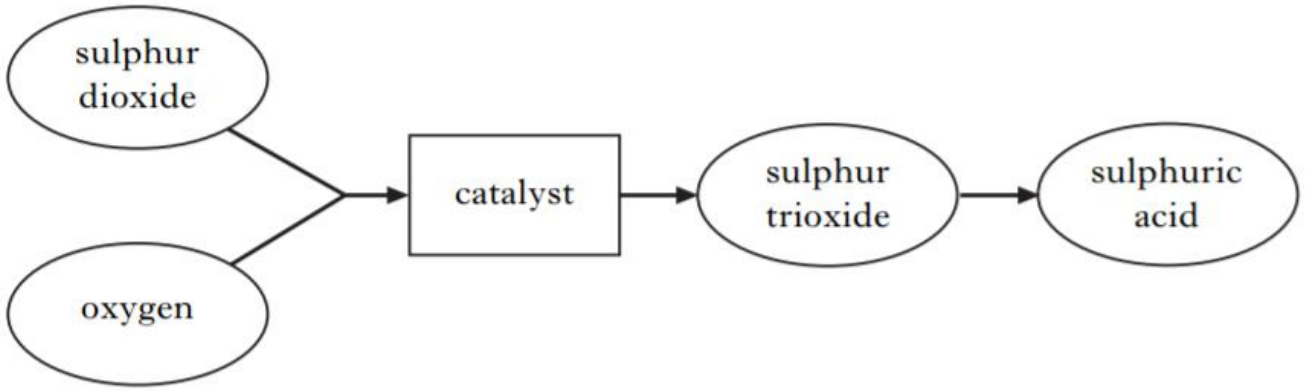
Lime water turns milky/cloudy

Crude oil contains sulphur compounds, such as hydrogen sulphide.

Hydrogen sulphide burns in oxygen to produce sulphur dioxide and water. Write a word equation for this reaction.

Hydrogen Sulphide + Oxygen → **Sulphur Dioxide + Water**

The sulphur dioxide produced is used to manufacture sulphuric acid. Part of the manufacture of sulphuric acid is shown.



What is the purpose of a catalyst?

A *catalyst* is a substance that can increase the rate of a reaction or allow a reaction to take place at a lower temperature

While a pupil was doing an experiment, an insoluble solid was produced in a solution.

What technique could the pupil use to separate the insoluble solid from the solution?

Filtration

State the difference between a mixture and a compound.

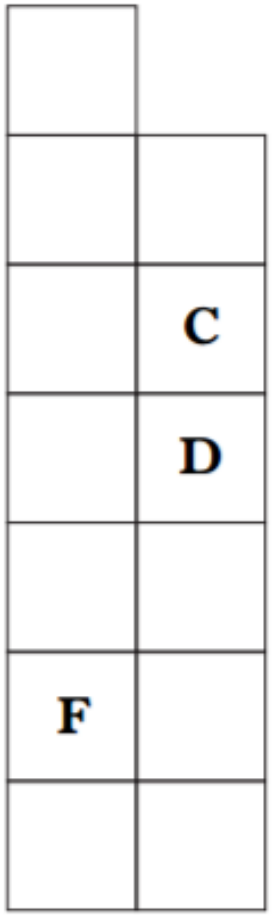
Mixture is composed of 2 or more molecules of different types and is easily separated.

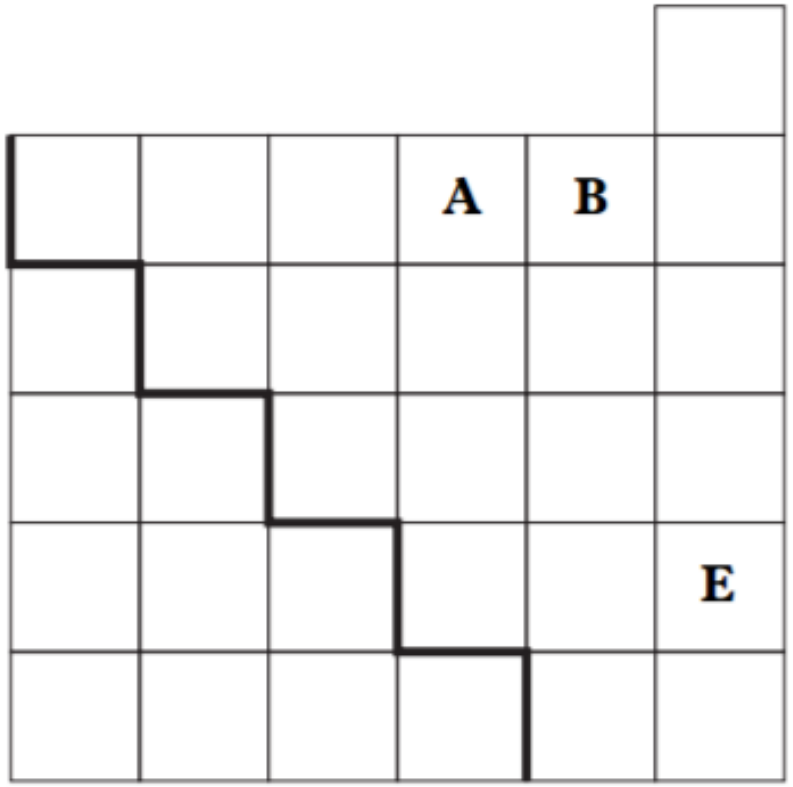
A compound can only be separated through chemical means. A compound is a substance made up of two or more elements which are chemically combined.

The diagram shows part of the Periodic Table.

The letters do not represent the symbols for the elements.

Identify the unreactive element.



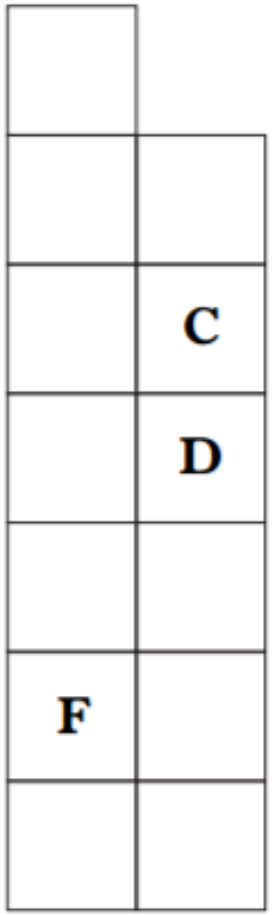


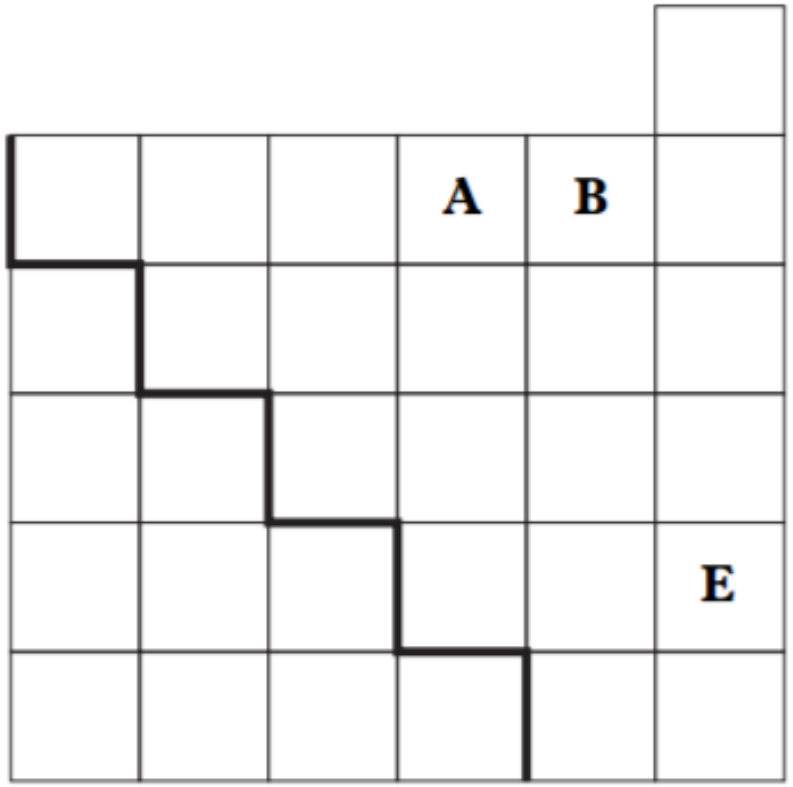
E

The diagram shows part of the Periodic Table.

The letters do not represent the symbols for the elements.

Identify the two elements which are in the same group.



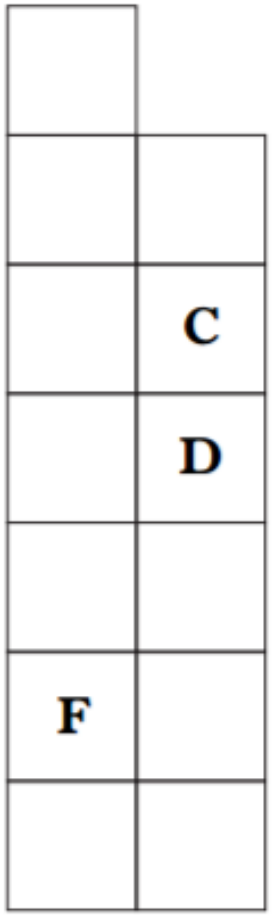


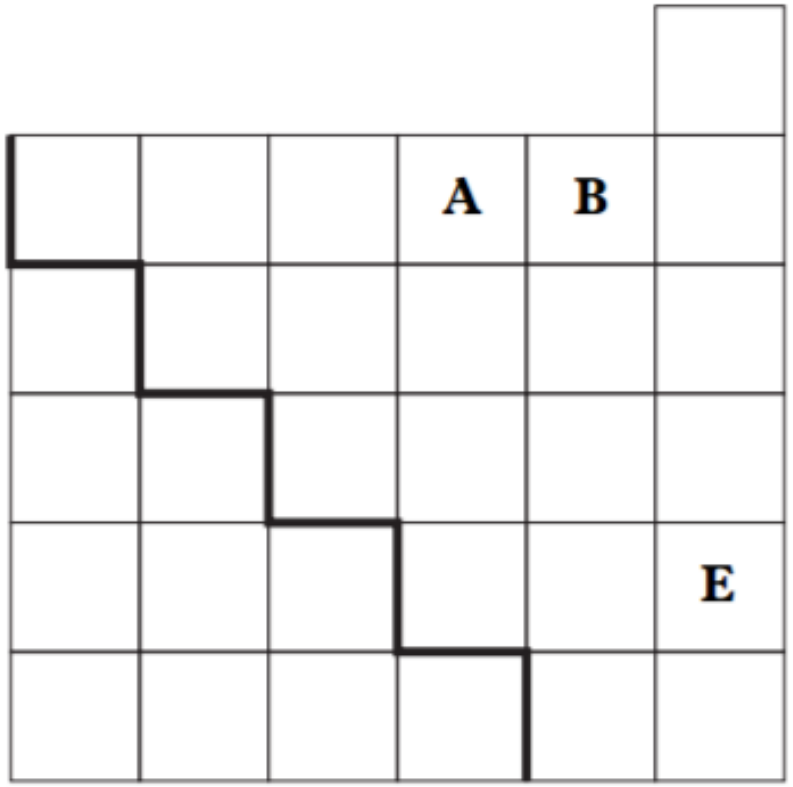
C and D

The diagram shows part of the Periodic Table.

The letters do not represent the symbols for the elements.

Identify the two elements which are in the same period.





A and B

Below are the names of some compounds.

A lead sulphate

B calcium hydroxide

C sodium chloride

D potassium phosphate

Identify the compound which contains only **two** elements

C

Below are the names of some compounds.

A lead sulphate

B calcium hydroxide

C sodium chloride

D potassium phosphate

Identify the compound which will neutralise an acid.

B

Below are the names of some reagents used in chemical tests.

A bromine solution

B iodine solution

C ferroxyl indicator

D Benedict’s solution

Identify the reagent used to test for glucose.

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When burned, some fossil fuels produce a poisonous gas.

This gas reacts with water in the atmosphere to produce acid rain.

Name the poisonous gas.

Sulfur Dioxide

Potassium carbonate is a compound made up of different elements.

Name the elements present in potassium carbonate.

Potassium, carbon and oxygen

What is a fuel?

A fuel is a compound that contains stored energy. When the fuel is burned, this stored energy is released.