If a chemist wanted to make themselves some bacon what 4 elements would they need?

If a chemist wanted to make themselves some BaCON what 4 elements would they need?

BaCON

- Ba - barium
- C - carbon
- O - oxygen
- N - nitrogen

What are the full names of these elements?

- Ag
- Au
- Hg
- Mg
- Zn
- K
- Na

Revision list

- Atomic structure
- Electron configuration
- Periodic table & trends
- Ions
- Dot & cross
- Balancing equations
- Types of reactions

Starter:

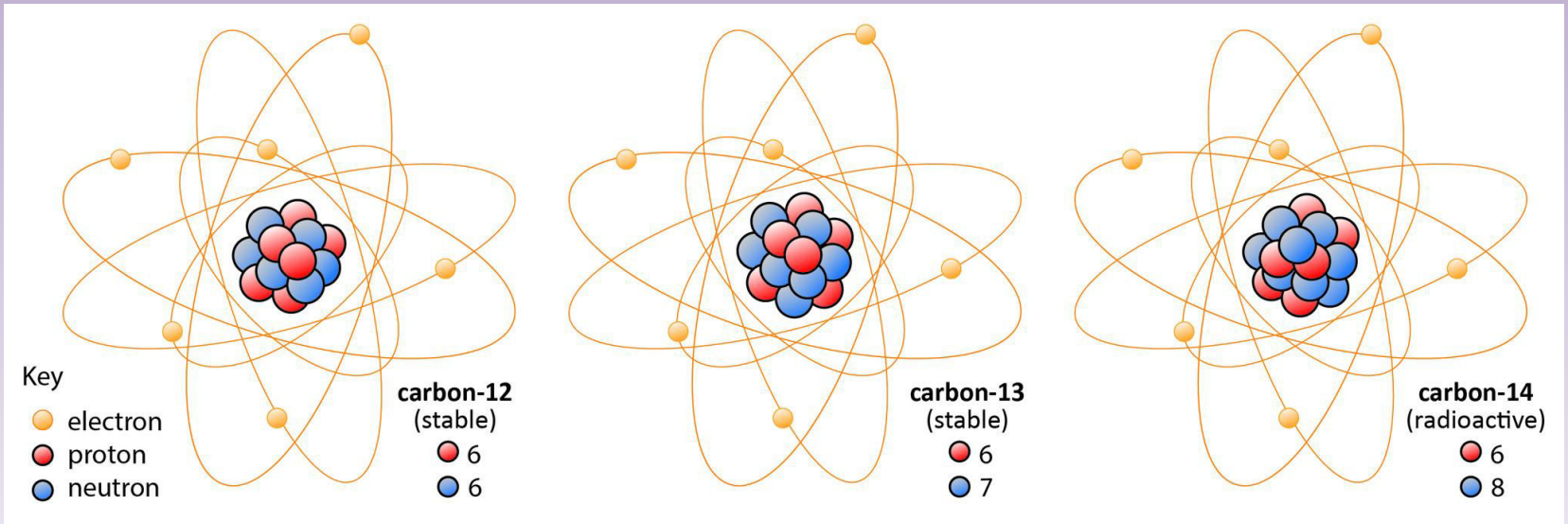
URATCSENLTBMOI

Starter: First letter, last letter

Acid - Decomposition - Neutralisation - Nitric - Combustion.....

Precipitate - Endothermic - Chemical - Liquid - Dilute - Energy - Yttrium - Method - Dissolve - Exothermic

Protons, neutrons and isotopes:

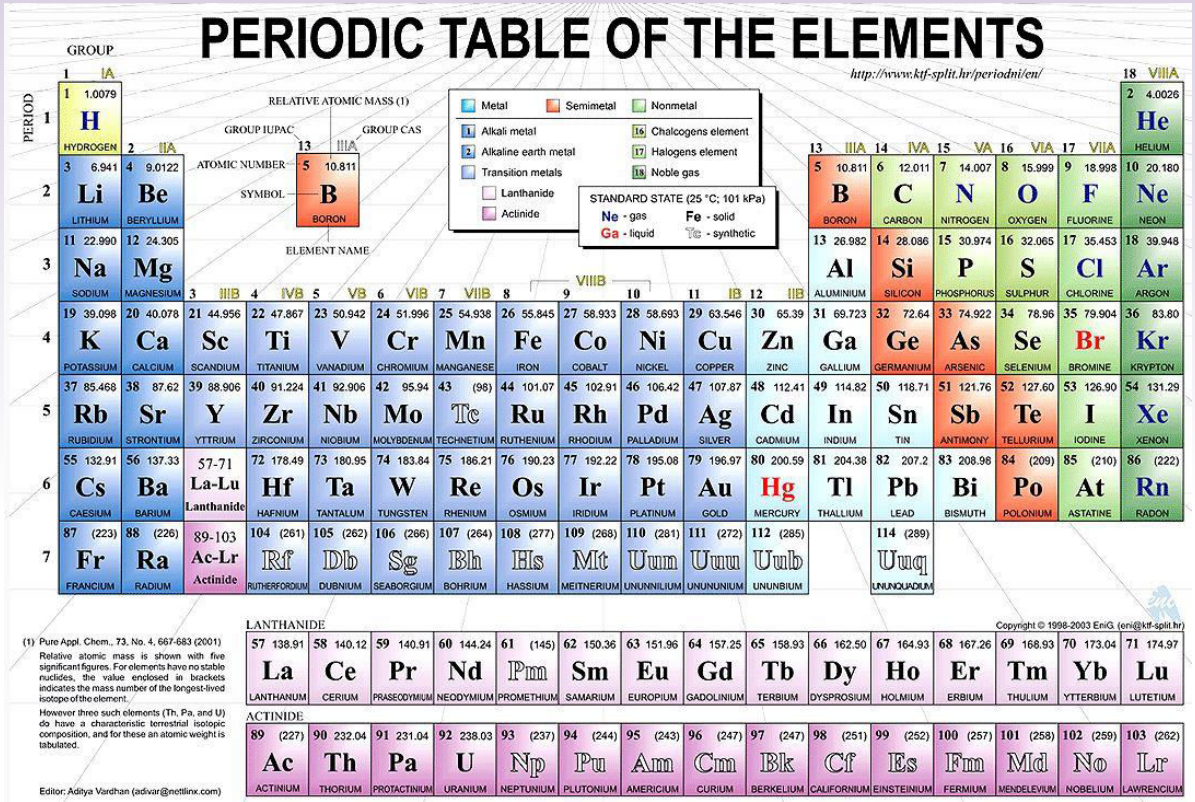


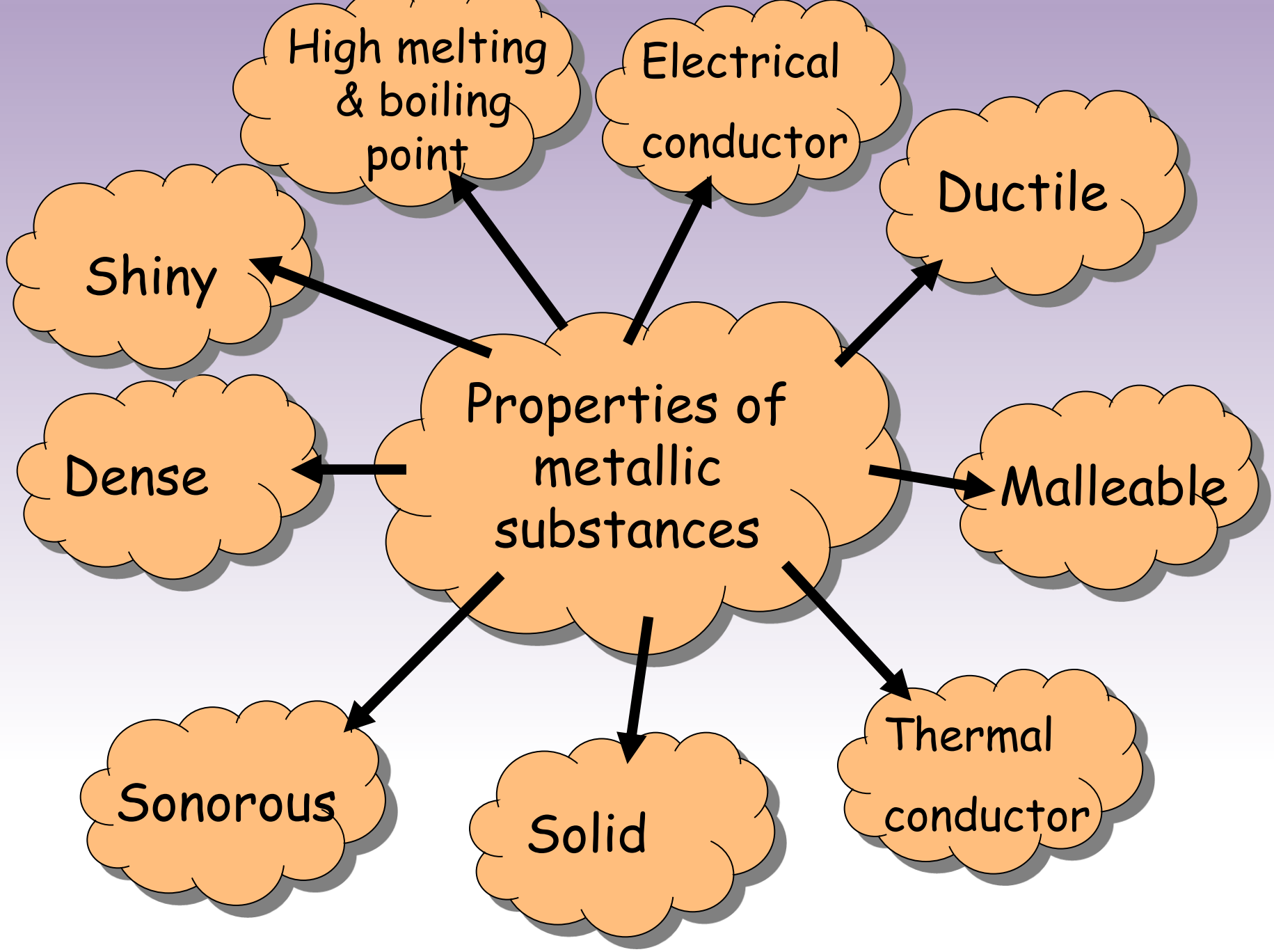
- Lightest particle?
- Biggest particles?
- How would you work out group and period numbers?
- Atomic number and mass number?
- Electronic configurations?
- Numbers of electrons?
- What are isotopes?

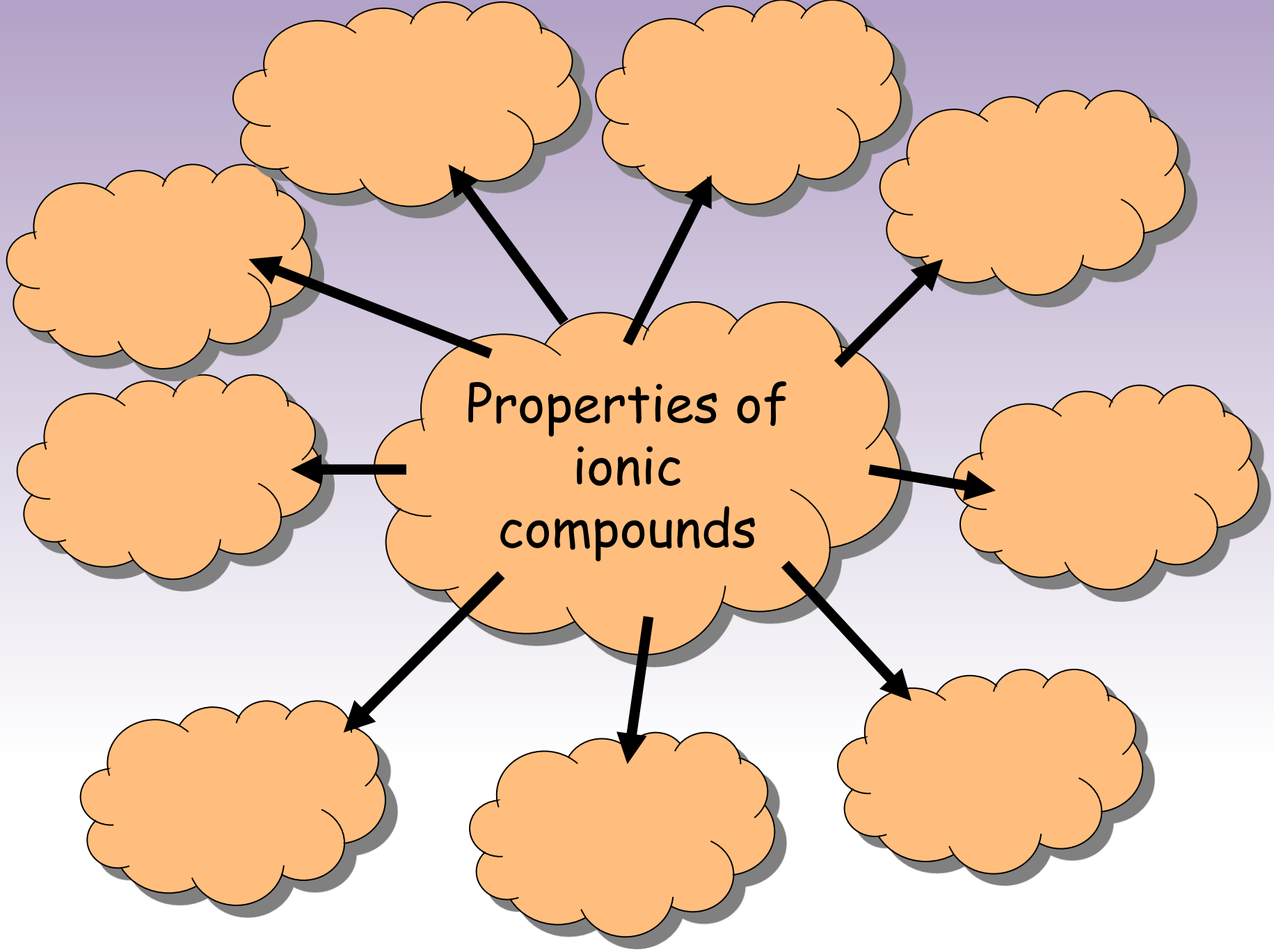
Electronic configurations:

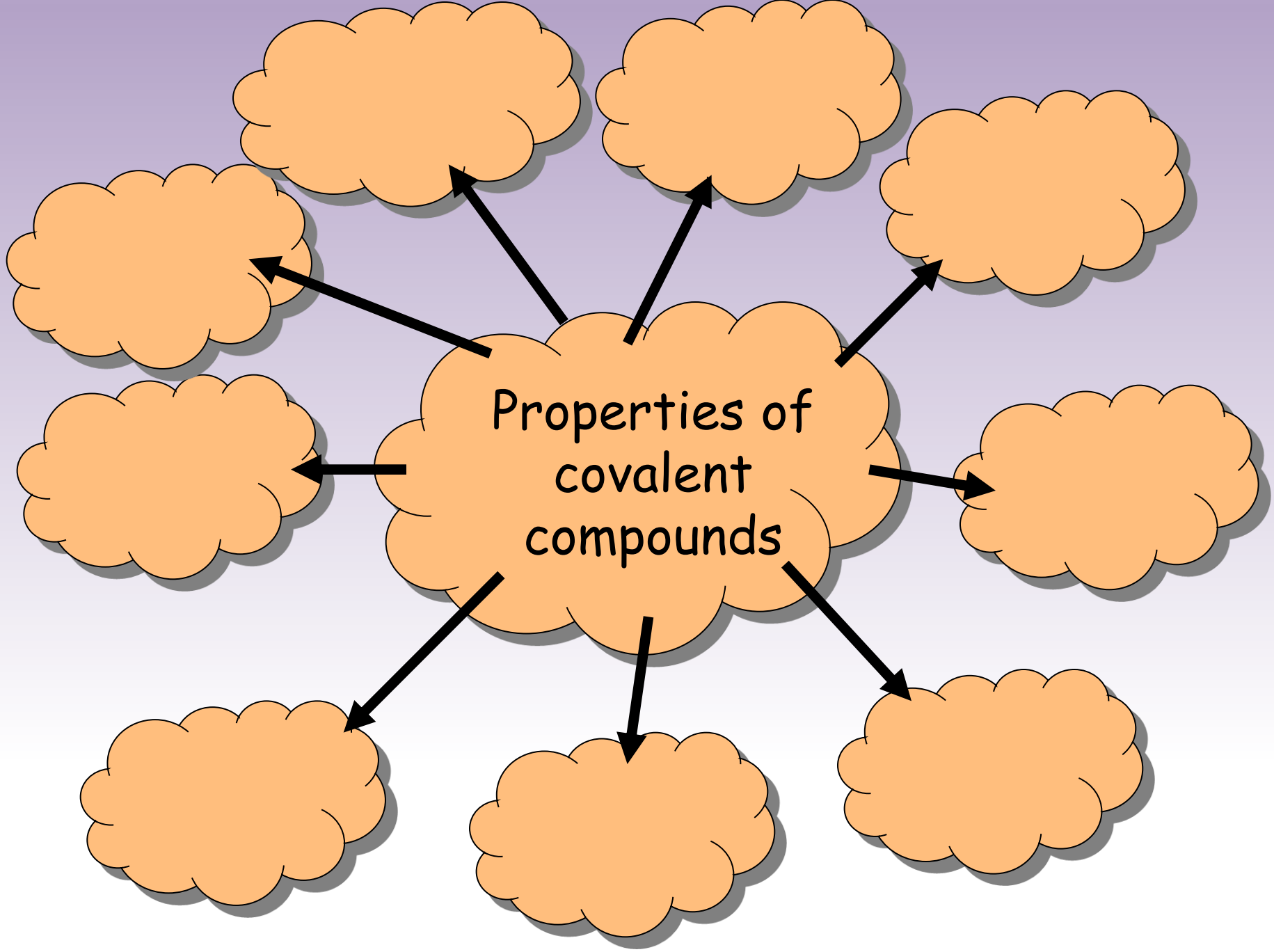
- What elements are these:
  - 1
  - 2,1
  - 2,8,1
- How do you know?
- What are the electronic configurations of:
  - Oxygen
  - Chlorine
  - Calcium

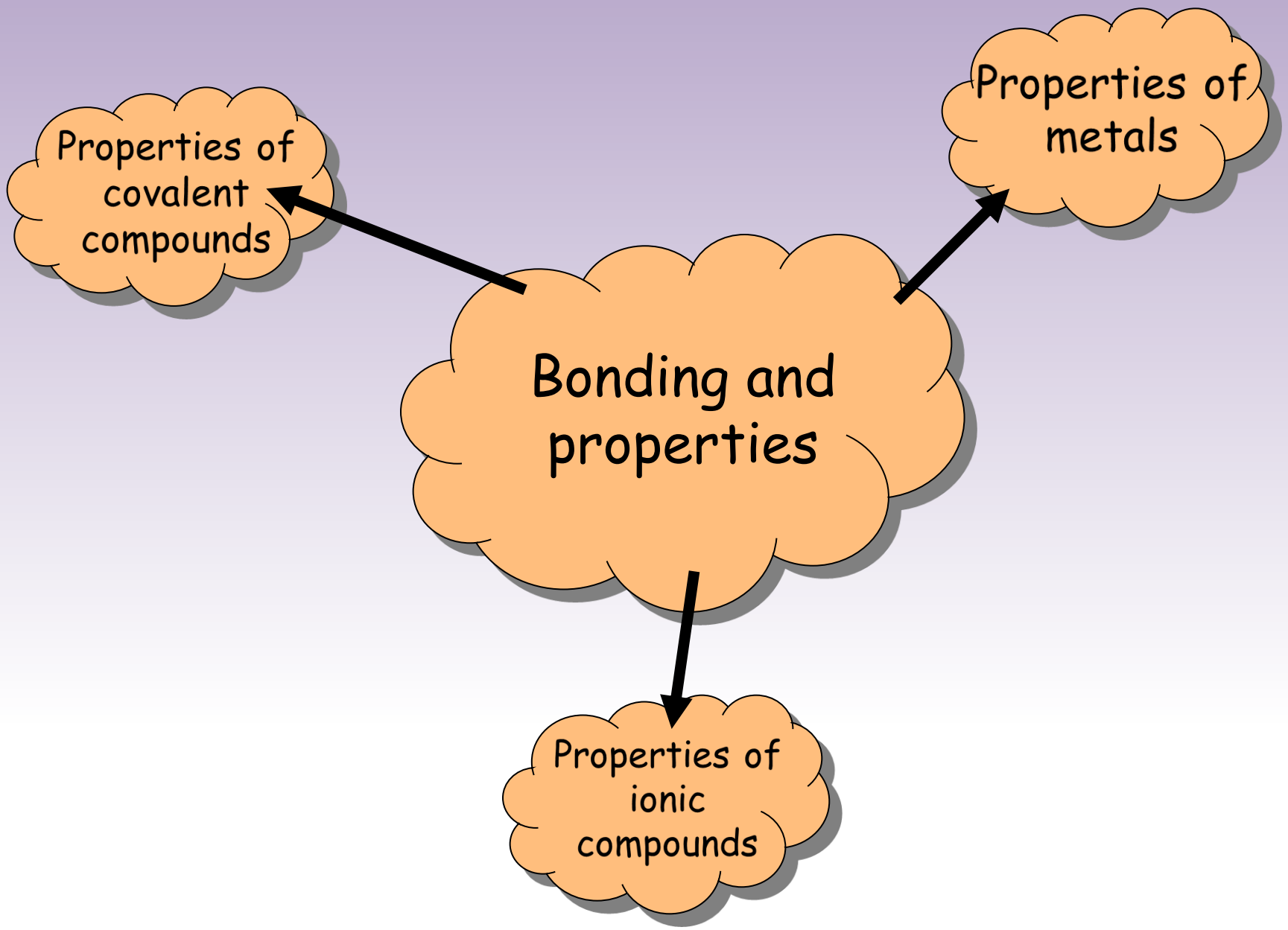
- Why are elements in groups?
- Where are the alkali metals/halogens/noble gases?
- Why are noble gases unreactive?
- Where are the metals?
- Where are the metalloids? – give examples of them
- What are *typical* properties of metals?



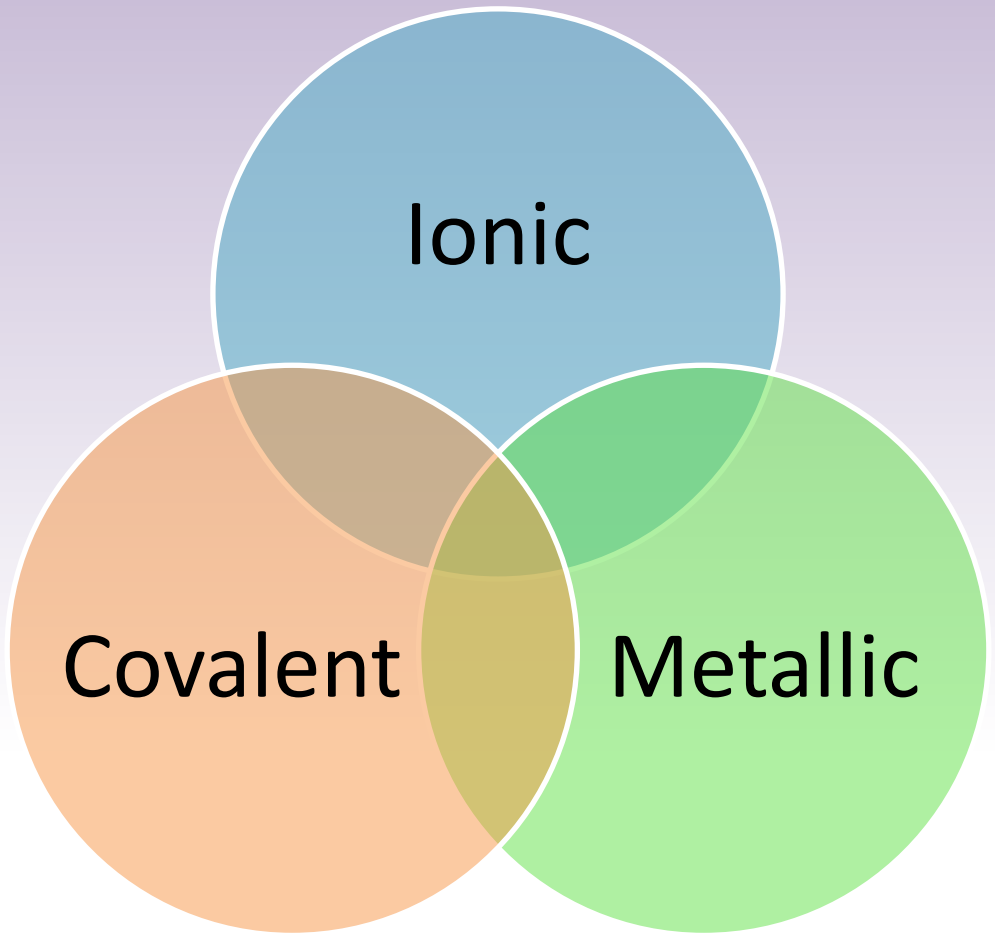

Properties of metallic substances
High melting & boiling point
Electrical conductor
Ductile
Shiny
Dense
Malleable
Sonorous
Solid
Thermal conductor


Properties of ionic compounds


Properties of covalent compounds


Properties of covalent compounds
Properties of metals
Bonding and properties
Properties of ionic compounds

Comparing bonding:



1. The smallest and lightest particle inside an atom?

2. What two particles are found in the nucleus of atoms?

3. The atomic number is the number of?

4. What makes Mercury different to every other metal?

5. The first group in the periodic table are also known as the 'what' metals? (It contains Li, Na, K)

6. Helium and Neon have FULL electron shells. They are known as 'what' gases?

7. In the periodic table, elements with SIMILAR properties are found in the same...?

8. What is the chemical symbol for Helium?

9. Which element has the symbol U?

Using the periodic table:

Symbol	Element
Na	
	Lead
	Magnesium
Au	
F	
	Copper
W	
Sn	

$$2n^2$$

1st shell =

2nd shell =

3rd shell =

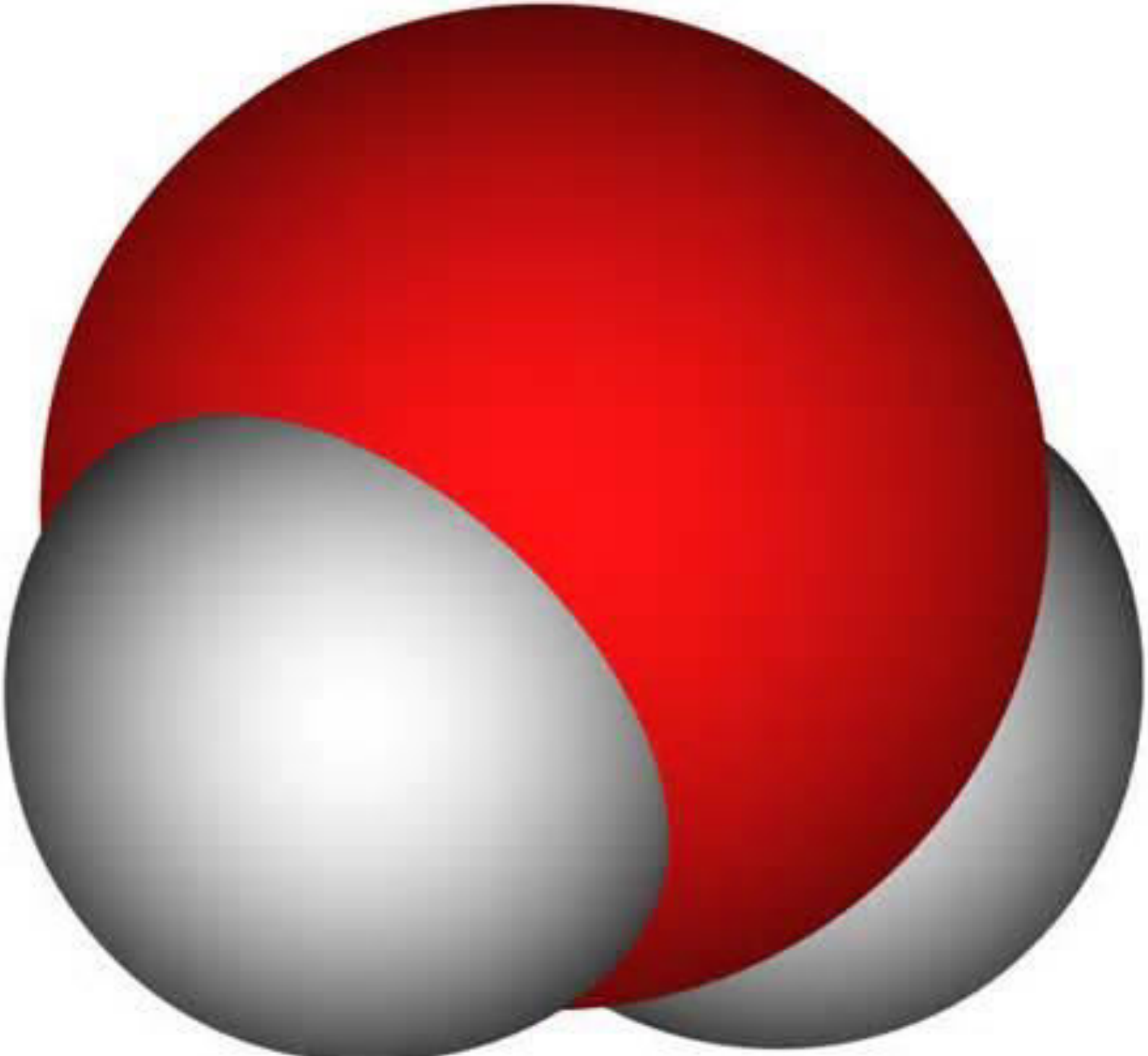
Chemical vs. Physical

What makes chemical reactions different from physical changes?

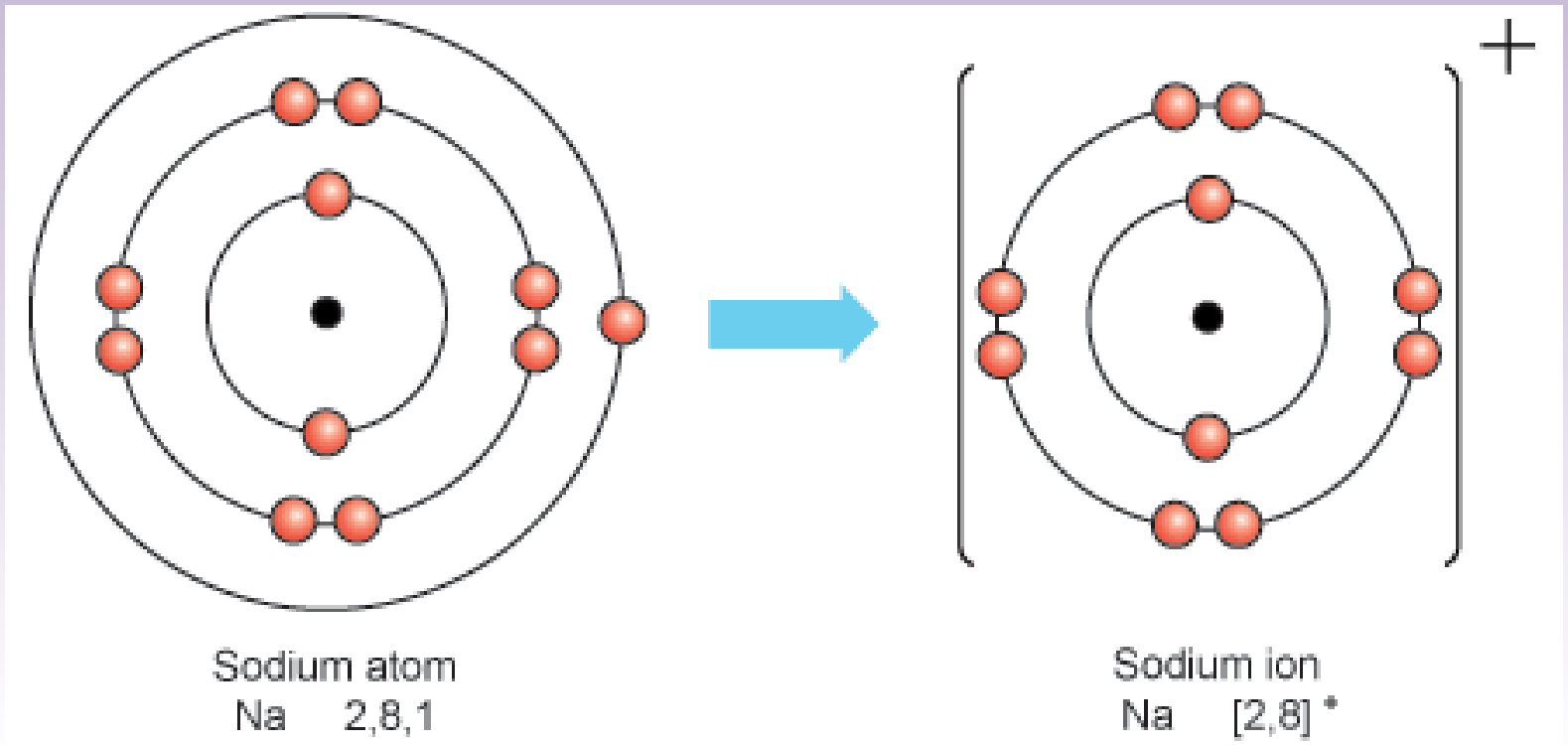
What 4 things indicate a chemical reaction?

Give an example of a physical change

How can the 'rate' of a chemical reaction be adjusted (x4 ways)?



Covalent vs. Ionic:



Charge and group numbers?

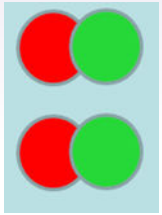
Charges and formulas?

Reactions:

DESCRIBE/EXPLAIN what you see using as many of the keywords as you ACCURATELY can (B/A grade)

Hydrogen + chlorine → hydrogen chloride

$H_{2(g)} + Cl_{2(g)} \rightarrow 2HCl_{(g)}$



KEY WORDS:

Atom
Element
Compound
Molecule
Bond
Symbol
State

NUMERACY:

Balancing symbol equations

A MODEL ANSWER:

The reaction shows a molecule of hydrogen gas reacting with a molecule of chlorine gas.

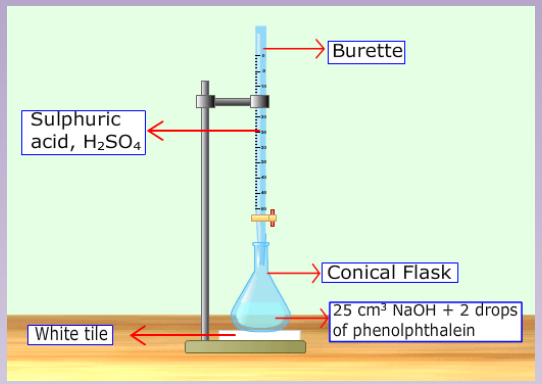
The molecules are made of two atoms of the same element bonded together.

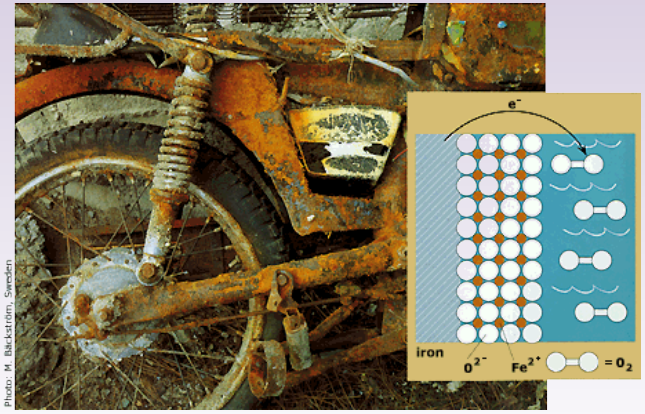
They react to form two molecules of the compound hydrogen chloride, which is a gas.

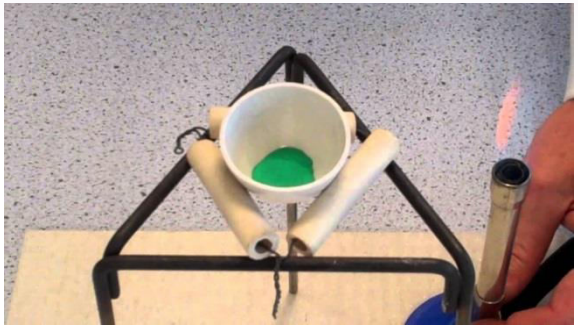
The symbols for the elements hydrogen and chlorine are H and Cl.

Hydrogen, chlorine and hydrogen chloride molecules are all found in the gaseous state.


FUNDAMENTAL
PHOTOGRAPHS


Burette
Sulphuric acid, H_2SO_4
Conical Flask
25 cm³ NaOH + 2 drops of phenolphthalein
White tile


e⁻
iron
O^{2-}
Fe^{2+}
$= O_2$
Photo - M. Bäckström, Sweden



Write a chemical reaction for hydrogen gas and oxygen gas reacting to make liquid water...

Reactants?

Products?

State symbols?

Balanced?

Types of reaction: Match these up

A. Thermal decomposition

B. Displacement

C. Combustion

D. Corrosion

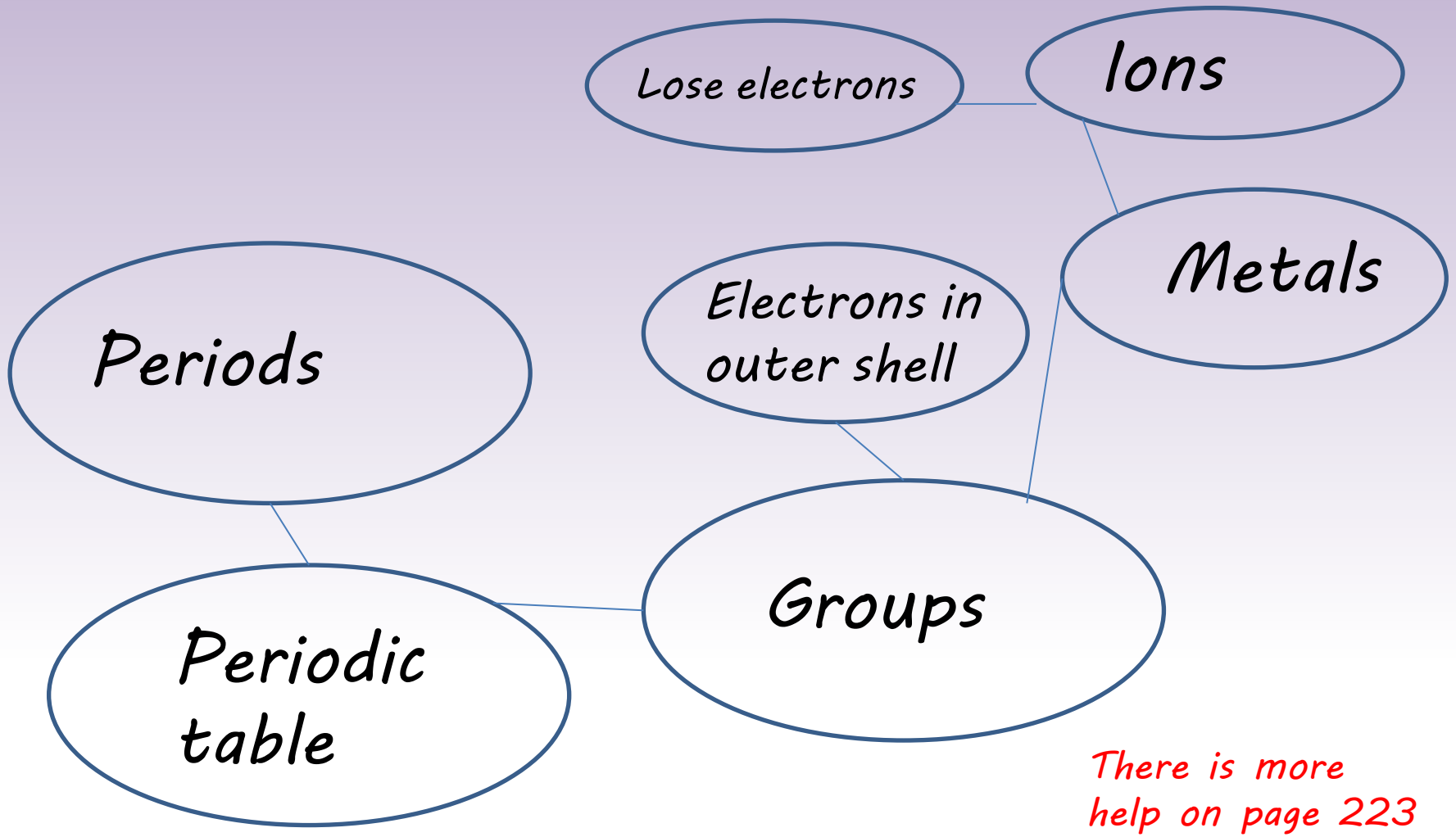
E. Precipitation

1. Zinc reacts with oxygen to produce zinc oxide (some heat emitted)
2. Silver reacts with copper nitrate to form copper and silver nitrate
3. Methane gas burns to produce carbon dioxide and water
4. Zinc carbonate is heated to produce zinc oxide and carbon dioxide
5. Aluminium reacts with the atmosphere forming aluminium oxide

Arrange these:

Electron	Precipitation	Noble gas	Isotope	Period	Non metal
Combustion	Proton	Covalent	Neutralisation	Atomic number	Charge
Symbols	Corrosion	Shell	Mass number	Metallic	Ion
Atom	Reaction	Similar properties	Element	Alkali	Catalyst
Reactant	Neutron	Ionic	Displacement	Nucleus	Product
Metalloid	Aqueous	Group	Conduct	Molecule	Metal

An example (there are many ways of doing this)….



There is more help on page 223 in the textbook

Revision questions:

- Page 226-227
- DON'T ANSWER questions: 2, 3, 4, 12, 16, 18, 19, 20, 21, 22, 23, 25

What's the formula of?

- Potassium nitride
- Calcium chloride
- Calcium nitride

Cations				Anions		
+1	+2	+3	+4	−3	−2	−1
Li^+	Be^{2+}	Al^{3+}	Sn^{4+}	N^{3-}	O^{2-}	F^-
Na^+	Mg^{2+}	Sc^{3+}	Mn^{4+}	P^{3-}	S^{2-}	Cl^-
K^+	Ca^{2+}	Y^{3+}	U^{4+}		Se^{2-}	Br^-
Rb^+	Sr^{2+}	Ga^{3+}	Th^{4+}			I^-
Cs^+	Ba^{2+}	In^{3+}	Ce^{4+}			
Cu^+	Mn^{2+}	Tl^{3+}				
Ag^+	Fe^{2+}	Sb^{3+}				
Tl^+	Co^{2+}	Bi^{3+}				
	Ni^{2+}	V^{3+}				
	Cu^{2+}	Cr^{3+}				
	Zn^{2+}	Fe^{3+}				
	Cd^{2+}	Co^{3+}				
	Hg^{2+}					

A grade! How could you use the information below to demonstrate what a precipitate is?

Table 17.3 Solubilities of Ionic Compounds* aq = aqueous (dissolves in water); s = solid (does not dissolve in water)

Ions	Acetate	Bromide	Carbonate	Chlorate	Chloride	Fluoride	Hydrogen Carbonate	Hydroxide	Iodide	Nitrate	Nitrite	Phosphate	Sulfate	Sulfide	Sulfite
Aluminum	s	aq		aq	aq	s		s	—	aq		s	aq	—	
Ammonium	aq	aq	aq	aq	aq	aq	aq	—	aq	aq	aq	aq	aq	aq	aq
Barium	aq	aq	s	aq	aq	s		aq	aq	aq	aq	s	s	—	s
Calcium	aq	aq	s	aq	aq	s		s	aq	aq	aq	s	s	—	s
Cobalt(II)	aq	aq	s	aq	aq	—		s	aq	aq		s	aq	s	s
Copper(II)	aq	aq	s	aq	aq	aq		s		aq		s	aq	s	
Iron(II)	aq	aq	s		aq	s		s	aq	aq		s	aq	s	s
Iron(III)	—	aq			aq	s		s	aq	aq		s	aq	—	
Lead(II)	aq	s	s	aq	s	s		s	s	aq	aq	s	s	s	s
Lithium	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	s	aq	aq	aq
Magnesium	aq	aq	s	aq	aq	s		s	aq	aq	aq	s	aq	—	aq
Nickel	aq	aq	s	aq	aq	aq		s	aq	aq		s	aq	s	s
Potassium	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq
Silver	s	s	s	aq	s	aq		—	s	aq	s	s	s	s	s
Sodium	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq	aq
Zinc	aq	aq	s	aq	aq	aq		s	aq	aq		s	aq	s	s