ELEMENTS, COMPOUNDS & MIXTURE

ELEMENTS

An element is a substance that cannot be broken into simpler substances by chemical methods.

E.g. Heating gold



ELEMENTS

An element is a substance that cannot be broken into simpler substances by chemical methods.

Elements can be found in the Periodic Table.



ELEMENTS

All elements has a symbol.

Symbols are either based on the Latin or English names.

All symbols start with a CAPITAL letter and end with a small letter.

ELEMENTS

The first 20 elements and iron, copper, zinc, lead, tin, silver, gold, mercury, bromine and iodine

Categorized into metal, non-metal and metalloid according to their properties

There is a change from metallic to non-metallic characteristic from left to the right of the periodic table.

ELEMENTS

Metal: Copper, Sodium, Magnesium
Non-metal: Chlorine, Neon, Carbon, Sulfur

ELEMENTS

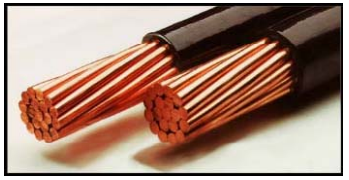
Except mercury (liquid)

Physical Properties	Metal	Non Metal
Appearance	Shiny	Dull, non-shiny
State	Mostly solid	Solid, liquids or gas
Melting & boiling point	High	Low
Density	High	Low
Malleability & ductility	Malleable and ductile	Brittle (for solids) – can break or snap easily Non-ductile
Electrical conductivity	Conductor of electricity	Non conductor of electricity
Heat conductivity	Good conductor of heat	bad conductor of heat

ELEMENTS

Malleable: Can be bent and beaten into different shapes

Ductile: Can be stretched to form wires



ELEMENTS

Metalloid: Boron, Silicon

Silicon properties: Shiny, brittle, poor conductor of heat and electricity

Metalloids have properties of a metal and non-metal.

ELEMENTS

Exercise:
State the symbol, high/low melting point and good/bad electrical conductivity for Iron and Bromine.

Element	Symbol	High/low m.p.	Good/bad electrical conductivity
Iron			
Bromine			

THINKING QUESTION

Melting of ice: Melting point

Sodium reacts with water

Which is a physical property and which is a chemical property?

DEFINITION

The physical property of a substance is the property that can be observed or measured without the substance changing into another substance.

The chemical property of a substance describes the change of a substance into another substance.

DISCUSSION

Given physical properties of the unknown, determine whether the *unknown is a metal or non-metal?*

1. Silvery solid, melting point is 962 °C and boiling point is 2162 °C.

2. Greenish yellow gas, melting point is −101 °C and boiling point is −35 °C.

USES OF METALS

Metal	Symbol	Uses
Copper	Cu	Pipes, wires
Zinc	Zn	Batteries, coins
Aluminium	Al	Aluminium foil, drink cans
Mercury	Hg	Thermometer
Iron	Fe	Cutlery, ships

USES OF NON-METALS

Non- metal	Symbol	Uses
Chlorine	Cl	Bleaches
Helium	He	Balloons, airships
Nitrogen	N	Fertilisers
Oxygen	O	Oxygen tank
Iodine	I	Antiseptic