

CAIE Chemistry IGCSE

3.1 Formulae

Flashcards

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Give the symbol that represents sodium



Give the symbol that represents sodium

Na represents sodium



State the formula of sodium hydroxide



State the formula of sodium hydroxide

NaOH is the formula of sodium hydroxide



Define molecular formula



Define molecular formula

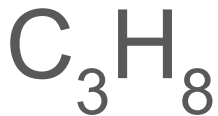
The molecular formula of a compound is the actual number of atoms of each element present in a compound



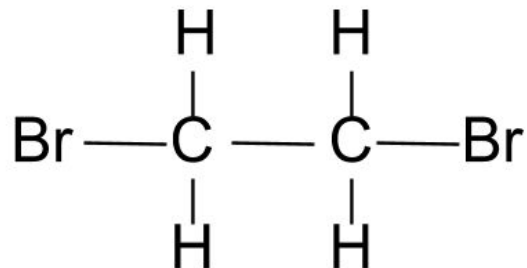
A compound contains 3 carbon atoms and 8 hydrogen atoms. Write the chemical formula of this compound



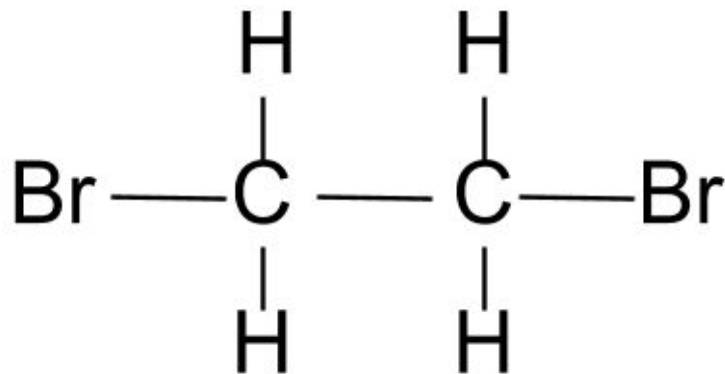
A compound contains 3 carbon atoms and 8 hydrogen atoms. Write the chemical formula of this compound



What is the formula for the compound shown in the diagram below?



What is the formula for the compound shown in the diagram below?



What are the state symbols used in chemical equations?



What are the state symbols used in chemical equations?

(g) - gas

(aq) - aqueous

(l) - liquid

(s) - solid



Give examples of substances that are in gaseous state at room temperature



Give examples of substances that are in gaseous state at room temperature

Chlorine Cl_2 (g) and fluorine F_2 (g)

Nitrogen N_2 (g), Hydrogen H_2 (g), Oxygen O_2 (g)

The noble gases



Give examples of substances that are aqueous at room temperature



Give examples of substances that are aqueous at room temperature

Any substance dissolved in water/solution is aqueous, e.g. :

NaCl (aq) , $\text{H}_2\text{SO}_4 \text{ (aq)}$, KOH (aq) ...



Give examples of substances that are liquid at room temperature



Give examples of substances that are liquid at room temperature

H_2O (l) - Pure water

Br_2 (l) - Bromine is liquid at room temp.

Hg (l) - Mercury is liquid at room temp.



Give examples of substances that are solid at room temperature



Give examples of substances that are solid at room temperature

Most metals are solid at room temperature, e.g. Na (s), Mg (s), Fe (s)...

Iodine I_2 is also solid at room temperature



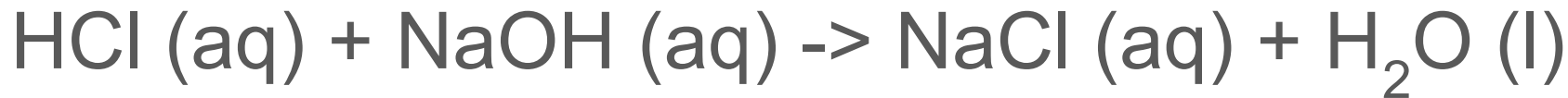
Write the following balanced word equation as a symbol equation, including state symbols:

Hydrochloric acid + Sodium hydroxide \rightarrow Sodium chloride + Water



Write the following balanced word equation as a symbol equation, including state symbols:

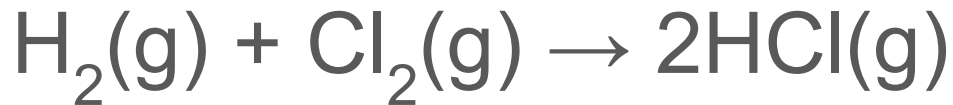
Hydrochloric acid + Sodium hydroxide \rightarrow Sodium chloride + Water



Write a balanced chemical equation for the reaction between hydrogen and chlorine to form hydrogen chloride. Include state symbols.



Write a balanced chemical equation for the reaction between hydrogen and chlorine to form hydrogen chloride. Include state symbols.



What is meant by the term empirical
formula?
(extended only)



What is meant by the term empirical formula?
(extended only)

The smallest whole number ratio of the atoms of each element in a compound.



What is the empirical formula of Fe_2O_4 ?
(extended only)



What is the empirical formula for Fe_2O_4 ?
(extended only)



What is the chemical formula of sodium oxide, formed from Na^+ and O^{2-} ions?
(extended only)



What is the chemical formula of sodium oxide, formed from Na^+ and O^{2-} ions? (extended only)



Charges must balance so 2 sodium ions are required.



What is the chemical formula of
magnesium hydroxide, formed from Mg^{2+}
and OH^- ions?
(extended only)



What is the chemical formula of magnesium hydroxide, formed from Mg^{2+} and OH^- ions?
(extended only)



Charges must balance so 2 hydroxide ions are required.



What are diatomic molecules and give
examples
(extended only)



What are diatomic molecules and give examples
(extended only)

Some non-metals are diatomic molecules so
have 2 atoms in each molecule

A mini/subscript 2 is written next to the
elements symbol to show this

Diatomic elements: H_2 , N_2 , O_2 , F_2 , Cl_2 , Br_2 , I_2



What is an ionic equation? (extended only)



What is an ionic equation? (extended only)

Ionic equations only show the reacting ions and can be written for any reaction involving ions in solution.

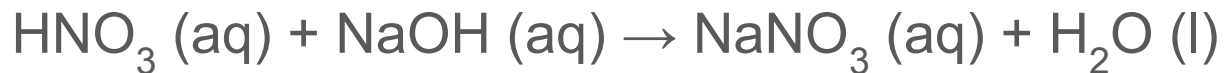


Write an ionic equation for the reaction between nitric acid (HNO_3) and sodium hydroxide (NaOH). Include state symbols.

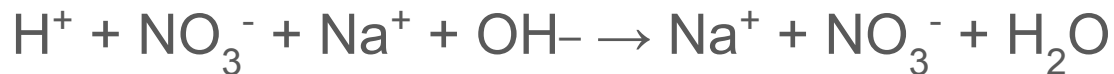
(extended only)



Write an ionic equation for the reaction between nitric acid (HNO_3) and sodium hydroxide (NaOH). Include state symbols. (extended only)



Rewrite the equation with the ions (separate (aq) substances):



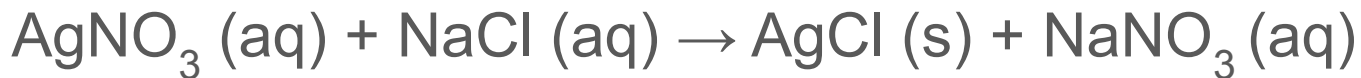
Cancel any ions appearing on both side to get the ionic equation:



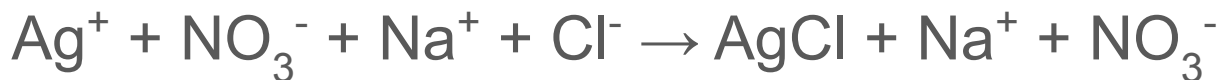
Write an ionic equation for the reaction between silver nitrate and sodium chloride. Include state symbols.
(extended only)



Write an ionic equation for the reaction between silver nitrate and sodium chloride. Include state symbols. (extended only)



Rewrite the equation with ions:



Cancel any ions appearing on both side to get the ionic equation:

