

Pages 54–55 Solids, liquids and gases

- 1 Drawing where 2 out of 3 particles are in contact with each other but there is no regular lattice and the arrangement is random (1)

2 a Substance	Melting point (°C)	Boiling point (°C)	Solid, liquid or gas
A	0	100	Liquid
B	–183	–162	Gas
C	100	245	Solid
D	–39	355	Liquid
E	1540	Above 2000	Solid

(1 mark for each correct entry)

- b i A

ii Because water melts at 0 °C and boils at 100 °C

- c i E

ii Because it needs a very high temperature to turn it into a liquid

- 3 a It expands

- b When a substance gets hotter it means that the particles have more thermal energy (1)

When particles have more thermal energy they vibrate more or move more (1)

which means that the space between them gets greater (1) The space between the

particles getting greater means the substance expands (1) (Any 3 of above, 1 mark each)

- 4 The particles in a gas are free to move around and fill up all the available space (1)

This means that the particles of the perfume will move around with the gas particles in the air in the room and will gradually reach all parts of the room (1)

(1) = 1 mark

Pages 56–57 Solubility and separation

1 150 g

(1 mark for correct numerical answer and 1 for unit)

2 a C B A D

(1 mark for each letter in correct order)

b C Bar magnet

B Beaker or possibly conical flask

A Filter funnel, filter paper and conical flask

D Bunsen burner, tripod and gauze and evaporating basin (1 mark for each correct stage)

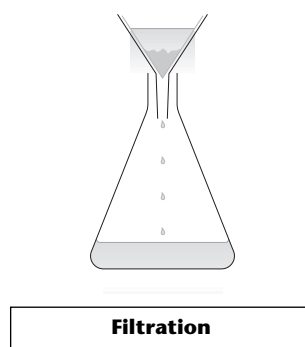
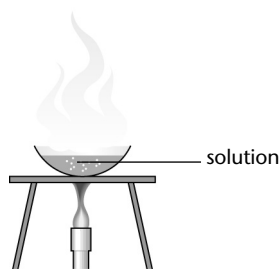
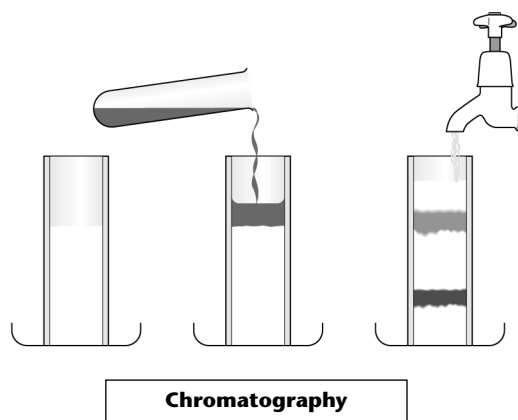
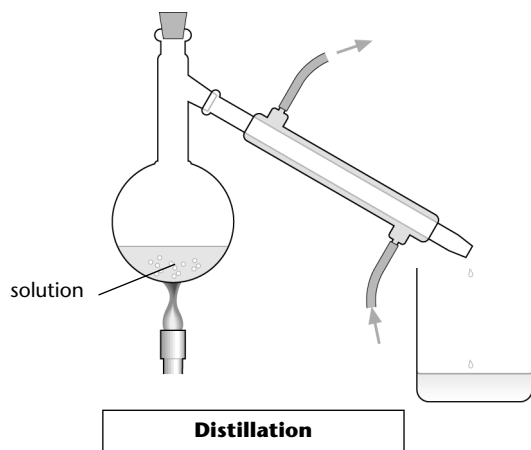
3 a Solution

b Solute

c Solvent

d Insoluble

4 a



(1 mark for each correctly labelled diagram)

b i Chromatography

ii Distillation

iii Filtration

iv Evaporation

Pages 58–59 Elements, compounds and mixtures

1 a

Substance	Element, compound or mixture
Oxygen	Element
Air	Mixture
Steel	Compound
Iron	Element
Water	Compound

(1 mark for each correct entry)

b In a compound a chemical reaction has taken place, but in a mixture the different substances have not reacted with each other.

2 Element	Symbol	Element	Symbol
Hydrogen	H	Phosphorus	P
Nitrogen	N	Sulphur	S
Sodium	Na	Potassium	K
Oxygen	O	Carbon	C
Copper	Cu	Nickel	Ni

3 CO₂ **Carbon** and **oxygen**

H₂O **Hydrogen** and **oxygen**

NH₃ **Nitrogen** and **hydrogen**

NaCl **Sodium** and **chlorine**

CuO **Copper** and **oxygen**

(1 mark for each correct pair of elements)

4 a A mixture

b Because there has been no chemical reaction or The elements and compounds that went into the mixture are all still there and are unaltered

5 a TRUE

b FALSE

c FALSE

d TRUE

(1 mark each)

Pages 60–61 Chemical reactions

1 a Physical change

b Ice melting, water boiling, etc.

c Neutralisation, oxidation, combustion, corrosion, etc.

2 a Combustion

b Iron oxide

c Rust

3 a Sodium + chlorine → sodium chloride

(1 mark for reactants, 1 for product)

b $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$

(1 mark for Na, 1 for Cl, 1 for NaCl, 1 for correct numbers)

4 a Salt

b i Sodium is a soft grey metal

ii Chlorine is a green poisonous gas used as a disinfectant

5 Oxygen

6 Endothermic

7 a Oxygen and glucose

b Carbon dioxide and water

Pages 62–63 Acids and alkalis

1 a Around pH 3

b pH 7

c Slightly alkaline, about pH 8

- 2 a** Acid + alkali → **salt + water** *(1 mark for each correct product)*
- b** Hydrochloric acid + sodium hydroxide → **sodium chloride + water** *(1 mark for each correct product)*
- Sulphuric acid + potassium hydroxide → **potassium sulphate + water** *(1 mark for each correct product)*
- Nitric acid + calcium hydroxide → **calcium nitrate + water** *(1 mark for each correct product)*
- c** Acid + metal → **salt + hydrogen** *(1 mark for each correct product)*
- d** A lighted splint placed at the mouth of a test tube of hydrogen will 'pop'
- e** A nitrate
- 3** Can cause acid rain or Can mix with water and make the rain acidic, etc. *(1 mark for specific answer – just pollution is not enough)*

4 Neutralisation

5 Substance	Colour of litmus
Lemon juice	Red
Toothpaste	Blue
Vinegar	Red
Cola	Red
Soap	Blue
Bleach	Blue

- 6 a** Toothpaste or soap NOT bleach
- b** Lemon juice or vinegar or cola
- c** Bee stings need something alkaline to neutralise the acid
Wasp stings need something acidic *(1 mark for getting correct acid/alkali, 1 for neutralising, and 1 for realising that it is not good to put bleach on the skin)*

Pages 64–65 Metals and non-metals

1 Properties of metals	Properties of non-metals
A Good conductors of heat	B Poor conductors of electricity
C Generally solids at room temperature	D Solids, liquids and gases at room temperature
E Shiny appearance	

(1 mark for each correct entry)

2 a Rust

b Any 1 from: paint oil galvanising or any reasonable protective suggestion

3 a Metal **D** (1) is copper

Because it is yellow or It doesn't react with water or It reacts with dilute acid and with oxygen

(1 mark for any of these)

b Metal **B** (1) is gold

Because it is yellow or It does not react with anything

(1 mark for either of these)

4 a No

b All of the others

c More reactive metals displace less reactive ones

Pages 66–67 Rocks and the rock cycle

1 Igneous (1) Metamorphic (1) Sedimentary (1)

2 **Sedimentary rocks contain fossils**

Granite is an igneous rock with large crystals

Limestone is a soft rock that crumbles easily

Marble is a hard metamorphic rock

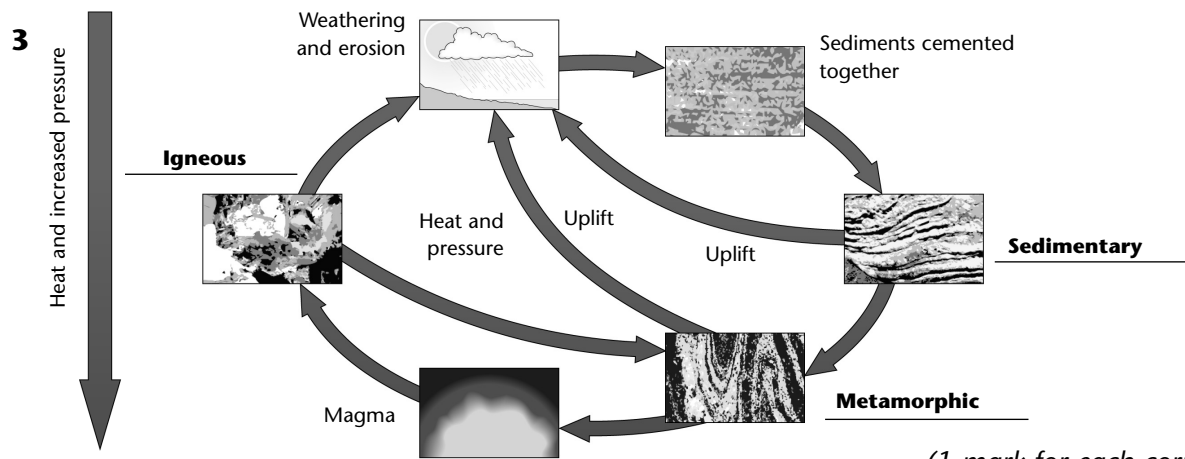
Rocks that form when molten rock from volcanoes cool slowly have larger crystals than when the cooling process is very quick.

When sedimentary rocks are heated under pressure the resulting rock is much harder.

The remains of dead sea creatures fall to the sea bed with the sediment from rocks and get trapped between the layers.

Rocks that form when layers of sediment build up on the sea bed are usually soft.

(1 mark for each correct link)



(1 mark for each correct label)

4 a Changed

b Quartzite

c Metamorphic rocks are much harder than sedimentary ones

5 A Rainwater collects in cracks

B When the temperature falls below 0 °C, the water freezes and expands making the crack bigger

C After repeated freezing and thawing the rock fragment breaks off