

S2 Chemistry Topic

23/01/2025

In this Unit you will learn about:

1. The Periodic Table
2. Metals
3. Elements, Compounds and Mixtures

The Periodic Table

23/01/2025

GROUPS

1 2

3 4 5 6 7 8

0

1 H hydrogen 1

2 He helium 4

3 B boron 11

4 C carbon 12

5 N nitrogen 14

6 O oxygen 16

7 F fluorine 19

8 Ne neon 20

9 Al aluminium 27

10 Si silicon 28

11 P phosphorus 31

12 S sulfur 32

13 Cl chlorine 35.5

14 Ar argon 40

15 K potassium 39

16 Ca calcium 40

17 Sc scandium 45

18 Ti titanium 48

19 V vanadium 51

20 Cr chromium 52

21 Mn manganese 55

22 Fe iron 56

23 Co cobalt 59

24 Ni nickel 59

25 Cu copper 63.5

26 Zn zinc 65

27 Ga gallium 70

28 Ge germanium 73

29 As arsenic 75

30 Se selenium 79

31 Br bromine 80

32 Kr krypton 84

33 Rb rubidium 86

34 Sr strontium 88

35 Y yttrium 89

36 Zr zirconium 91

37 Nb niobium 93

38 Mo molybdenum 96

39 Tc technetium [98]

40 Ru ruthenium 101

41 Rh rhodium 103

42 Pd palladium 106

43 Ag silver 108

44 Cd cadmium 112

45 In indium 115

46 Sn tin 119

47 Sb antimony 122

48 Te tellurium 128

49 I iodine 127

50 Xe xenon 131

51 Cs cesium 133

52 Ba barium 137

53 La* lanthanum 139

54 Hf hafnium 178

55 Ta tantalum 181

56 W tungsten 184

57 Re rhenium 186

58 Os osmium 190

59 Ir iridium 192

60 Pt platinum 196

61 Au gold 197

62 Hg mercury 201

63 Tl thallium 204

64 Pb lead 207

65 Bi bismuth 209

66 Po polonium [209]

67 At astatine [210]

68 Rn radon [222]

69 Fr francium [223]

70 Ra radium [226]

71 Ac* actinium [227]

72 Rf rutherfordium [261]

73 Db dubnium [262]

74 Sg seaborgium [266]

75 Bh bohrium [264]

76 Hs hassium [270]

77 Mt meitnerium [268]

78 Ds darmstadtium [271]

79 Rg roentgenium [272]

Atomic Number

Atomic Symbol

Name

Relative Atomic Mass

Alkali Metals

Alkaline Earth Metals

Transition Metals

Halogens

Nobel Gases

Cu and Cl have not been rounded to the nearest whole number

*The lanthanides and actinides (atomic numbers 90-103) have been omitted

[] Denotes radioactive elements

The Periodic Table

23/01/2025

Page 4

Starter:

1. What do you know about the Periodic table ?
2. Name any elements that you have heard of.
3. What do you think makes an “element” different from other chemical substances?

The Periodic Table of Elements

The Periodic Table is a list of all the different elements. The elements are specifically arranged within the table so that they are categorised into groups that have similar properties. The elements are listed in order of their atomic number. This is the number of protons in the nucleus of each atom. The atomic mass of the most abundant isotope of each element is also shown on the table.



The periodic table is organized into groups (columns) and periods (rows). The groups are numbered 1 through 18. The elements are arranged in order of increasing atomic number. The table includes the following elements:

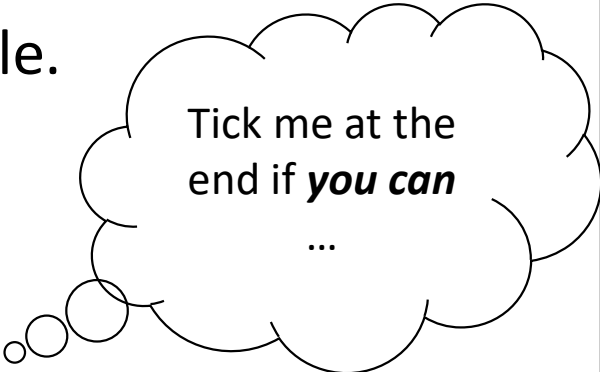
GROUPS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	H Hydrogen 1																	
2	Li Lithium 3	Be Beryllium 4																
3	Na Sodium 11	Mg Magnesium 12																
4	K Potassium 19	Ca Calcium 20	Sc Scandium 21	Ti Titanium 22	V Vanadium 23	Cr Chromium 24	Mn Manganese 25	Fe Iron 26	Co Cobalt 27	Ni Nickel 28	Cu Copper 29	Zn Zinc 30	Ga Gallium 31	Ge Germanium 32	As Arsenic 33	Se Selenium 34	Br Bromine 35	Kr Krypton 36
5	Rb Rubidium 37	Sr Strontium 38	Y Yttrium 39	Zr Zirconium 40	Nb Niobium 41	Mo Molybdenum 42	Tc Technetium 43	Ru Ruthenium 44	Rh Rhodium 45	Pd Palladium 46	Ag Silver 47	Cd Cadmium 48	In Indium 49	Sn Tin 50	Sb Antimony 51	Te Tellurium 52	I Iodine 53	Xe Xenon 54
6	Cs Cesium 55	Ba Barium 56	La Lanthanum 57	Hf Hafnium 58	Ta Tantalum 59	W Tungsten 60	Re Rhenium 61	Os Osmium 62	Ir Iridium 63	Pt Platinum 64	Au Gold 65	Hg Mercury 66	Tl Thallium 67	Pb Lead 68	Bi Bismuth 69	Po Polonium 70	At Astatine 71	Rn Radon 72
7	Fr Francium 87	Ra Radium 88	Ac Actinium 89	Rf Rutherfordium 90	Db Dubnium 91	Sg Seaborgium 92	Bh Bohrium 93	Hs Hassium 94	Mt Meitnerium 95	Ds Darmstadtium 96	Rg Roentgenium 97							

Learning Intentions:

- To learn that the periodic table organises elements by atomic number.
- To understand that an element is made of one type of atom.
- To learn to write symbols for elements using the periodic table.

Success Criteria

- ☐ I can state that the periodic table organises elements by atomic number.
- ☐ I can describe an element as being made of one type of atom.
- ☐ I can write symbols for elements using the periodic table.



Tick me at the
end if ***you can***

...

The Period Table

23/01/2025

The Periodic Table was first proposed by the Russian Chemist Dimitri Mendeleev.

Everything in the world is made of the 118 Elements in the Periodic table

Elements are arranged by atomic number.

He even left gaps for elements he said hadn't been developed yet!



Uses of the Elements

- Visit the Large periodic table on the wall upstairs in Science.
- Take your booklet and a pencil.
- Make a note of 4 elements that you've heard of...
- Write their "use" beside their name.
- Or use the QR code to access the interactive periodic table to do this.



Uses of the Elements

Element	Use

Uses of the Elements

- The Periodic table is used by all Scientists around the world. The elements were discovered in a variety of countries around the world. You might notice this when reading their names.

Discovery Nation

United Kingdom (24)	Austria (3)
United States (21)	Denmark (2)
Sweden (20)	Finland (1)
Germany (19)	Italy (1)
France (17)	Spain (1)
Russia/USSR (9)	Ancient Discovery

The periodic table displays elements 1 through 118. Each element's box contains its symbol, atomic number, and a flag representing the country of discovery. The legend indicates the following counts: United Kingdom (24), United States (21), Sweden (20), Germany (19), France (17), Russia/USSR (9), Austria (3), Denmark (2), Finland (1), Italy (1), and Spain (1). Elements marked 'KNOWN TO ANCIENTS' include B, C, N, O, P, S, Se, As, Te, Sb, Sn, Pb, Bi, Po, At, and Rn. The lanthanide series (Ce to Lu) and actinide series (Th to Lr) are shown at the bottom.

Some Interesting Periodic Table facts

Technetium was the first to be made artificially!

The only letter not in the periodic table is the letter J!

Francium is the rarest element on earth!

Hydrogen is the most common element found in the universe. It is also the lightest element!

The phrase 'mad hatter' comes from the element mercury, and mercury poisoning.

Do you know anymore?

Elements

An element is a substance made up of only one type of atom.



Element



Atom

Atoms

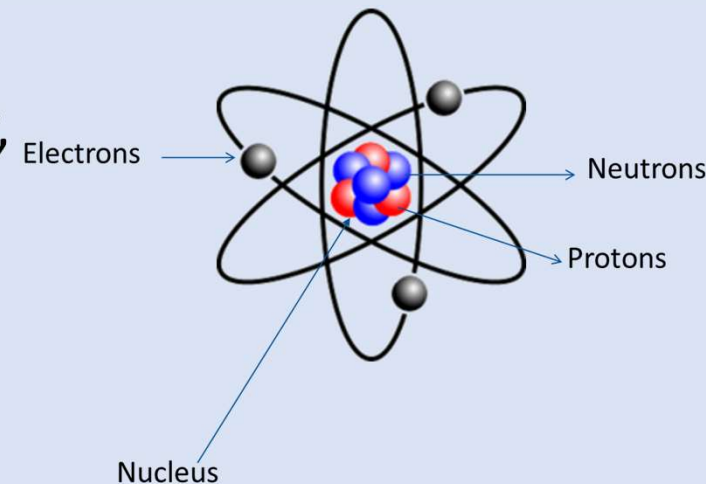
Everything that exists is made up of atoms!

(from the Greek word 'atomos' meaning uncuttable!)

An atom is the basic building block of any material.

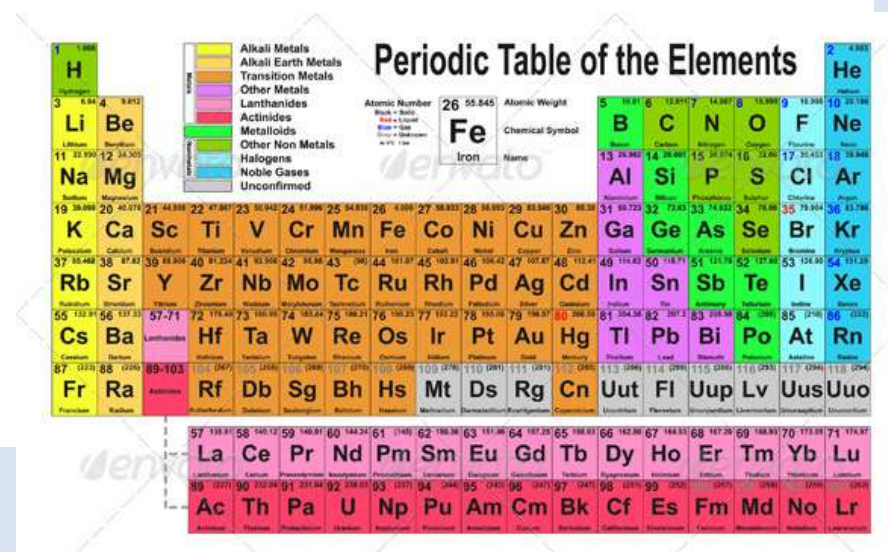
When something is broken up into smaller and smaller pieces, there come a point that it cannot be broken down any further.

An atom was thought to be the smallest unit of matter, but it is made up of even smaller particles ...



Element Symbols

- Each element has its own unique symbol.
- The first letter in the symbol must be CAPITAL letter.
- If there is a second letter in the symbol, this must be lower case.
- For Example, the symbol for Helium is He.



The image shows a standard periodic table of elements. It is color-coded by groups: Alkali Metals (yellow), Alkali Earth Metals (orange), Transition Metals (green), Lanthanides (light blue), Actinides (dark blue), Metalloids (purple), Other Non Metals (pink), Halogens (light green), Noble Gases (light blue), and Unconfirmed (grey). The table includes element symbols, names, atomic numbers, and atomic weights. A legend on the left side identifies the color-coding. The title 'Periodic Table of the Elements' is prominently displayed at the top right of the table.

Periodic Table of the Elements																	
1	2															3	4
H	He																
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Cs	Ba
57-71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
Lanthanides	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ra
89-103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Actinides	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo		
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu			
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr			

Element Symbols

Write down the symbol for:

Oxygen

Helium

Magnesium

Lithium

Hydrogen



Element Symbols

A few elements have symbols that come from the Latin name for the element.

- Write the symbol for:
Silver
Gold
Iron
- Can you find out what the Latin word **is** for:
Silver
Gold
Iron

Element Symbols

Activity – Matching elements to their Symbol

Use your Periodic Table to match the name and symbol. Circle the element name and connect to the *correct symbol*. Watch out for sneaky ones!

Magnesium

Pb

Au

Oxygen

O

Tin

Chlorine

S

Cl

Potassium

Phosphorous

P

Gold

Lead

Cu

K

Copper

Ga

Manganese

Sulphur

Sn

Sodium

Co

Na

Mn

Gallium

Cobalt

Mg

Element Symbols – Extension (cartoon elements)

Use the laminated periodic tables to write the element symbol and create the name of a cartoon character

Cartoon Elements

Use the periodic table to find the symbols for the groups of elements below.
Each group should spell a different cartoon character



Tungsten, oxygen, oxygen, dysprosium Woody

Phosphorus, iodine, nitrogen, nobelium, carbon, hydrogen, iodine, oxygen Pinochio

Rhenium, platinum, argon Reptar

Sulphur, hydrogen, rhenium, potassium Shrek

Argon, iodine, aluminium Arwel

Tin, oxygen, oxygen, phosphorus, yttrium Snoopy

Carbon, hydrogen, iodine, phosphorus Chip

Fluorine, lithium, potassium _____

Samarium, iodine, thorium, erbium, sulphur _____



Plenary – Element Bingo

Page 7

Write 6 elements from atomic number 1-20 on your bingo card.

The Periodic Table

Learning Intentions:

To learn:

- some of the ways elements can be categorised in the Periodic table.
- about the position of metal and non-metals elements in the periodic table.
- that a row is known as a period in the periodic table.
- that a column is known as a group in the periodic table.

The Periodic Table

Success Criteria

- ☐ I can state that the metal elements are found on the left-hand side of the periodic table.
- ☐ I can state that the non-metal elements are found on the right-hand side of the periodic table.
- ☐ I can use the periodic table to find information about elements.

Categorising the elements

The elements can be categorised in different ways. For example,

- Metals and non-metals
- Solids, liquids and gases

Metals and Non-metals

Page 9

- Use the laminated periodic table which categorises the elements as metals/non-metals.
- Use this to find out if an element is a metal or non-metal.
- Complete column 1 of the table

Column 1

Column 2

1
Hydrogen
H

3
Lithium
Li

11
Sodium
Na

19
Potassium
K

37
Rubidium
Rb

55
Caesium
Cs

87
Francium
Fr

4
Beryllium
Be

12
Magnesium
Mg

20
Calcium
Ca

38
Strontium
Sr

56
Barium
Ba

88
Radium
Ra

21
Scandium
Sc

39
Yttrium
Y

57
Lanthanum
La

89
Actinium
Ac

22
Titanium
Ti

40
Zirconium
Zr

72
Hafnium
Hf

104
Rutherfordium
Rf

23
Vanadium
V

41
Niobium
Nb

73
Tantalum
Ta

105
Dubnium
Db

24
Chromium
Cr

42
Molybdenum
Mo

74
Tungsten
W

106
Seaborgium
Sg

25
Manganese
Mn

43
Technetium
Tc

75
Rhenium
Re

107
Bohrium
Bh

26
Iron
Fe

44
Ruthenium
Ru

76
Osmium
Os

108
Hassium
Hs

27
Cobalt
Co

45
Rhodium
Rh

77
Iridium
Ir

109
Meitnerium
Mt

28
Nickel
Ni

46
Palladium
Pd

78
Platinum
Pt

110
Darmstadtium
Ds

29
Copper
Cu

47
Silver
Ag

79
Gold
Au

111
Roentgenium
Rg

30
Zinc
Zn

48
Cadmium
Cd

80
Mercury
Hg

112
Copernicium
Cn

31
Gallium
Ga

49
Indium
In

81
Thallium
Tl

113
Nihonium
Nh

32
Germanium
Ge

50
Tin
Sn

82
Lead
Pb

114
Flerovium
Fl

33
Arsenic
As

51
Antimony
Sb

83
Bismuth
Bi

115
Moscovium
Mc

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Selenium
Se

52
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Te

84
Polonium
Po

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Bromine
Br

53
Iodine
I

85
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117
Tennessine
Ts

36
Krypton
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54
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Xe

86
Radon
Rn

118
Ognessine
Og

2
Helium
He

10
Neon
Ne

18
Argon
Ar

36
Krypton
Kr

54
Xenon
Xe

86
Radon
Rn

118
Ognessine
Og

5
Boron
B

13
Aluminium
Al

31
Gallium
Ga

49
Indium
In

81
Thallium
Tl

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Nihonium
Nh

6
Carbon
C

14
Silicon
Si

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50
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Sn

82
Lead
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114
Flerovium
Fl

7
Nitrogen
N

15
Phosphorus
P

33
Arsenic
As

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Tantalum
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105
Dubnium
Db

24
Chromium
Cr

42
Molybdenum
Mo

74
Tungsten
W

106
Seaborgium
Sg

25
Manganese
Mn

43
Technetium
Tc

75
Rhenium
Re

107
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Fe

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Os

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Hassium
Hs

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Og

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Hydrogen
H

3
Lithium
Li

11
Sodium
Na

19
Potassium
K

37
Rubidium
Rb

55
Caesium
Cs

87
Francium
Fr

4
Beryllium
Be

12
Magnesium
Mg

20
Calcium
Ca

38
Strontium
Sr

56
Barium
Ba

88
Radium
Ra

21
Scandium
Sc

39
Yttrium
Y

57
Lanthanum
La

89
Actinium
Ac

22
Titanium
Ti

40
Zirconium
Zr

72
Hafnium
Hf

104
Rutherfordium
Rf

23
Vanadium
V

41
Niobium
Nb

73
Tantalum
Ta

105
Dubnium
Db

24
Chromium
Cr

42
Molybdenum
Mo

74
Tungsten
W

106
Seaborgium
Sg

25
Manganese
Mn

43
Technetium
Tc

75
Rhenium
Re

107
Bohrium
Bh

26
Iron
Fe

44
Ruthenium
Ru

76
Osmium
Os

108
Hassium
Hs

27
Cobalt
Co

45
Rhodium
Rh

77
Iridium
Ir

109
Meitnerium
Mt

28
Nickel
Ni

46
Palladium
Pd

78
Platinum
Pt

110
Darmstadtium
Ds

29
Copper
Cu

47
Silver
Ag

79
Gold
Au

111
Roentgenium
Rg

30
Zinc
Zn

48
Cadmium
Cd

80
Mercury
Hg

112
Copernicium
Cn

31
Gallium
Ga

49
Indium
In

81
Thallium
Tl

113
Nihonium
Nh

32
Germanium
Ge

50
Tin
Sn

82
Lead
Pb

114
Flerovium
Fl

33
Arsenic
As

51
Antimony
Sb

83
Bismuth
Bi

115
Moscovium
Mc

34
Selenium
Se

52
Tellurium
Te

84
Polonium
Po

116
Livermorium
Lv

35
Bromine
Br

53
Iodine
I

85
Astatine
At

117
Tennessine
Ts

36
Krypton
Kr

54
Xenon
Xe

86
Radon
Rn

118
Ognessine
Og

2
Helium
He

10
Neon
Ne

18
Argon
Ar

36
Krypton
Kr

54
Xenon
Xe

86
Radon
Rn

118
Ognessine
Og

5
Boron
B

13
Aluminium
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Gallium
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Indium
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Thallium
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Nh

6
Carbon
C

14
Silicon
Si

32
Germanium
Ge

50
Tin
Sn

82
Lead
Pb

114
Flerovium
Fl

7
Nitrogen
N

15
Phosphorus
P

33
Arsenic
As

51
Antimony
Sb

83
Bismuth
Bi

115
Moscovium
Mc

8
Oxygen
O

16
Sulfur
S

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Selenium
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Krypton
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Xenon
Xe

86
Radon
Rn

118
Ognessine
Og

1
Hydrogen
H

3
Lithium
Li

11
Sodium
Na

19
Potassium
K

37
Rubidium
Rb

55
Caesium
Cs

87
Francium
Fr

4
Beryllium
Be

12
Magnesium
Mg

20
Calcium
Ca

38
Strontium
Sr

56
Barium
Ba

88
Radium
Ra

21
Scandium
Sc

39
Yttrium
Y

57
Lanthanum
La

89
Actinium
Ac

22
Titanium
Ti

40
Zirconium
Zr

72
Hafnium
Hf

104
Rutherfordium
Rf

23
Vanadium
V

41
Niobium
Nb

73
Tantalum
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Dubnium
Db

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Chromium
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Ognessine
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Yttrium
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Actinium
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Ti

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Zirconium
Zr

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Hafnium
Hf

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Rutherfordium
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Manganese
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Technetium
Tc

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Rhenium
Re

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Bohrium
Bh

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Iron
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Ruthenium
Ru

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Osmium
Os

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Hassium
Hs

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Rhodium
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Iridium
Ir

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Meitnerium
Mt

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Nickel
Ni

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Palladium
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Platinum
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Cu

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Zinc
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Cadmium
Cd

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Mercury
Hg

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Copernicium
Cn

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Gallium
Ga

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Indium
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Thallium
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Nihonium
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Germanium
Ge

50
Tin
Sn

82
Lead
Pb

114
Flerovium
Fl

33
Arsenic
As

51
Antimony
Sb

Key



Metal

Non-metal

Solids, liquids and gases

- Use the laminated periodic table which categorises the elements as solids/liquids/gases.
- Use this to find out if an element is a solid, liquid or gas.
- Complete column 2 of the table.

1

Hydrogen

H

2

Helium

He

3

Lithium

Li

4

Beryllium

Be

11

Sodium

Na

12

Magnesium

Mg

19

Potassium

K

20

Calcium

Ca

37

Rubidium

Rb

38

Strontium

Sr

55

Caesium

Cs

56

Barium

Ba

87

Francium

Fr

88

Radium

Ra

21

Scandium

Sc

39

Yttrium

Y

57

Lanthanum

La

89

Actinium

Ac

22

Titanium

Ti

40

Zirconium

Zr

72

Hafnium

Hf

104

Rutherfordium

Rf

23

Vanadium

V

41

Niobium

Nb

73

Tantalum

Ta

105

Dubnium

Db

24

Chromium

Cr

42

Molybdenum

Mo

74

Tungsten

W

106

Seaborgium

Sg

25

Manganese

Mn

43

Technetium

Tc

75

Rhenium

Re

107

Bohrium

Bh

26

Iron

Fe

44

Ruthenium

Ru

76

Osmium

Os

108

Hassium

Hs

27

Cobalt

Co

45

Rhodium

Rh

77

Iridium

Ir

109

Meitnerium

Mt

28

Nickel

Ni

46

Palladium

Pd

78

Platinum

Pt

110

Darmstadtium

Ds

29

Copper

Cu

47

Silver

Ag

79

Gold

Au

111

Roentgenium

Rg

30

Zinc

Zn

48

Cadmium

Cd

80

Mercury

Hg

112

Copernicium

Cn

5

Boron

B

13

Aluminium

Al

31

Gallium

Ga

49

Indium

In

81

Thallium

Tl

6

Carbon

C

14

Silicon

Si

32

Germanium

Ge

50

Tin

Sn

82

Lead

Pb

7

Nitrogen

N

15

Phosphorus

P

33

Arsenic

As

51

Antimony

Sb

83

Bismuth

Bi

8

Oxygen

O

16

Sulfur

S

34

Selenium

Se

52

Tellurium

Te

84

Polonium

Po

9

Fluorine

F

17

Chlorine

Cl

35

Bromine

Br

53

Iodine

I

85

Astatine

At

10

Neon

Ne

18

Argon

Ar

36

Krypton

Kr

54

Xenon

Xe

86

Radon

Rn

114

Flerovium

Fl

116

Livermorium

Lv

58

Cerium

Ce

90

Thorium

Th

59

Praseodymium

Pr

91

Protactinium

Pa

60

Neodymium

Nd

92

Uranium

U

61

Promethium

Pm

93

Neptunium

Np

62

Samarium

Sm

94

Plutonium

Pu

63

Europium

Eu

95

Americium

Am

64

Gadolinium

Gd

96

Curium

Cm

65

Terbium

Tb

97

Berkelium

Bk

66

Dysprosium

Dy

98

Californium

Cf

67

Holmium

Ho

99

Einsteinium

Es

68

Erbium

Er

100

Fermium

Fm

69

Thulium

Tm

101

Mendelevium

Md

70

Ytterbium

Yb

102

Nobelium

No

71

Lutetium

Lu

103

Lawrencium

Lr

Key

Atomic Number

Name of Element

Symbol

●

■

Categorising elements

use both of your Periodic Tables to decide if the Element is a metal or a non-metal and a solid/liquid/gas.

Element	Metal/non-metal	Solid/liquid/gas
Oxygen		
Aluminium		
Sodium		
Helium		
Bromine		
Mercury		
Hydrogen		

Page 9

- [illegible]

Groups in the Periodic table

Key

Atomic Number
Name of Element
Symbol

TRANSITION METALS

1 Hydrogen H	2 Helium He
3 Lithium Li	4 Beryllium Be
11 Sodium Na	12 Magnesium Mg
19 Potassium K	20 Calcium Ca
37 Rubidium Rb	38 Strontium Sr
55 Caesium Cs	56 Barium Ba
87 Francium Fr	88 Radium Ra
21 Scandium Sc	22 Titanium Ti
23 Vanadium V	24 Chromium Cr
25 Manganese Mn	26 Iron Fe
27 Cobalt Co	28 Nickel Ni
29 Copper Cu	30 Zinc Zn
31 Gallium Ga	32 Germanium Ge
33 Arsenic As	34 Selenium Se
35 Bromine Br	36 Krypton Kr
49 Indium In	50 Tin Sn
51 Antimony Sb	52 Tellurium Te
81 Thallium Tl	82 Lead Pb
83 Bismuth Bi	84 Polonium Po
85 Astatine At	86 Radon Rn
114 Flerovium Fl	116 Livermorium Lv

58-71

58 Cerium Ce	59 Praseodymium Pr	60 Neodymium Nd	61 Promethium Pm	62 Samarium Sm	63 Europium Eu	64 Gadolinium Gd	65 Terbium Tb	66 Dysprosium Dy	67 Holmium Ho	68 Erbium Er	69 Thulium Tm	70 Ytterbium Yb	71 Lutetium Lu
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90-103

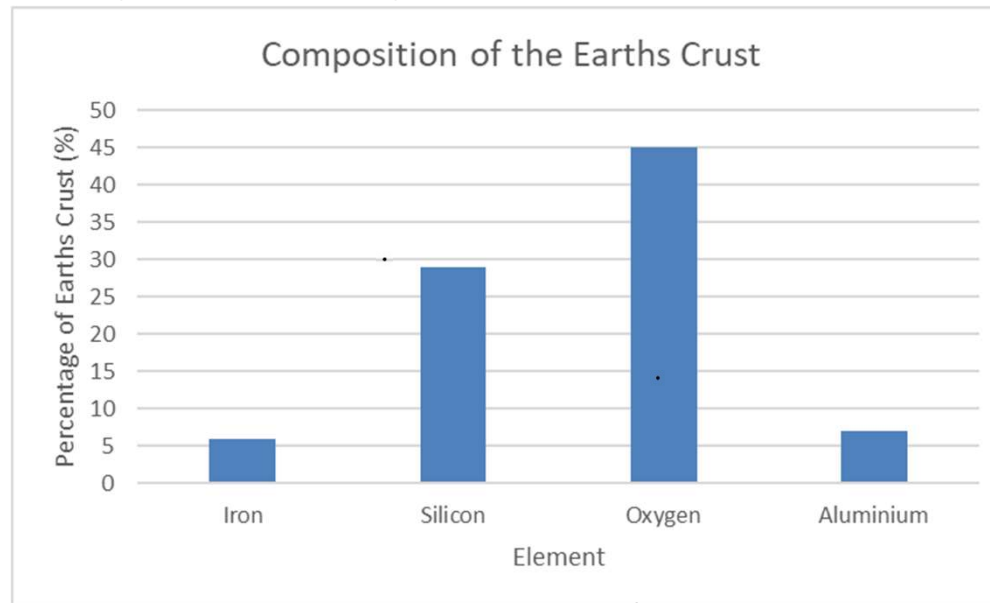
90 Thorium Th	91 Protactinium Pa	92 Uranium U	93 Neptunium Np	94 Plutonium Pu	95 Americium Am	96 Curium Cm	97 Berkelium Bk	98 Californium Cf	99 Einsteinium Es	100 Fermium Fm	101 Mendelevium Md	102 Nobelium No	103 Lawrencium Lr
---------------------	--------------------------	--------------------	-----------------------	-----------------------	-----------------------	--------------------	-----------------------	-------------------------	-------------------------	----------------------	--------------------------	-----------------------	-------------------------

Alkali metals Halogens Noble gases

Skills – Interpreting a graph

Page ?

The graph shows the composition of elements in the earth's crust. Use the graph to answer the questions in your booklet.



1. Name the most common element in the earth's crust.
2. State the percentage of the earth's crust that is made from Iron.
3. State the element that makes up 7% of the earth's crust?

Plenary – Spot the errors

Use your coloured in Periodic table in your booklet to help you answer these questions. Circle the error and make the correction.

Example: hydrogen has the symbol ^Hh and is a gas.

1. Nitrogen has the symbol N and is a metal element.
2. Carbon has the symbol ca and is a non-metal element.
3. Lithium has the symbol li and is a metal element.
4. Sodium has the symbol Na and is a liquid metal.

Reactivity of Metals

23/01/2025

Page 11

Starter:

- Using your periodic table:
- Give an example of a metal.
 - Give an example of a non-metal gas.
 - Give an example of a liquid metal.
 - Write symbol for each of your elements

The Periodic Table of Elements

The Periodic Table is a list of all the different elements. The elements are specifically arranged within the table so that they are categorised into groups that have similar properties. The elements are listed in order of their atomic number. This is the number of protons in the nucleus of each atom. The atomic mass of the most abundant isotope of each element is also shown on the table.



GROUPS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

1 H Hydrogen 1

2 He Helium 4

3 Li Lithium 7 4 Be Beryllium 9 5 B Boron 11 6 C Carbon 12 7 N Nitrogen 14 8 O Oxygen 16 9 F Fluorine 19 10 Ne Neon 20

11 Na Sodium 23 12 Mg Magnesium 24 13 Al Aluminium 27 14 Si Silicon 28 15 P Phosphorus 31 16 S Sulphur 32 17 Cl Chlorine 35.5 18 Ar Argon 40

19 K Potassium 39 20 Ca Calcium 40 21 Sc Scandium 45 22 Ti Titanium 48 23 V Vanadium 51 24 Cr Chromium 52 25 Mn Manganese 55 26 Fe Iron 56 27 Co Cobalt 59 28 Ni Nickel 58.7 29 Cu Copper 63.5 30 Zn Zinc 65 31 Ga Gallium 70 32 Ge Germanium 72 33 As Arsenic 75 34 Se Selenium 79 35 Br Bromine 80 36 Kr Krypton 84

37 Rb Rubidium 85 38 Sr Strontium 88 39 Y Yttrium 89 40 Zr Zirconium 91 41 Nb Niobium 93 42 Mo Molybdenum 96 43 Tc Technetium 98 44 Ru Ruthenium 101 45 Rh Rhodium 103 46 Pd Palladium 106 47 Ag Silver 108 48 Cd Cadmium 112 49 In Indium 115 50 Sn Tin 119 51 Sb Antimony 122 52 Te Tellurium 128 53 I Iodine 127 54 Xe Xenon 131

55 Cs Cesium 133 56 Ba Barium 137 57 La Lanthanum 139 58 Ce Cerium 140 59 Pr Praseodymium 141 60 Nd Neodymium 144 61 Pm Promethium 145 62 Sm Samarium 150 63 Eu Europium 152 64 Gd Gadolinium 157 65 Tb Terbium 159 66 Dy Dysprosium 163 67 Ho Holmium 165 68 Er Erbium 167 69 Tm Thulium 169 70 Yb Ytterbium 173 71 Lu Lutetium 175 72 Hf Hafnium 178 73 Ta Tantalum 181 74 W Tungsten 184 75 Re Rhenium 187 76 Os Osmium 190 77 Ir Iridium 192 78 Pt Platinum 195 79 Au Gold 197 80 Hg Mercury 201 81 Tl Thallium 204 82 Pb Lead 207 83 Bi Bismuth 209 84 Po Polonium 209 85 At Astatine 210 86 Rn Radon 222

87 Fr Francium 223 88 Ra Radium 226 89 Ac Actinium 227 90 Th Thorium 232 91 Pa Protactinium 231 92 U Uranium 238 93 Np Neptunium 237 94 Pu Plutonium 244 95 Am Americium 243 96 Cm Curium 247 97 Bk Berkelium 247 98 Cf Californium 251 99 Es Einsteinium 252 100 Fm Fermium 257 101 Md Mendelevium 258 102 No Nobelium 259 103 Lr Lawrencium 262

104 Rf Rutherfordium 261 105 Db Dubnium 262 106 Sg Seaborgium 266 107 Bh Bohrium 264 108 Hs Hassium 277 109 Mt Meitnerium 268 110 Ds Darmstadtium 271 111 Rg Roentgenium 272

Cu and Cl have not been rounded to the nearest whole number
*The lanthanides and actinides (atomic numbers 58-103) have been omitted
† Denotes radioactive elements

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Learning Intentions:

- To learn that metals do not all react in the same way.
- To learn about the different reactivity of metals with water.

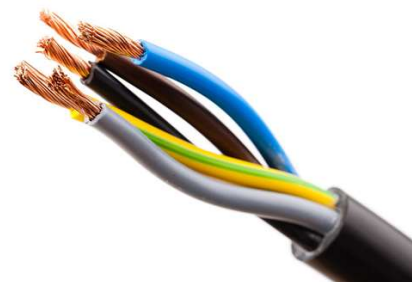
Success Criteria

- ☐ I can state that metals have different reactivities.
- ☐ I can perform an experiment safely.
- ☐ I can describe my observations in an experiment.

Reactivity of Metals

23/01/2025

Think about the metals we see in the world around us.



Reactivity of Metals with Water

One way that we can experimentally show that metals have different reactivities is to react them with water and compare the results.

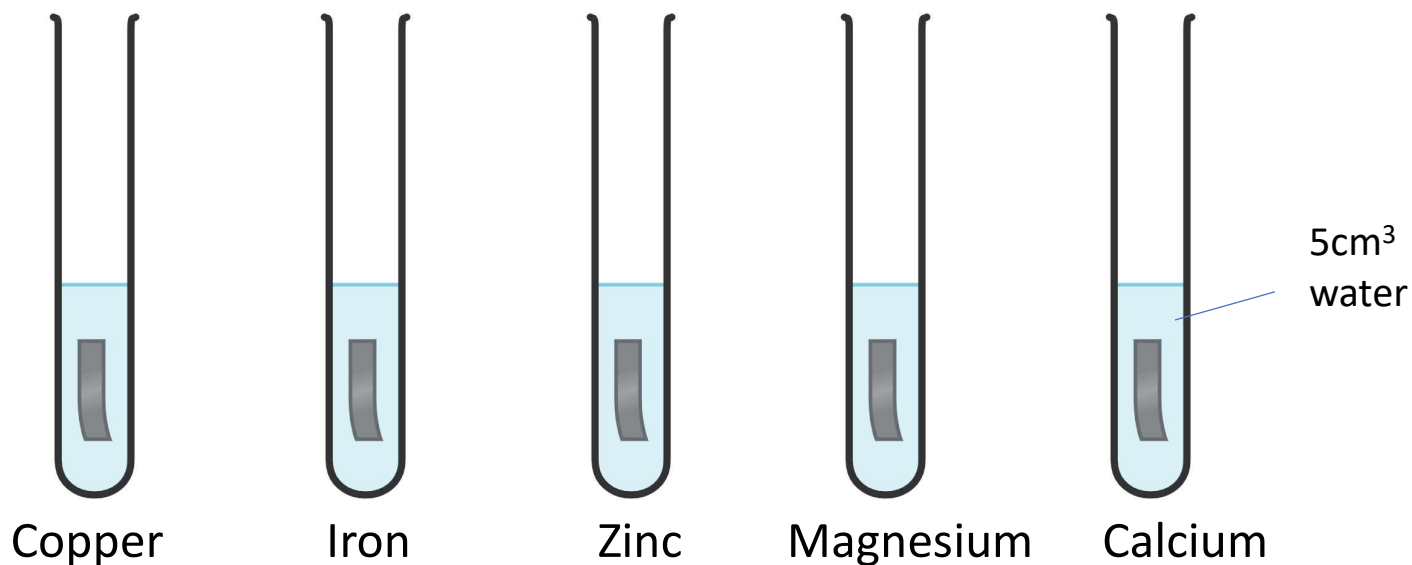
Think about the metals you use at home that come into contact with water. Do you see them react?

Reactivity of Metals with Water - Part 1 Pupil experiment

Aim

To find out which metal is most reactive with water.

Method Part 1: *Draw method*



Reactivity of Metals with Water - Part 1 Pupil experiment

Results: (Record your observations)

Metal	What do you see?	Order of reactivity
copper		
iron		
zinc		
magnesium		
calcium		
lithium (teacher)		
sodium (teacher)		
potassium (teacher)		

Reactivity of Metals with Water - Part 1 Pupil experiment

Metal	What do you see?	Order of reactivity
copper	No reaction	
iron	No reaction	
zinc	No reaction	
magnesium	No reaction	
calcium	Fizzing, bubbling, 'pops' with a lit splint	
lithium (teacher)		
sodium (teacher)		
potassium (teacher)		

Remaining metals will be reacted with water by your teacher next lesson.

Starter:

1 State the symbol for

- a. Magnesium
- b. Calcium
- c. Zinc
- d. Iron
- e. Copper

2. When these metals were added to water which ones reacted?

Reaction of Metals with Water

Learning Intentions:

Continue to learn about the different reactivity of metals with water.

Reaction of Metals with Water

Success Criteria

- ☐ I can state that metals have different reactivities.
- ☐ I can identify patterns of reactivity.
- ☐ I can perform an experiment safely.
- ☐ I can describe my observations in an experiment.

Reaction of Metals with Water- part 2 teacher demo

Method Part 2: *Draw method*



Watch your teacher demonstrate the reaction of the alkali metals with water

Reactivity of Metals with Water - Part 2 Teacher demo

Metal	What do you see?	Order of reactivity
copper	No reaction	
iron	No reaction	
zinc	No reaction	
magnesium	No reaction	
calcium	Fizzing, bubbling, 'pops' with a lit splint	
lithium (teacher)	Fizzing gas given off	
sodium (teacher)	Fizzes, metal balls fizzes in the water	
potassium (teacher)	Catches fire, burns with a lilac flame	

Record your results and number the elements in order to most reactive (1) to least reactive (8)

Reactivity of Metals with Water

Complete your lab report by writing your conclusion.

Conclusion: *Answer your aim*

Starter:

- 1) Why is jewellery made from silver and gold?
- 2) Why are your water pipes not made from gold?
- 3) Why do you think magnesium is not a good metal to make the forth road bridge?

Reaction of Metals with Acid

Learning Intentions:

To learn about the different reactivity of metals with acid.

Reactivity of Metals with Acid

Success Criteria

- ☐ I can state that some metals react with acids.

Reactivity of Metals with Acid

Acid rain is a pollution problem which can corrode buildings and damage trees and lakes.



Strong acids react with some metals.

Reactivity of Metals with Acid

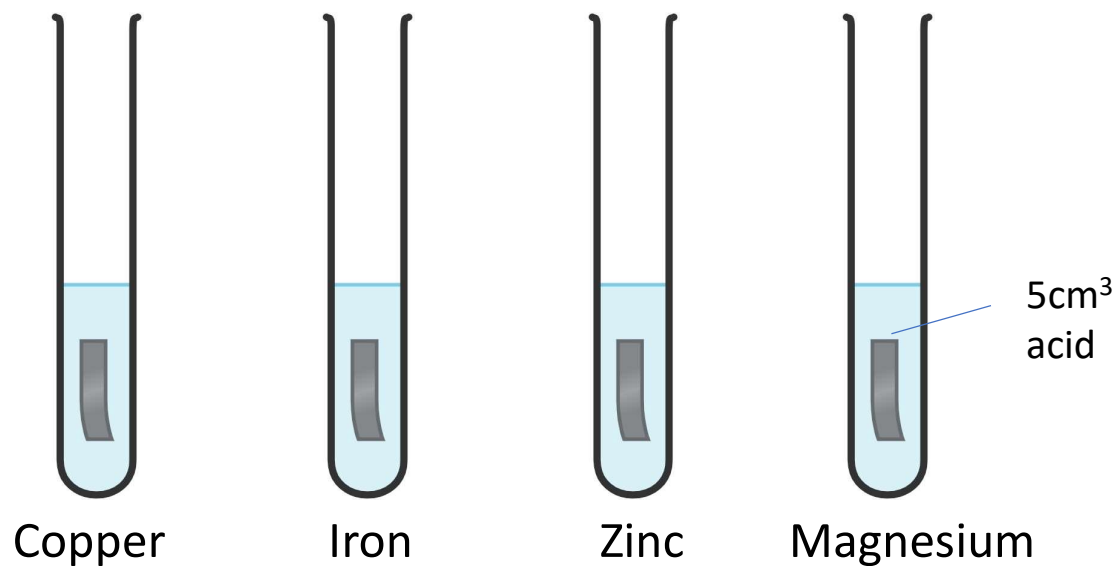
By reacting metals with an acid, we can compare the reactivity of the metal.

Reactivity of Metals with Acid

Aim

To find out which metal is most reactive with acid.

Method: *Draw method*



Reactivity of Metals with Acid

Results:

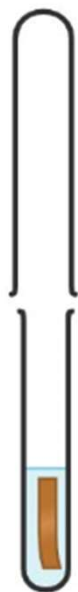
Metal	What do you see?	Order of reactivity
Magnesium	Some fizzing giving off hydrogen gas. Test tube gets warm.	
Zinc	Little bit of fizzing giving off hydrogen gas.	
Iron	Some bubbles of hydrogen gas	
Copper	No reaction.	

Conclusion: *Answer your aim*

Testing for Hydrogen (optional)

We can prove that the gas formed was Hydrogen by testing the gas with a lit splint. If Hydrogen is present this will burn with a squeaky pop.

1. Collect the gas formed when metal reacts with Hydrochloric acid



2. Test the gas with a lit splint



Plenary

Page 14

Predict what would happen if sodium reacted with acid.

Extension – Word equations

Word equation:

reactive metal + acid \longrightarrow metal salt + hydrogen

Hydrochloric acid + copper \longrightarrow copper chloride + hydrogen

Hydrochloric acid + zinc \longrightarrow _____ + hydrogen

Hydrochloric acid + magnesium \longrightarrow _____ + _____

Starter – True or false

1. Copper makes a good electrical wire because it can conduct electricity. _____
2. Sodium would make a poor cooking pot because it is so reactive. _____
3. Potassium makes a good metal for jewellery because its unreactive. _____

Learning Intentions:

To learn about the conductivity of different materials.

Properties of elements

Success Criteria

- ☐ I can state that substances that do not conduct electricity are known as insulators.
- ☐ I can state that metals are good conductors of electricity.

Conductors

Conductivity is a property that some elements have. It is another way that we can categorise elements in the periodic table.

Conductors of electricity have uses in Electronics, computing and Communication.

Substances that do not conduct electricity are known as insulators.

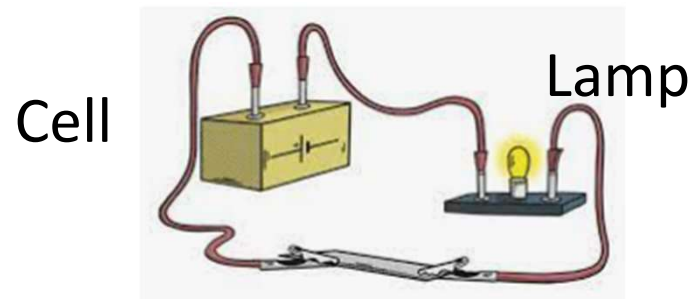
Conductors

Aim

To test the conductivity of a set of substances and determine if they are conductors or insulators.

Conductors

Method



Cell

Lamp

Test
material

Draw a circuit diagram for your method

Conductors

Results

Conductors	Insulators

Determine which elements are metals/non-metals to help you make a conclusion for your experiment.

Conductors

Conclusion

Conductors	Insulators

Plenary

Complete the passage using word from the word bank

_____ are good conductors of electricity. Metals can be found on the _____ side of the periodic table. _____ are not conductors of electricity, these are described as _____. These are found on the _____ side of the periodic table. The exception to this is _____ which is a conductor.

Word bank

Left Right graphite Non-metal Metals Insulator

Starter

1. Put these metals in order of reactivity: Copper, Potassium, Magnesium
2. Complete the word equation:

_____ + hydrochloric acid → Magnesium chloride + hydrogen
3. Describe how you could prove that Hydrogen was produced.

Learning Intentions:

- To learn that when metal elements are burned they produce a specific colour, this is called a flame test.
- Flame tests can be used to identify metal elements.

Identifying Elements

Success Criteria

- ☐ I can use flame colours to identify elements.

Identifying Elements

When elements are burned, they produce specific colours. The colours they produce can be used to identify the element. Astronomers use a similar technique to identify which elements are present in distant stars.

Today you will test some metal samples and observe the flame colour. You can then use this information to identify the metal present in 3 unknown samples.



Identifying Elements

Page 18

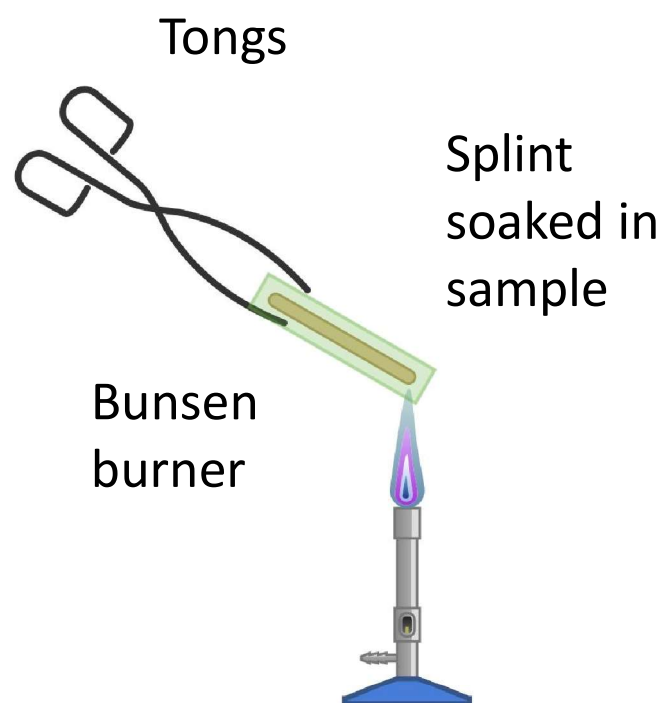
Aim

To identify the metal present in 3 unknown samples, using flame colour data.

Identifying Elements

Page 18

Method



Identifying Elements

Results	Metal	Colour
	Unknown 1	
	Unknown 2	

Identifying Elements

Conclusion

In conclusion unknown sample A was found to contain _____. Whilst unknown sample B contains _____.

Starter:

1. What is the name of the “chart” that shows all the known elements?
2. Why is this “chart” laid out in a particular way?
3. What term describes a vertical column?

Elements, Compounds and Mixtures 23/01/2025

Learning Intentions

To learn about elements, compounds and mixtures and the differences between them.

Elements, Compounds and Mixtures 23/01/2025

Success Criteria

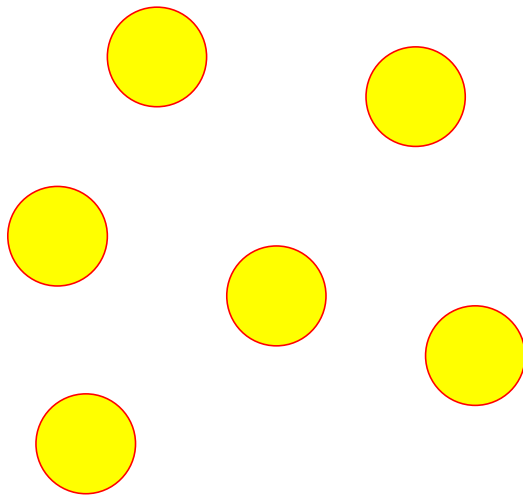
- ☐ I can state that an element is composed of only 1 type of atom.
- ☐ I can state that a mixture is composed of two or more substances that are not chemically linked.

Elements

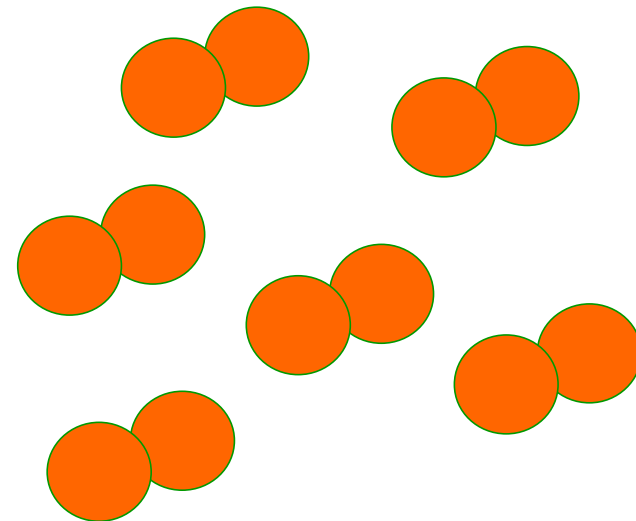
23/01/2025

An element is a substance made up of only one type of atom.

Elements are found in the Periodic Table.



Element 1

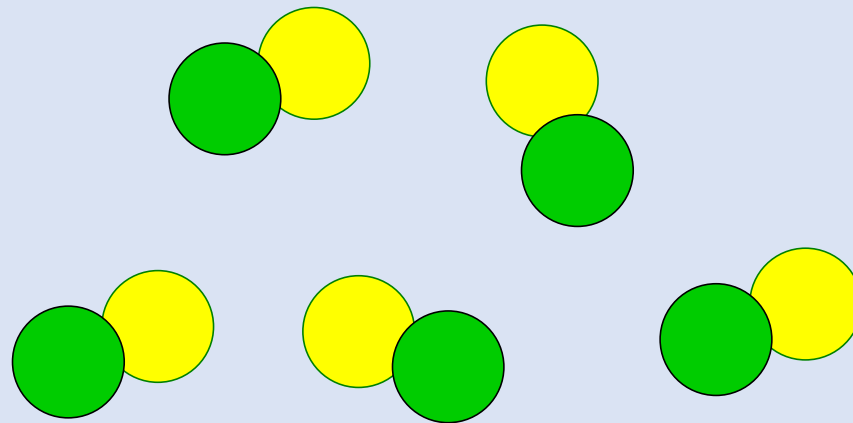


Element 2

Compounds

23/01/2025

A compound is made of two or more atoms that are chemically linked to each other

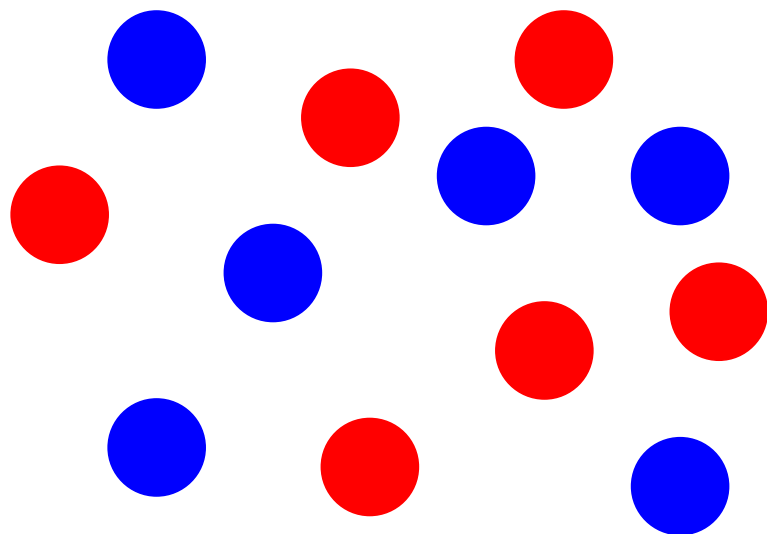


Compound

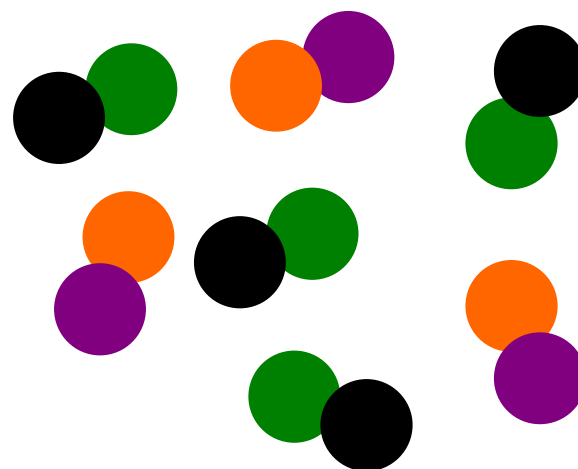
Mixtures

23/01/2025

Contains atoms and/or compounds that are mixed but not chemically joined together.



2 elements mixed



2 compounds mixed

Element, Compound or Mixture

23/01/2025

For the following slides, decide if the picture is showing:

An element

A compound

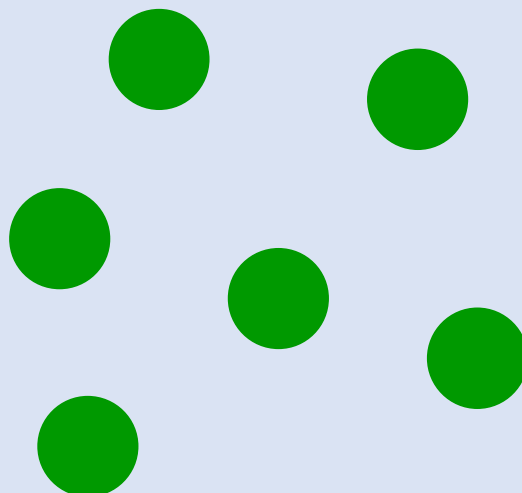
A mixture

If it is a mixture, what is it a mixture of..?

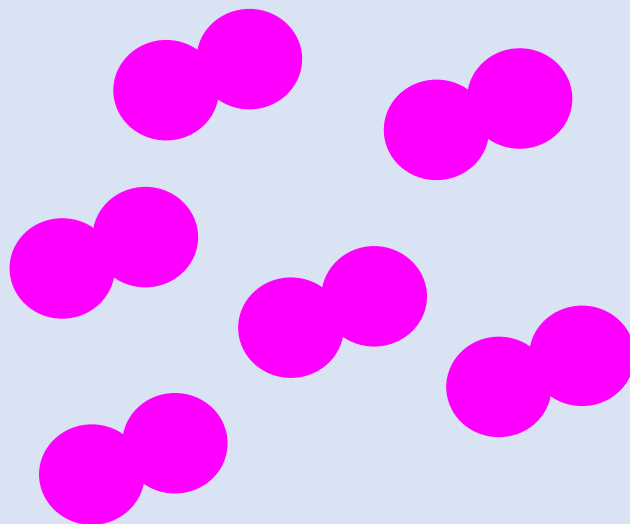
Complete the table in your booklet.



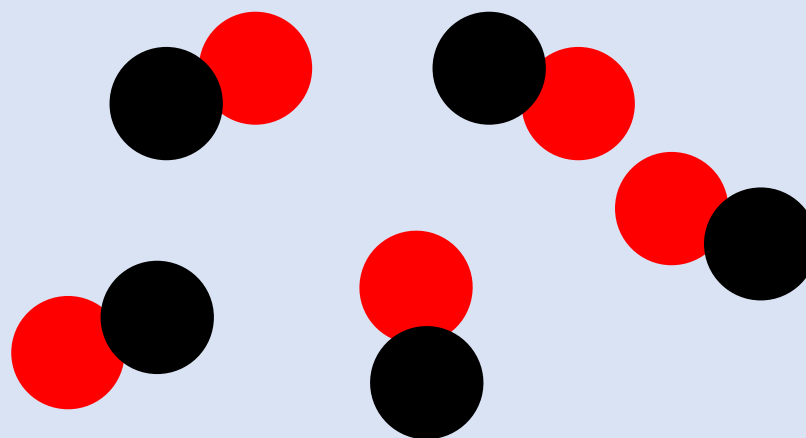
1



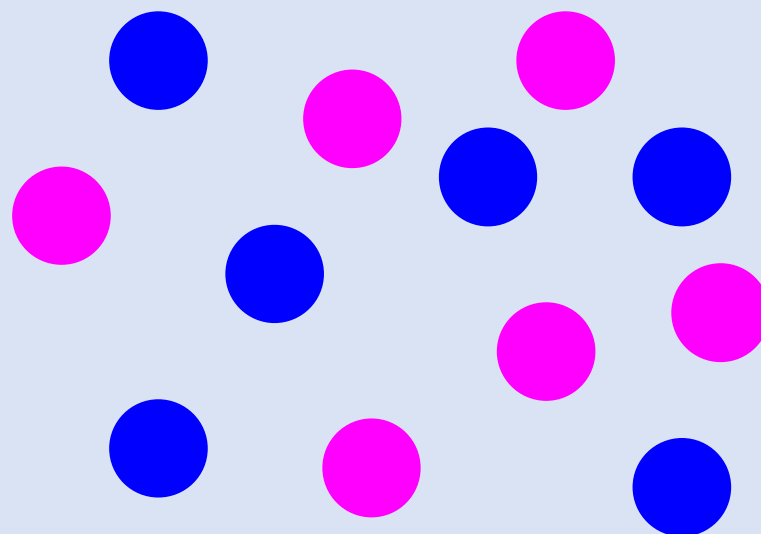
2



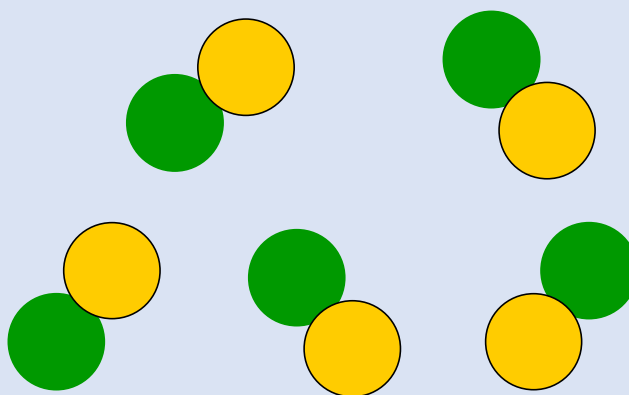
3



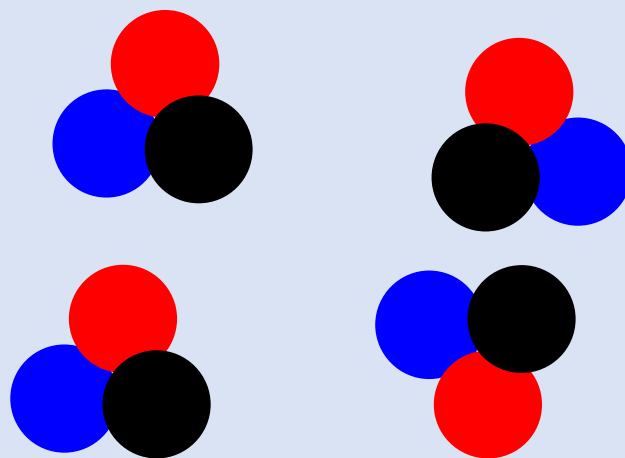
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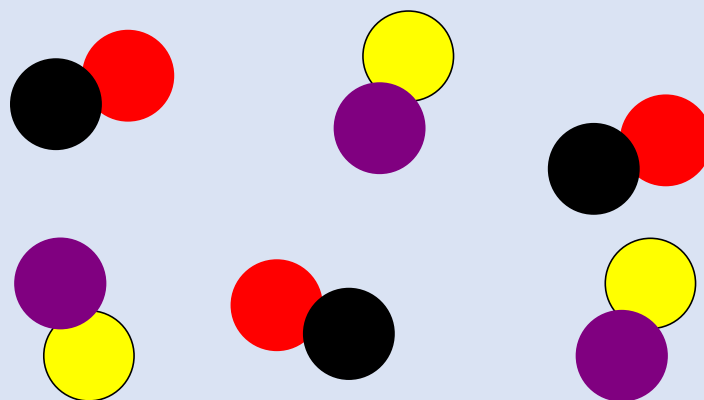
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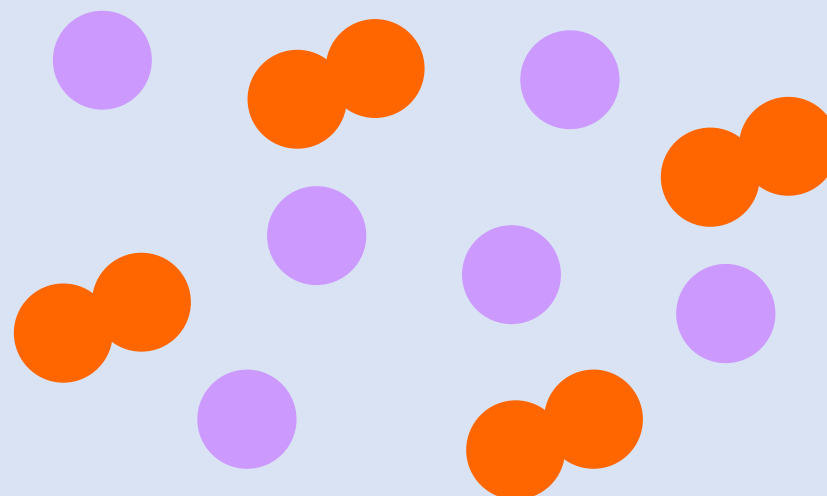
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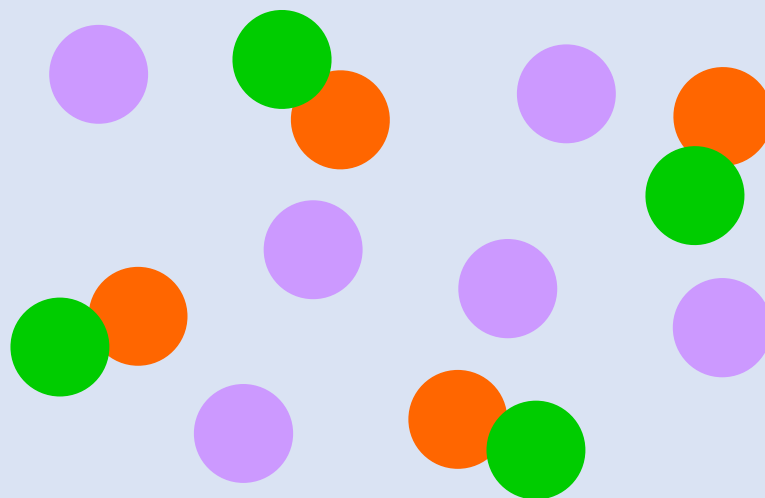
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8



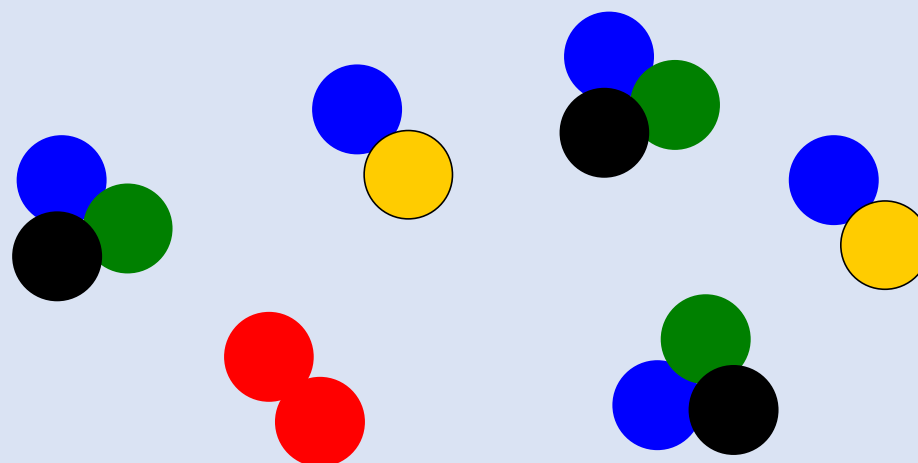
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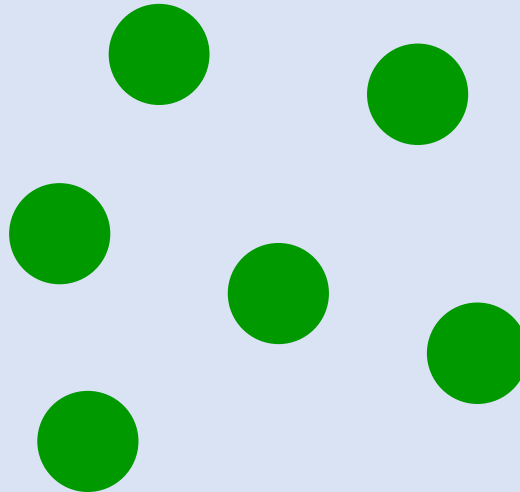
Element, Compound or Mixture

23/01/2025

10

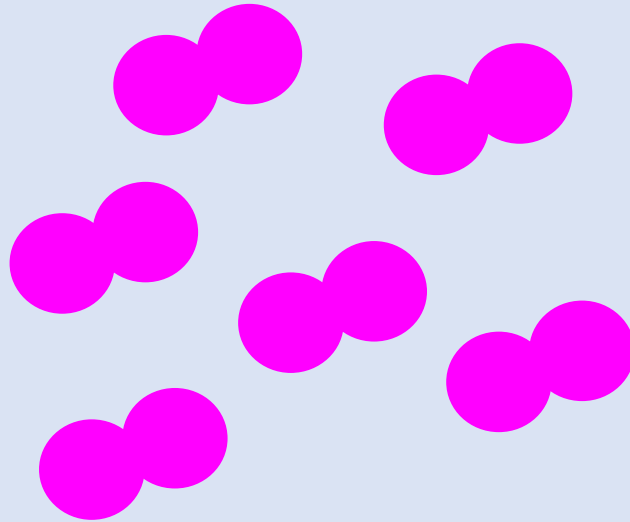


1



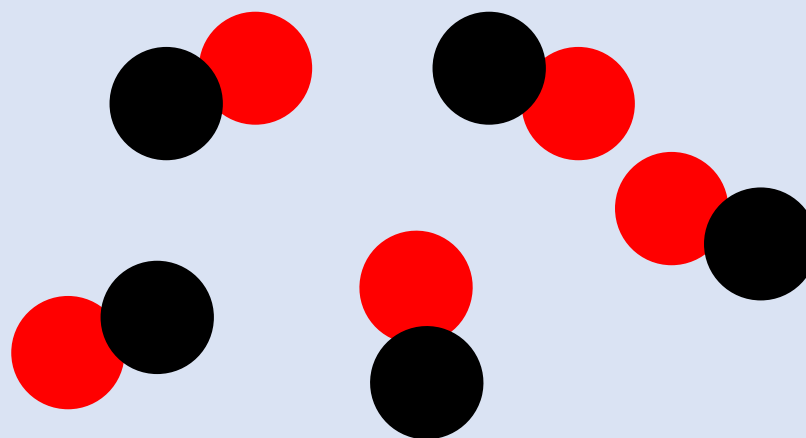
An element

2



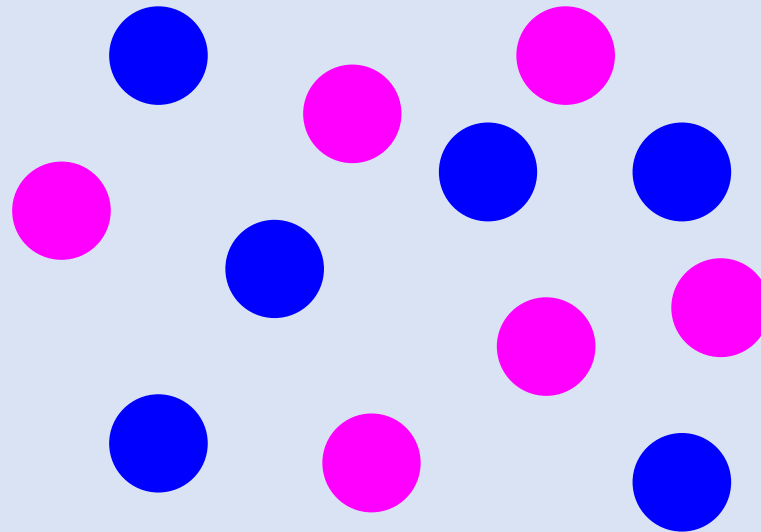
An element

3



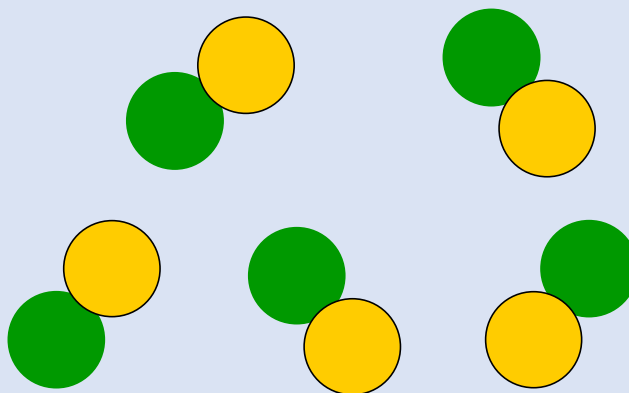
A compound

4



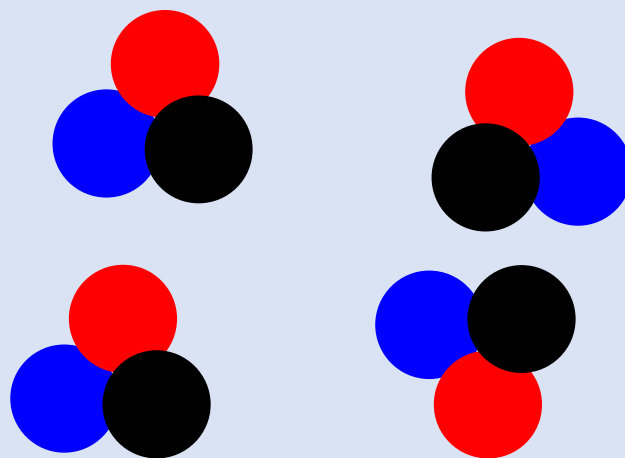
A mixture of two elements

5



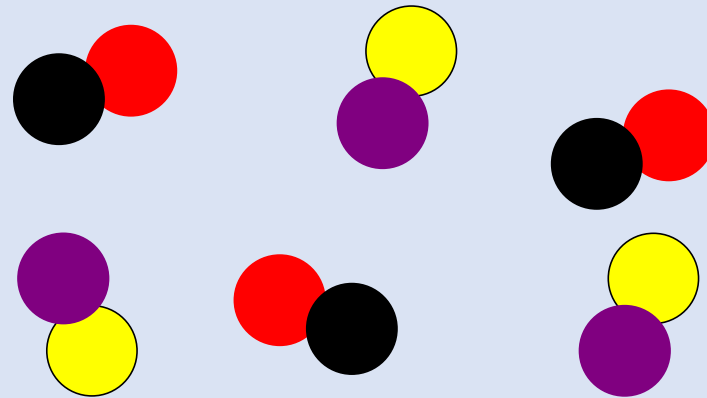
A compound

6



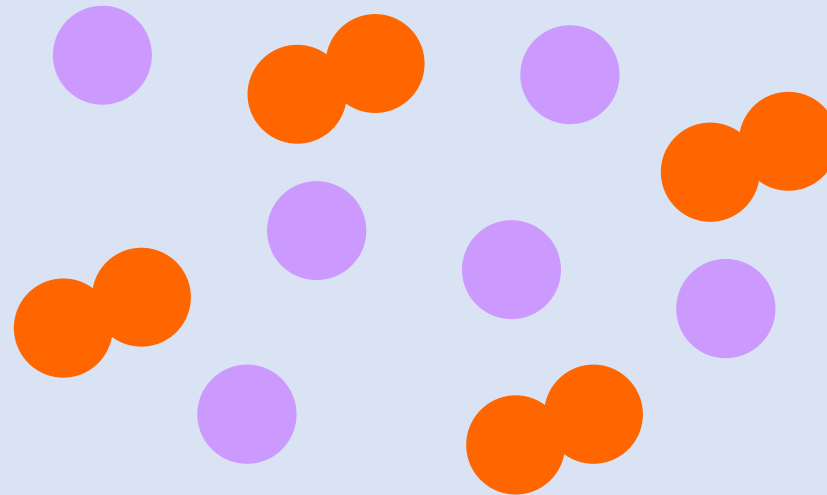
A compound

7



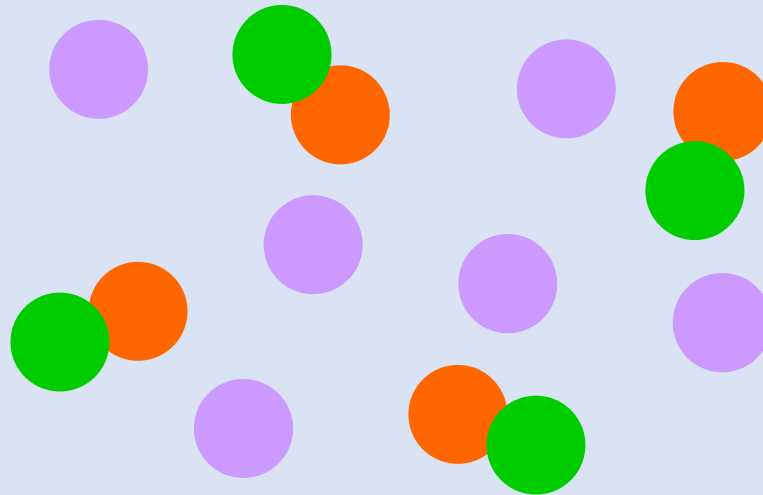
A mixture of two compounds

8



A mixture of two elements

9

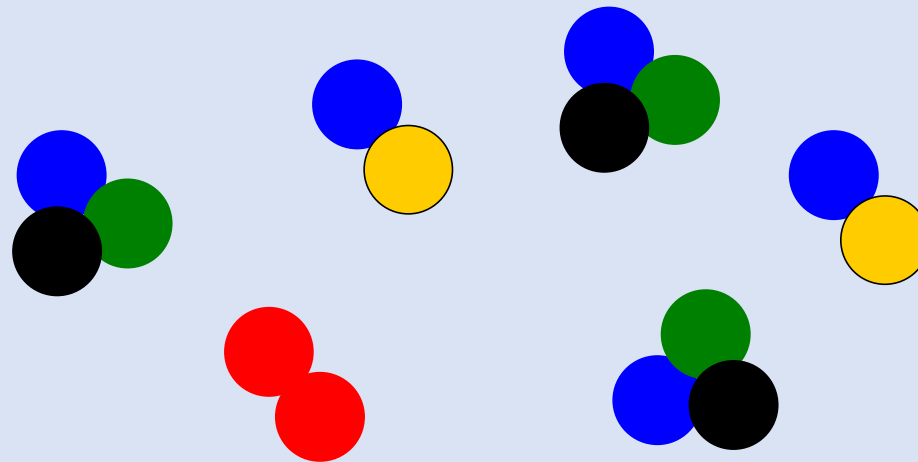


A mixture of an element and a compound

Answers – Check your work

23/01/2025

10



A mixture of an element and two compounds

Element
Mixture
Compound

You have already learned about Elements of the Periodic Table.

How can we make a mixture?



- Mixtures contain 2 or more substances that are **not** chemically joined.
- Mixtures can be separated easily as the atoms are not chemically joined.



Activity: Collect a tube containing an iron and sulfur mixture and a magnet.



- Record what happens when the magnet is held close to the container?

- The mixture of Iron and Sulfur can be separated using a



- Mixtures can be separated when there is a **difference in properties** between the two substances.

Match the word with the meaning!

1. An element is..

a) not chemically
joined and can be
separated

2. A mixture is..

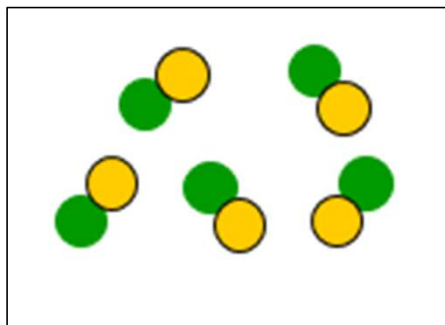
b) two or more atoms of
different elements joined
together chemically

3. A compound is..

c) made of only one type
of atom

Starter:

1. Does this particle diagram show an element, compound or a mixture?



2. Explain your answer to question 1.

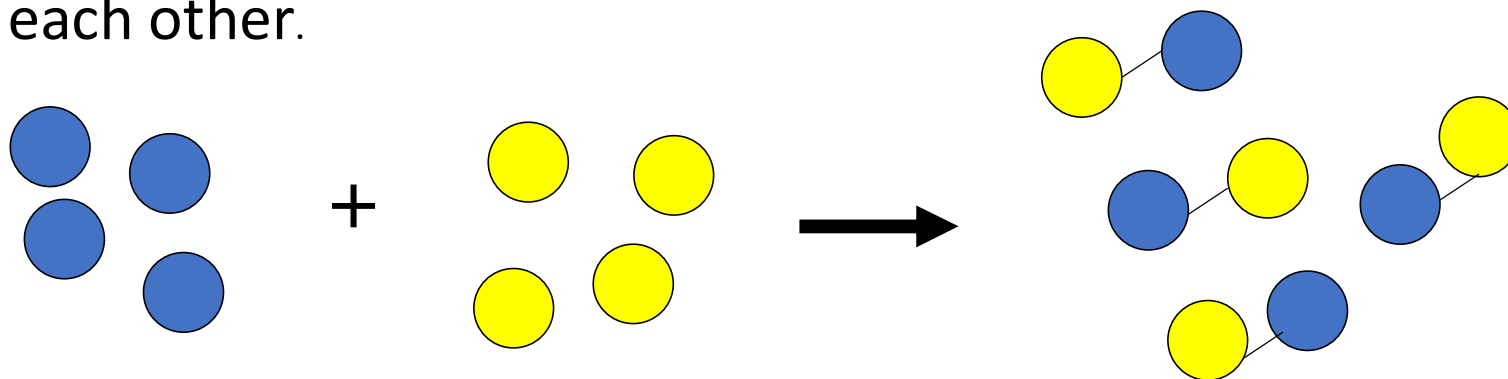
Learning Intentions

- To learn that compounds are made of elements that are chemically linked to each other.
- Compounds cannot be separated into their parts easily.

Success Criteria

- ☐ I can state that a compound is made of two or more elements that are chemically connected to each other.
- ☐ I can state that compounds are not easily separated in their parts.

Making a compound often needs energy to make the elements **react** and **connect** to each other.



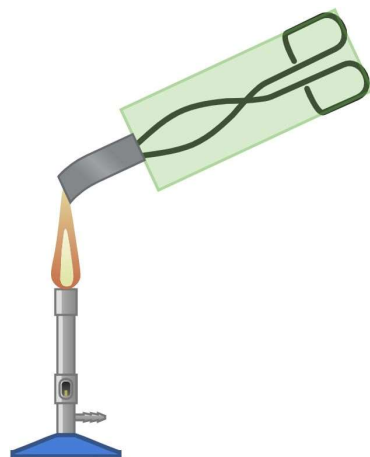
+



Aim

To make compounds and write word equations.

Method *Draw method*



1. Light a Bunsen burner on a safety flame.
2. Use a blue flame for burning the magnesium and copper.
3. Using tongs, burn a piece of Magnesium ribbon in oxygen
4. Using tongs, burn a piece of Copper in oxygen

Results

Element	Starting Colour	End Colour	Compound Formed
Magnesium			
Copper			

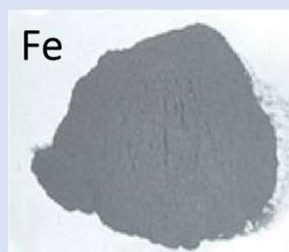
Word Equation

Copper + Oxygen \longrightarrow Copper oxide

Write the word equation for Magnesium reacting with Oxygen

State 2 differences between a compound and a mixture

Element



Mixture



Compound



Starter:

1. Magnesium costs £3.00 per meter. One meter of Magnesium can be cut into 20 x 5cm strips.
Calculate the cost per strip (you can use a calculator).
2. Calculate the cost if 240 strips are needed by the science department.

Learning Intentions

To learn how to name elements in compounds.

Success Criteria

- ☐ I can name a compound made from 2 elements.
- ☐ I can name a compound made from 3 elements where one element is oxygen.

Naming Compounds with 2 Elements 23/01/2025

Compounds containing two elements end with **-ide**

Metal name goes first, followed by the non metal element. The non-metal element takes the ending ide.

Example:

Compound

lithium chloride

magnesium oxide

Elements

lithium and chlorine

magnesium and oxygen

Naming Compounds with 2 Elements 23/01/2025

Name the following compounds made from the following elements.

Element 1	Element2	Name of compound
iron	sulphur	
magnesium	nitrogen	
sodium	chlorine	
tin	oxygen	
aluminium	bromine	
nickel	iodine	
zinc	sulphur	
lithium	nitrogen	

Identify the elements in the following compounds?

1. Sodium fluoride
2. Lithium bromide
3. Calcium oxide
4. Aluminium chloride
5. Phosphorus sulphide
6. Caesium chloride

Naming Compounds with 3 Elements 23/01/2025

Page 25

Compounds containing two element AND oxygen end in **-ite** or **-ate**

First part of the name comes from the metal, then the non-metal, then add the suffix ate at the end for Oxygen.

Example:

Compound

copper sulfate

sodium sulfite

Elements

copper, sulfur and oxygen

sodium, sulfur and oxygen

Naming Compounds with 3 Elements 23/01/2025

Which elements are in the following compounds?

Element 1	Element 2	Element 3	Name of Compound
Potassium	Nitrogen	Oxygen	
Sodium	Sulfur	Oxygen	
Beryllium	Phosphate	Oxygen	
Aluminium	Chlorine	Oxygen	
Phosphorus	Oxygen	Sulfur	
Caesium	Nitrogen	Oxygen	
Oxygen	Copper	Sulfur	

Which elements are in the following compounds?

1. Sodium nitrate
2. Lithium sulphate
3. Calcium phosphate
4. Aluminium chlorate
5. Phosphorus sulfite
6. Caesium nitrite

Fill in the blanks in the tables below – to check your understanding

Elements in the compound	Compound Name
Sodium, chlorine	
Beryllium, oxygen	
Potassium, Nitrogen, oxygen	

Elements in the compound	Compound Name
	Magnesium fluoride
	Zinc oxide
	Copper sulfate

Starter

Name the compound made from the following elements?

1. Sodium and chlorine

2. Iron and nitrogen

3. Magnesium, sulfur and oxygen

4. Copper, nitrogen and oxygen

Learning Intentions

- To learn about different techniques to separate compounds.

Success Criteria

- ☐ I can state that it is not easy to separate compounds into elements.
- ☐ Energy is often need to break apart elements in a compound.

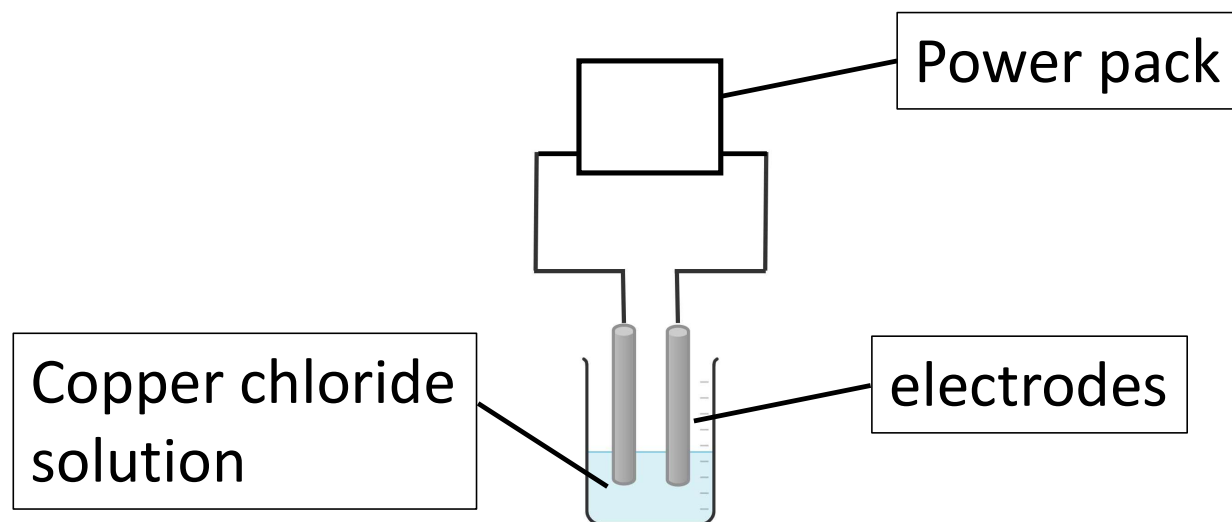
- The connections between elements in a compound are called chemical bonds.
- These are strong and often require energy to be used to break these connections.
- The energy can be supplied as heat, light or electricity.



Aim

To find out if Copper Chloride can be separated into the elements copper and chlorine using electricity.

Method *Draw and label method.*



1. Connect the cables to D.C Supply Power.
2. Apply a voltage of 6 V across the circuit.
3. Observe what happens at either carbon electrode.

Results

	Observations	
	Before the experiment	After the experiment
POSITIVE carbon rod		
NEGATIVE carbon rod		

Conclusion

When copper chloride is electrolysed, a brown solid (____) forms at the _____ electrode and bubbles of a gas which smells like the swimming pool (____) is produced at the _____ electrode.

1. Complete the word equation:

Copper chloride \longrightarrow _____ + Chlorine

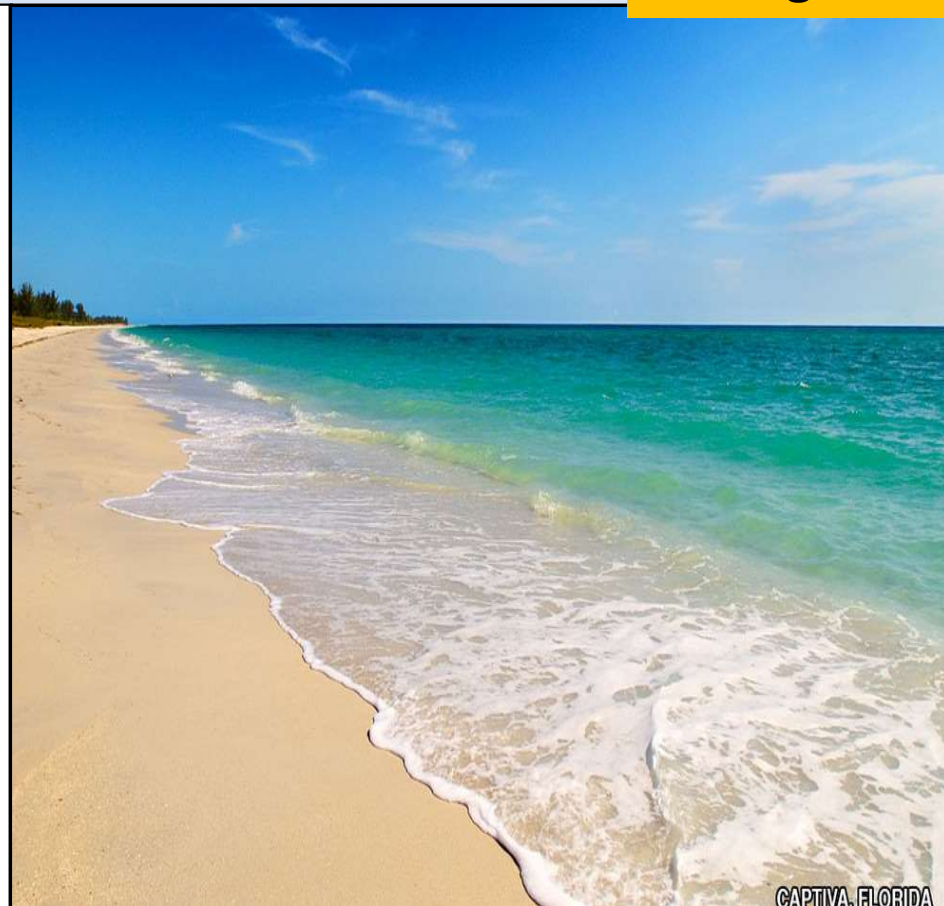
2. Identify the compound in the word equation.

3. Identify the elements.

4. Is it easy to break apart compounds?

Starter

1. How would you separate salt from sea water?
2. How would you separate sand from sea water?
3. Describe the meaning of the word soluble.
4. Describe the meaning of the word insoluble.



Learning Intentions

- to use different separation techniques.
- To learn how to plan your own experiment
- To safely perform an experiment.
- To separate salt from salt water.

Success Criteria

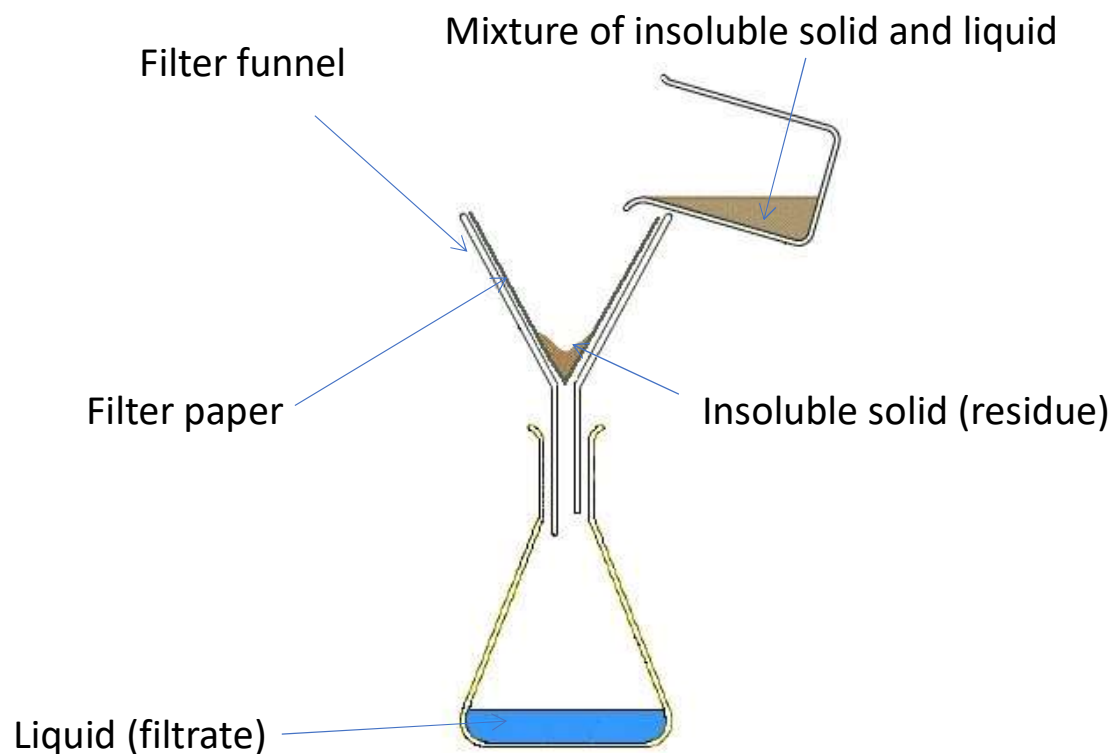
- ☐ I can plan my experiment.
- ☐ I can safely perform a filtration experiment.
- ☐ I can safely perform an evaporation experiment.

- A pure substance is made up of only one component.
- The differences in properties will determine the method of purification that can be used.
- Filtration is used to separate an insoluble solid from a liquid.
- Evaporation is used to remove a liquid from a soluble solid.

Filtration

23/01/2025

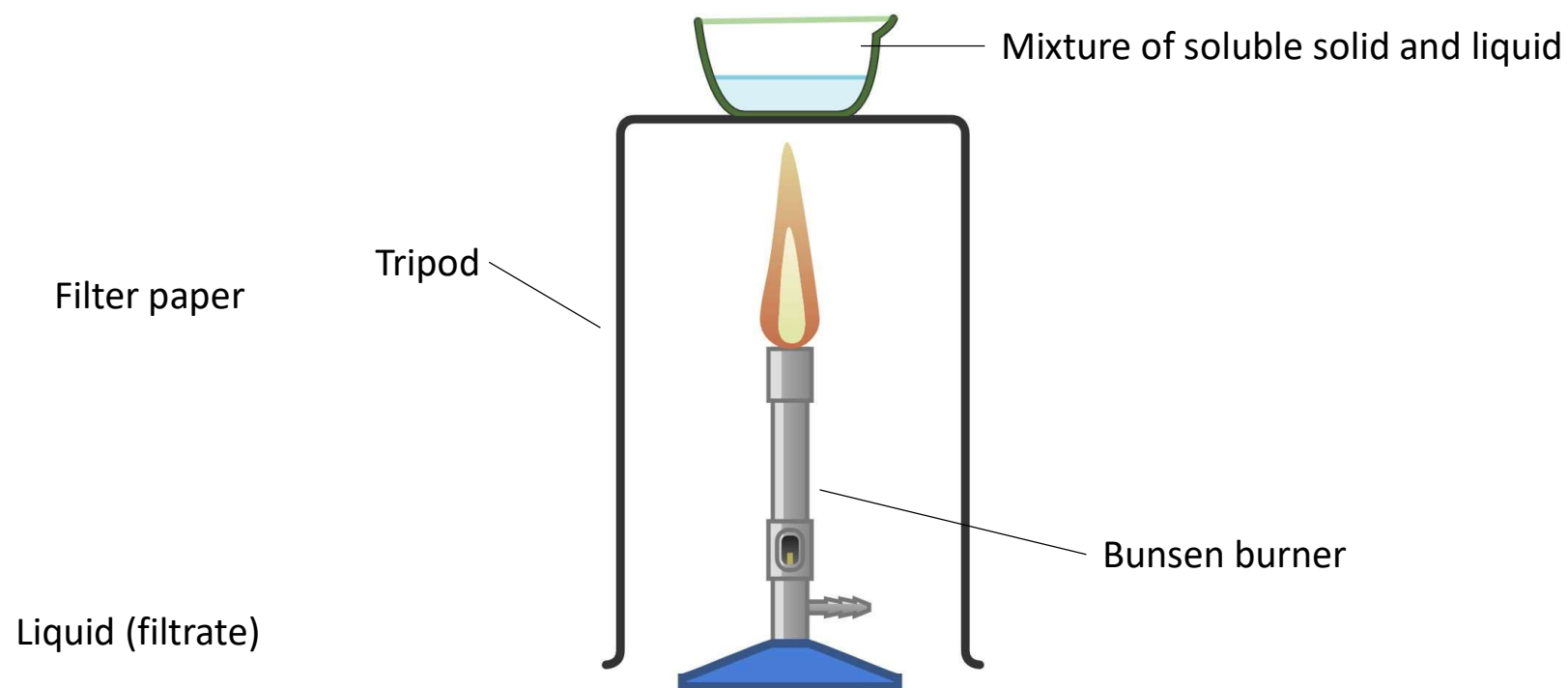
Filtration is used to separate an insoluble solid from a liquid. Solid is collected in the filter paper and the liquid is collected in the flask.



Evaporation

23/01/2025

Evaporation is used to remove a liquid from a soluble solid.



Aim

To investigate how to make pure salt from rock salt (solid that contains sand, salt).

You will investigate the best way to make a pure sample of salt.

Aim

To investigate how to make pure salt

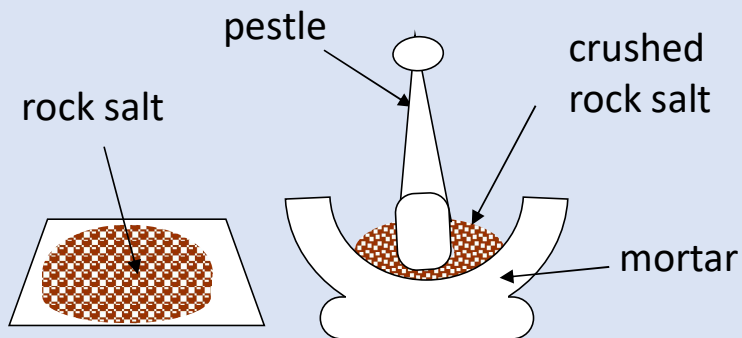
Method

Results

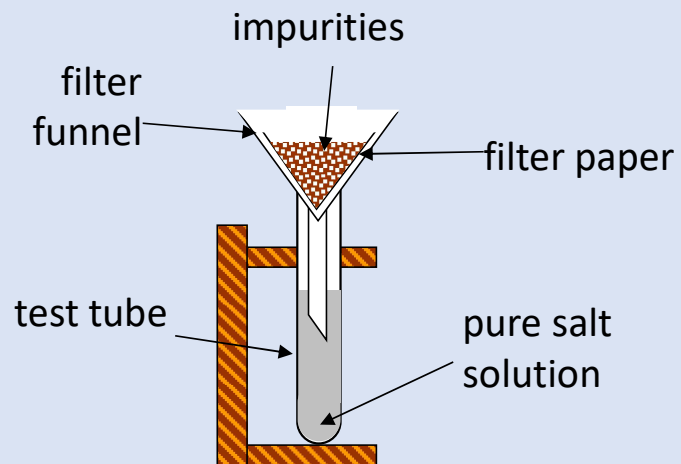
Conclusion: *How can you make pure salt (use the word soluble or insoluble)? What techniques did you use?*

Method

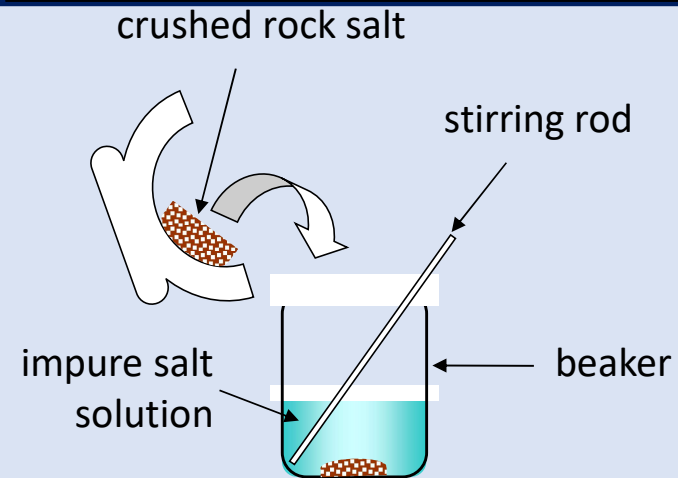
Step 1: Collect and crush a small amount of rock salt



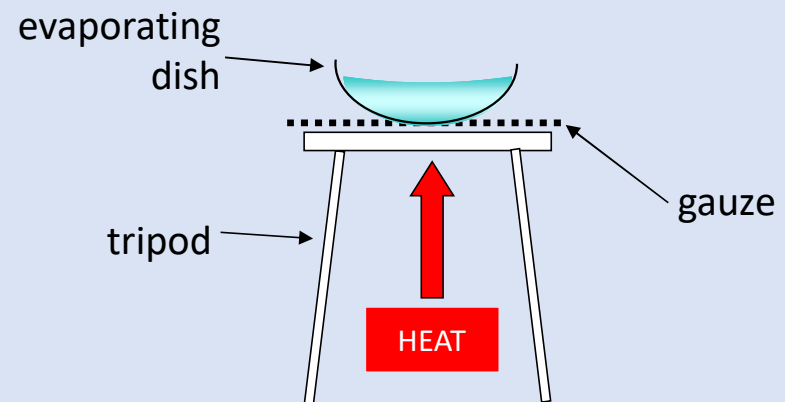
Step 3: Filter the impure salt solution.



Step 2: Dissolve the salt in 50ml of water



Step 4: Evaporate half the water from the pure salt solution



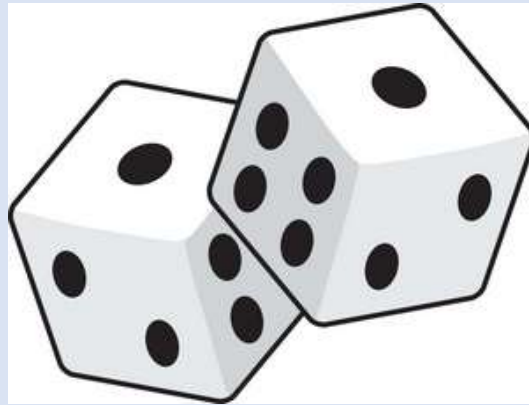
Results

Purification step	Observations

Conclusion

1. Write down everything that you can remember from this lesson.

The Plenary Dice



2. Write down two things you want to know more about

3. You will be given a key word, you must write everything you know about this word.

4. Write a question regarding today's lesson, then you may get to choose someone to answer your question.

5. Describe this lesson in 5 words

6. Name a skill that you have used in this lesson.

Put the picture cards in order

Starter

1. How would you separate salt from sea water?
2. How would you separate sand from sea water?
3. Describe the meaning of the word soluble.
4. Describe the meaning of the word insoluble.



Learning Intentions

- To learn about Chromatography as a separation technique.

Success Criteria

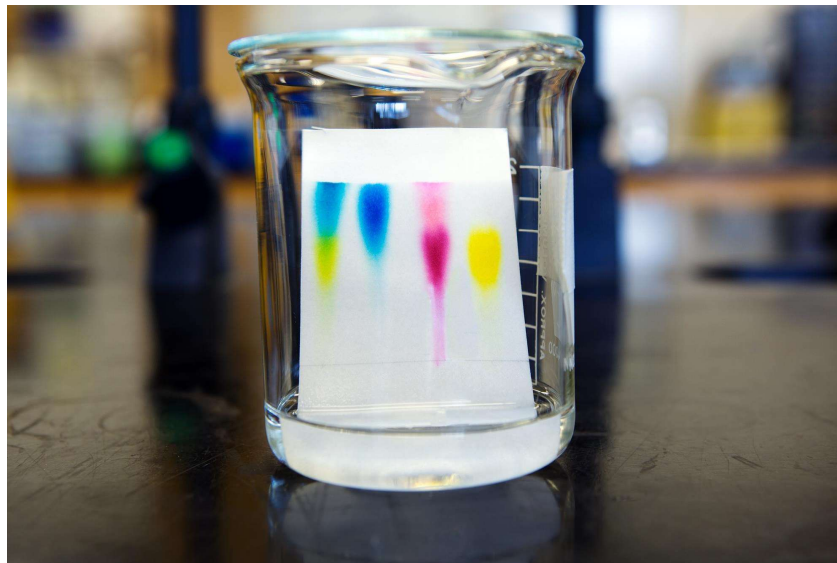
- ☐ I can perform a chromatography experiment.
- ☐ I can state that chromatography can be used to separate mixture in solution.

Chromatography

23/01/2025

Chromatography means colour writing!

It is used to separate a mixture of coloured or non-coloured substances that are soluble in the same solvent.

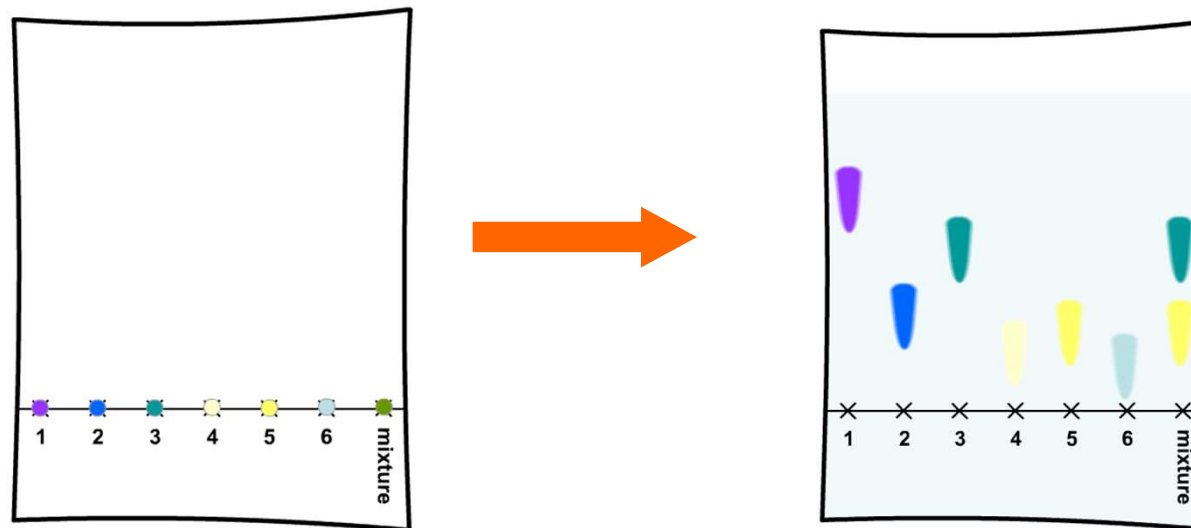


Chromatography

23/01/2025

Chromatography means colour writing!

It is used to separate a mixture of substances that are soluble in the same solvent.

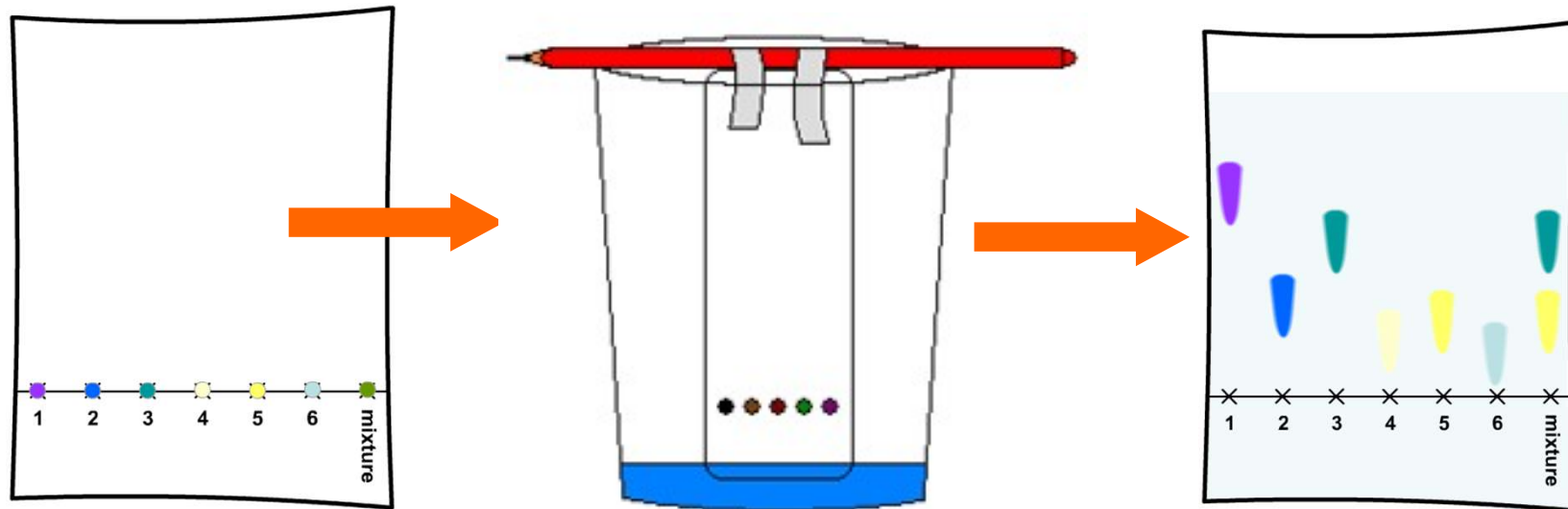




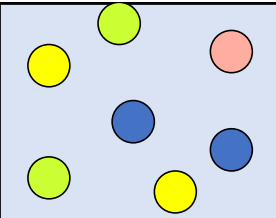

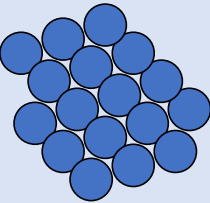
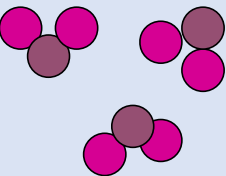
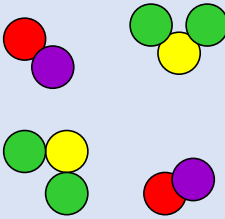

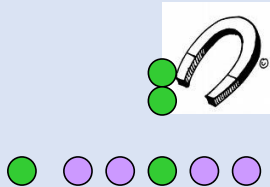
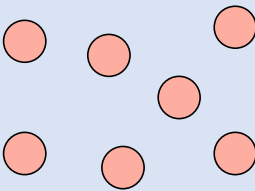
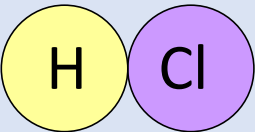


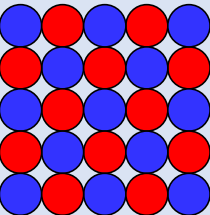



Chromatography

23/01/2025

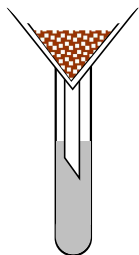
You have two investigations to carry out:

1. Identify the mixture of dye in pens. Which pen contains the most dyes?

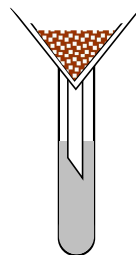


Na		 salt	Carbon dioxide		
	Contains only 1 type of atom		2 or more elements chemically combined	Components not combined together	
Has a symbol		CuSO_4	Has a formulae		Iron and sulphur in test tube
O_2			Magnesium chloride		Can be easily separated
Cannot be broken down	iron 				

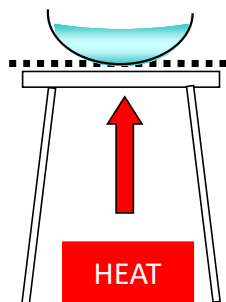
Element	Compound	Mixture



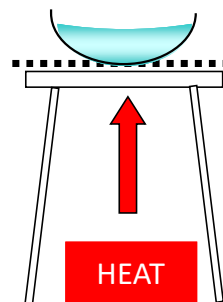
Filtration – used to separate s_____ from a s_____. The solid gets stuck in the f_____ p_____, and the s_____ passes through.



Filtration – used to separate s_____ from a s_____. The solid gets stuck in the f_____ p_____, and the s_____ passes through.



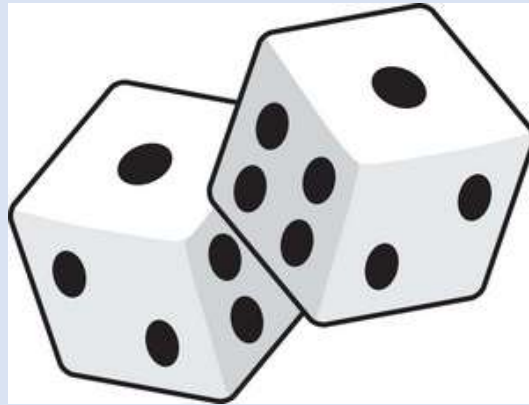
Evaporation – used to separate the solutThe liquid e_____ and leaves the s_____ behind.



Evaporation – used to remove l_____ from a m_____ of liquid and d_____. The liquid e_____ and leaves the s_____ behind.

1. Write down everything that you can remember from this lesson.

The Plenary Dice



2. Write down two things you want to know more about

3. You will be given a key word, you must write everything you know about this word.

4. Write a question regarding today's lesson, then you may get to choose someone to answer your question.

5. Describe this lesson in 5 words

6. Name a skill that you have used in this lesson.

Plenary:

List 3 things you found out/learnt today

List 3 things your neighbour has learnt today

60 second challenge – sum up knowledge of text, or write down all the words you can think of to describe...

The answer is XYZ – now write the question. N.B. the question must begin with the words ‘What is...’

Spot missing words in cloze summary of learning

True or false – hold up card/whiteboard to show whether statement on OHT is true or false

Change role – student as teacher. What questions would you ask the class and why?

Getting to know you

Spin the colour generator and answer **one** question about yourself from the table below.

Colour	Choose a question		
Purple	What is one of your hobbies?	When is your birthday?	What was your favourite part of today?
Blue	What is your favourite book?	Do you have any brothers and/or sisters?	What is your favourite subject in school?
Green	What's your favourite TV show/movie?	Do you have any pets? What kind?	What job would you like to do in the future?
Yellow	What's your favourite colour?	If you could have a super power what would it be?	What is your favourite memory from last school year?
Red	What's one of your favourite foods?	If you could travel anywhere, where would it be?	What did you enjoy doing this summer?

<http://thewessens.net/ClassroomApps/Main/spin.html?topic=utilities&id=4>

Name the Equipment Extension

