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Chemistry in a Flash

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Iridium Education

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The Atom

Draw a diagram of the atom below, include the following labels:

proton, nucleus, electron, shell, neutron

Particle	Relative Mass	Relative Charge
Proton		
Neutron		
Electron		

Particles

Work out the number of protons, electrons and neutrons in the atoms below.

$^{23}_{11}\text{Na}$ $^{24}_{12}\text{Mg}$ $^{27}_{13}\text{Al}$

Explain why an atom has no overall charge.

	Na	Mg	Al
P			
E			
N			

Isotopes

Atoms of the same element with different numbers of _____ are called isotopes.

$^{14}_6\text{C}$ $^{12}_6\text{C}$

P = P =
 E = E =
 N = N =

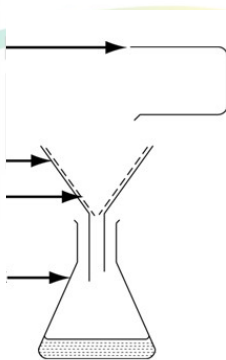


Substances

Substance	Definition	Diagram
Element		
	Two or more types of atom joined together.	
mixture		

Filtration

Label the diagram.

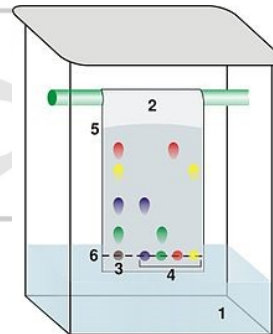


Filtration can be used to separate an _____ solid from a liquid.

For example:

- _____ and _____

Chromatography



Describe how to carry out paper chromatography.

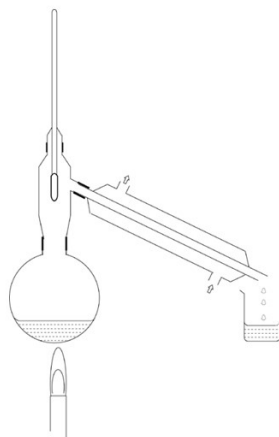
Distillation

Simple distillation is used to separate _____.

Fractional distillation is used to separate mixtures of _____.

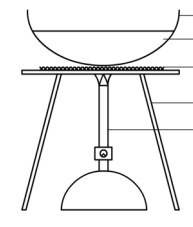
Distillation separates liquids with different _____.

Label the diagram opposite.



Evaporation and Crystallisation

Label the diagram Opposite.



What is the difference between evaporation and crystallisation?

When would you not use evaporation?

Ion Formation

Ions are formed when atoms l_____ or g_____ electrons.
 M_____ atoms l_____ electrons to become p_____ charged.
 N_____ - m_____ atoms g_____ electrons to become n_____ charged.

Atom	Ion	Gain/lose	Number of electrons
Li	Li ⁺	lost	1
O		gain	2
	Mg ²⁺		

Ionic Bonding

Draw a diagram that represent the bonding between sodium and chlorine

A sodium atom becomes a sodium ion by: _____

A chlorine atom becomes a chloride ion by: _____

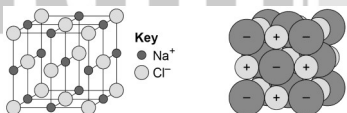
Oppositely charged atoms are strongly attracted to each other by e_____ f_____.

Properties of Ionic Compounds

Ionic compounds contain metal and n_____ - m_____.

Here is a list of the properties of ionic compounds:

-
-
-
-



Covalent Bonding

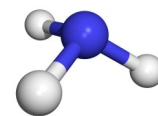
Covalent bonding involves s_____ of e_____, and are formed between n_____ - m_____.

Covalent bonds can be represented by models. Complete the models of ammonia (NH₃) below.

Dot and Cross Diagram

Displayed Formula

3D Model

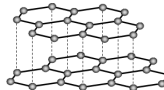


Properties of Simple Covalent Substances

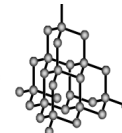
Explain why simple molecular substances have low boiling points.

Giant Covalent Structures

Graphite

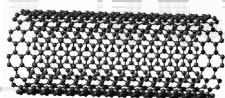


Diamond

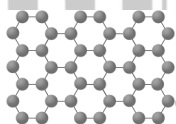


Explain why diamond and graphite have a high melting point.

More Carbon!



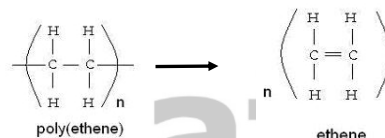
Fullerenes



Graphene

Polymers

Polymers have c_____ b_____, and consists of many small units (m_____) joined together to make a l____ m_____. The i_____ f_____ between the polymer molecules are larger than those between simple covalent molecules. This means more e_____ is needed to break them, this explains why most polymers are s_____ at room temperature.



Hydrocarbons—Alkanes

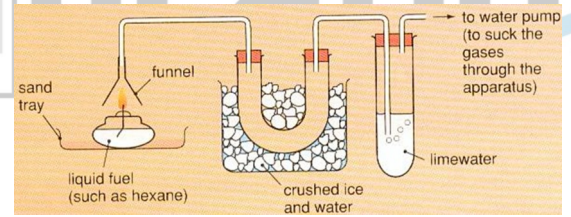
Hydrocarbons are compounds made up of _____ and _____ only.

Alkanes are s_____ hydrocarbons which have single c_____ bonds. The general formula for alkanes is _____.

Methane, CH ₄ .	Ethanes, C ₂ H ₆ .
Propane, C ₃ H ₈ .	Butane, C ₄ H ₁₀ .

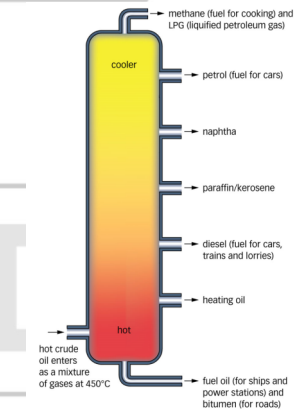
Combustion of hydrocarbons

Hydrocarbon + _____ → _____ + _____



What is the differences between complete and incomplete combustion?

Fractional Distillation



Crude oil is a m_____ of Hydrocarbons which can be separated by F_____
D_____.
Describe how fractional distillation works.

Hydrocarbon Properties

Longer hydrocarbons collect at the b_____ of the column, they have the following properties:

-
-
-
-
-

Cracking

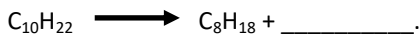
Long chain hydrocarbons are in lower d_____. These are c_____ to produce shorter more useful hydrocarbons.

Long alkane → shorter alkane + alkene

Cracking is a t_____ d_____ reaction.

Catalytic cracking is carried out under h_____ temperatures in the presence of a c_____.

Steam cracking does not require a c_____.



Combustion of hydrocarbons (2)

Pollutant	Associated Problem
Particulates	G_____ d_____.
Carbon monoxide	Takes the place of o_____ in the blood.
Sulphur dioxide	A_____ R_____. This can kill p_____, damage b_____, statues and m_____.
Oxides of nitrogen	Formed when n_____ and o_____ from the air react under high t_____.

Glossary

Finite resource—

Natural resource—

Renewable resources—

Test for Alkenes (unsaturated hydrocarbons).

Orange bromine water becomes c_____.

The alkene reacts with the bromine, the new p_____ is c_____.

