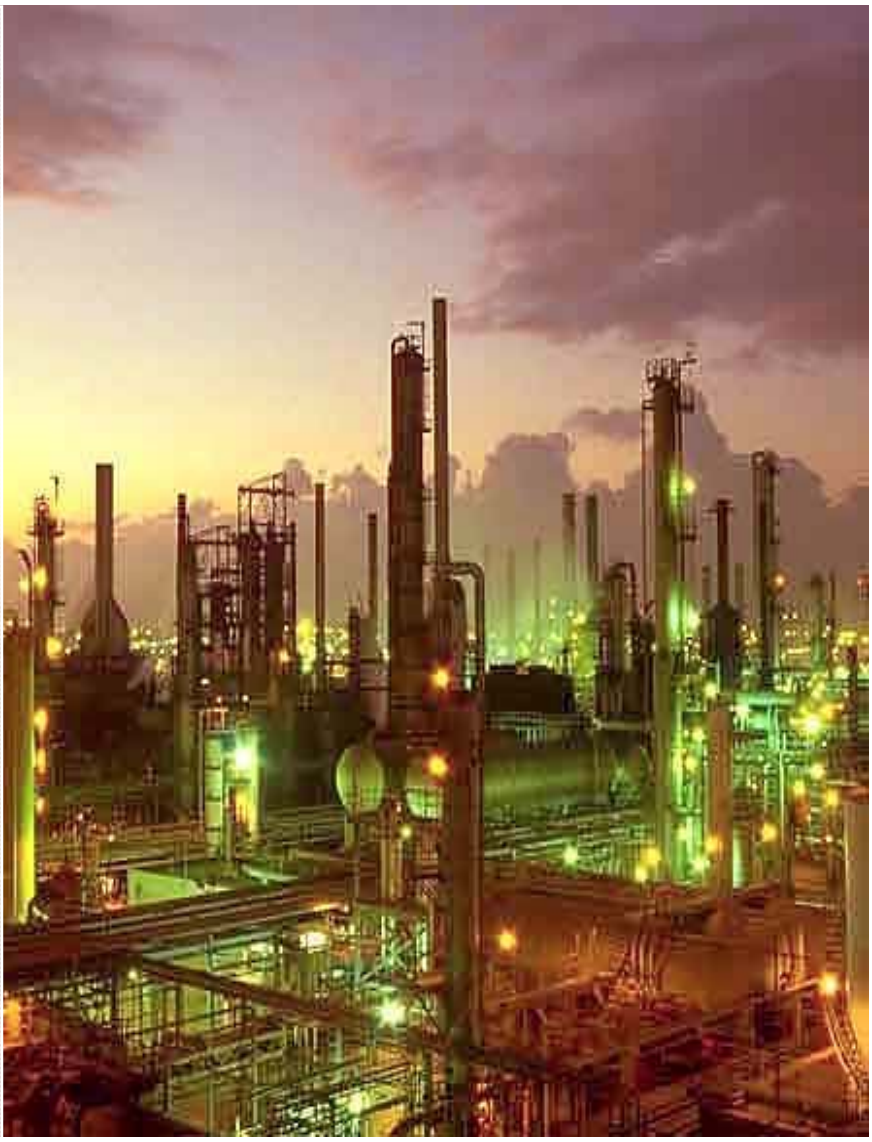
Chemistry Revision Guide

Normanhurst School

Year 8



Contents

Chemistry Revision Guide

Atoms & elements

Atoms & elements

- Atoms are the basic building blocks of all matter
- There are about 100 different types of atoms
- These different atoms are called the elements
- The elements form a pattern called the Periodic Table.

The Periodic Table

- Shows 'families' of elements with similar properties
- To the left of the zigzag line are the metals
- To the right of the zigzag line are the non-metals
- The left-hand column contains the alkali metals
- The right-hand column contains the noble gases.

- Atoms of the same type are called an element
- Substances with more than one type of atom are called non-elements
- There are billions of different ways of joining atoms
- When atoms join together they are called molecules
- When different atoms join they are called compounds.

Every element has its own symbol:

- Na – sodium
- Cl – chlorine
- H – hydrogen

New materials are made by joining atoms together:

- NaCl – sodium chloride (common salt)
- HCl – hydrochloric acid.

Word equations & chemical equations

- When we burn charcoal on a BBQ we create a chemical reaction
- Word equation: carbon + oxygen → carbon dioxide
- Chemical equation: $C + O_2 \rightarrow CO_2$

Compounds & mixtures

Atoms, molecules & compounds

- He: atomic helium (a noble gas, doesn't join to anything)
- H_2: molecular hydrogen
- O_2: molecular oxygen
- H_2O: a molecule of water (a compound because it contains 2 different elements).

Air

Air is a mixture of:

- Oxygen (21%)
- Nitrogen (78%)
- Other gases (1% - of which CO_2 is less than 0.04%).

Melting point & boiling point

Melting point:

- Melting: solid → liquid
- Solidifying: liquid → solid.

Boiling point:

- Evaporating: liquid → gas
- Condensing: gas → liquid.

Melting point of a pure substance (e.g. water)

- As the substance melts, the temperature doesn't change
- When it has all melted, the temperature can rise.

Melting point of a mixture (e.g. salty water)

- The mixture melts over a range of temperatures.

Rocks & weathering

Rock are:

- Solid
- Naturally occurring
- Non-living material
- Made up of minerals.

Minerals are compounds such as:

- Iron oxide
- Aluminium oxide
- Calcium carbonate.

Many rocks contain mineral grains stuck together.

- Interlocking grains – no spaces
- Non-interlocking – spaces between grains.

Weathering: rocks get worn away by

- Wind
- Rain
- Ice.

Physical weathering:

- Minerals get dissolved by water
- Ice breaks up rock
- Wind scours rock.

Chemical weathering:

- Acidic water causes a chemical change to rock.

Affects of temperature on weathering

- As temperatures rise rock expands
- As it cools it contracts
- Over many cycles, the stresses make the rock crack.

The affects of ice on rock:

- When water freezes it expands
- This makes cracks in the rock bigger
- Eventually the rock breaks.

Transport: after weathering the rocks are moved by

- Wind
- Water
- Ice.

Erosion is the combined effect of weathering & transportation:

- Erosion = weathering + transport.

Rivers & transport

- Rocks are carried downstream by water
- They hit and break into smaller pieces
- They end up as sand and mud.

The smallest grains are carried furthest so:

- Sand and mud are carried towards the sea
- As the river slows down, the sand and mud are deposited.

Forming sedimentary layers

- Sand and mud fall to the bottom of the river or sea
- This is called sediment
- The sediments form layers.

As more layers of sediment are added

- The lower layers get squeezed (compacted)
- Over a long time the grains are cemented together.

The rock cycle

Sedimentary rock

- Sedimentary layers are compacted and cemented
- Sedimentary rock is made
- These rocks form layers
- Sedimentary rocks contain grains.

Types of sedimentary rock:

- Limestone
- Sandstone
- Clay
- Chalk
- Shale.

Metamorphic rock

This is sedimentary rock that has been changed by heat and pressure:

- Sedimentary rock lower down gets heated by the Earth's interior
- Grains are transformed into interlocking crystals.

Examples of metamorphic rock:

- Slate
- Marble.

Magma & lava

- Deep in the Earth rock is molten
- This is called magma
- If magma rises to the surface it is called lava.

Igneous rock is molten rock that has cooled down:

- If it cools quickly it has small crystals
- If it cools slowly it has large crystals.

Examples of igneous rock:

- Granite
- Basalt.

Earth on the move

- Continents move
- New rocks are made
- Old rocks are subducted.

The rock cycle

- Sedimentary rock is turned into metamorphic
- All rocks can be melted
- All rocks can be eroded back to sedimentary rocks.