

Revision For Final Test Yr 9 Chemistry

Q1. List 3 properties of acids.

sour taste, turn litmus red, release H^+ ions into solution

Q2. Write the formulae and names for three common acids.

HCl, H_2SO_4 , HNO_3

Q3. List 3 properties of bases

taste bitter, soapy feel, release OH^- ions in solution

Q4. Write the formulae and names for three common bases.

NaOH, $Mg(OH)_2$, KOH

Q5. Which solution will be more acidic?

1M HCl or 0.1 M HCl? 1 M HCl

Q6. Which solution will have the lower pH

1M HCl or 0.1 M HCl? 1 M HCl

Q5. Which solution will be more acidic?

1M HCl or 1 M citric acid solution 1 M HCl

Q6. Write the down the colour of universal indicator if it is placed in a beaker of solution where the

pH = 7 Colour of universal indicator = green

pH = < 7 Colour of universal indicator = red \rightarrow yellow

pH = > 7 Colour of universal indicator = blue \rightarrow purple

Q7. List some common household chemicals or foods that are acidic.

Vinegar, lemon juice, cool drinks

Q8. List some common household chemicals that are basic.

soap, detergent, baking soda

Q9. Write the correct symbol and valency for the following ions

sodium Na^+ , silver Ag^+ , hydroxide OH^- ,
 nitrate NO_3^- , oxide O^{2-} , Calcium Ca^{2+} ,

Q 10.

Write the ionic formulas for the following compounds in the spaces provided.

potassium bromide KBr calcium hydroxide Ca(OH)_2
 sodium hydroxide NaOH aluminium nitrate $\text{Al(NO}_3)_3$
 Hydrogen gas H_2 Oxygen gas O_2

Q 11.

Complete the following table:

Particle	Number of Protons	Number of Neutrons	Number of Electrons	Atomic No.
$^{14}_7\text{N}$	7	7	7	7
$^{23}_{11}\text{Na}^+$	11	12	10	11
$^{35}_{17}\text{Cl}^-$	17	18	18	17
$^{29}_{14}\text{Si}^{4+}$	14	15	10	

Q 12. Write the electron configuration for the above atoms and ions.

$^{14}_7\text{N} = 2, 5$ $\text{Na}^+ = 2, 8$ $\text{Cl}^- = 2, 8, 8$

IS IT AN ACID OR A BASE ?

Acids, Bases and Salts

Acids (will release H^+ ions into solution) eg HCl

Bases (Metal hydroxides or oxides)—neutralise acids eg, NaOH, Na_2O ,

Salts (ionic compounds which contain any positive ion (apart from H^+) and any negative ion (other than OH^- or O^{2-}) eg NaCl, KNO_3

Classify the following compounds as either acids ,bases or salts

KOH, NaCl, $Mg(NO_3)_2$, HNO_3 , $PbSO_4$, NaOH, K_2CO_3 , H_2SO_4 , CaS, $MgSO_4$, $CuCO_3$
 CH_3COOH , $Ca(OH)_2$, MgO, AgCl, HF.

Acids	Bases	Salts
HNO_3	KOH	$PbSO_4$
HF	NaOH	$MgSO_4$
CH_3COOH	MgO	AgCl
H_2SO_4		CaS
	$CuCO_3^*$	$\leftrightarrow CuCO_3^*$
	$K_2CO_3^*$	$\leftrightarrow K_2CO_3^*$

Salts, but
also
neutralise
acids.
...also
bases.

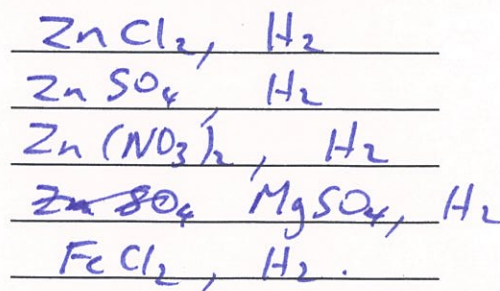
1. Acid - Metal Reactions

Atoms from the metal replace the hydrogen atom(s) contained in the acid.
 The resulting substance is called a salt. Hydrogen gas, formula H_2 , is also produced. Use this idea to write formulas for the products formed when the following acids and metals react.

REACTANTS

1. Zn + HCl
2. Zn + H_2SO_4
3. Zn + HNO_3
4. Mg + H_2SO_4
5. Fe + HCl

PRODUCTS



Acid-Base or Acid- Carbonate reactions

- (b). Determine the products formed when each of the following pairs of compounds react together. Do this by **swapping** the pair of ions in each compound to work out the products that form. Use **valencies** to write correct formula for the products.
Complete the table by writing formula for the reactants or products in the space provided.

REACTANTS	PRODUCTS
1. NaOH + HCl	NaCl, H ₂ O
2. KOH + HNO ₃	KNO ₃ , H ₂ O
3. HCl + Na ₂ CO ₃	NaCl, CO ₂ , H ₂ O
4. NaOH + H ₂ SO ₄	Na ₂ SO ₄ , H ₂ O
5. MgCO ₃ + HCl	MgCl ₂ , CO ₂ , H ₂ O
6. Zn(OH) ₂ + HCl	ZnCl ₂ , 2 H ₂ O
7. Ca(OH) ₂ + HNO ₃	Ca(NO ₃) ₂ , H ₂ O
8. H ₂ SO ₄ + CaCO ₃	CaSO ₄ , CO ₂ , H ₂ O

GENERAL REACTIONS WORKSHEET (EXTENSION)

For each of the following reactions predict the products or reactants as required. Write the correct formula for each species and then balance the complete equation.

- $2\text{HCl} + \text{MgO} \rightarrow \text{MgCl}_2 + \text{H}_2\text{O}$
- $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
- $\text{HCl} + \text{KOH} \rightarrow \text{KCl} + \text{H}_2\text{O}$
- $2\text{HNO}_3 + (\text{NH}_4)_2\text{CO}_3 \rightarrow 2\text{NH}_4\text{NO}_3 + \text{CO}_2 + \text{H}_2\text{O}$
- $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$
- $\text{CaCO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{CaSO}_4 + \text{CO}_2 + \text{H}_2\text{O}$
- $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ (excess oxygen)
- $2\text{C}_2\text{H}_6 + 5\text{O}_2 \rightarrow 4\text{CO} + 6\text{H}_2\text{O}$ (limited oxygen)

GENERAL REACTIONS SUMMARY

Complete the following list of common chemical reactions.

Copy and complete the general equations listed here.

- (a) ACID + METAL \rightarrow salt + hydrogen gas
- (b) ACID + BASE \rightarrow salt + water
- (c) ACID + CARBONATE \rightarrow salt + CO₂ + H₂O
- (d) METAL + OXYGEN \rightarrow metal oxide

1. Complete the table by putting in the **formulas**. The first one has been done for you.

Positive Ions	Negative Ions					
	Chloride	Sulfide	Hydroxide	Nitrate	Sulfate	Phosphate
Potassium	KCl	K ₂ S	KOH	KNO ₃	K ₂ SO ₄	K ₃ PO ₄
Calcium	CaCl ₂	CaS	Ca(OH) ₂	Ca(NO ₃) ₂	CaSO ₄	Ca ₃ (PO ₄) ₂
Tin (II)	SnCl ₂	SnS	Sn(OH) ₂	Sn(NO ₃) ₂	SnSO ₄	Sn ₃ (PO ₄) ₂
Lead	PbCl ₂	PbS	Pb(OH) ₂	Pb(NO ₃) ₂	PbSO ₄	Pb ₃ (PO ₄) ₂
Iron (III)	FeCl ₃	Fe ₂ S ₃	Fe(OH) ₃	Fe(NO ₃) ₃	Fe ₂ (SO ₄) ₃	Fe ₃ (PO ₄) ₂
Ammonium	NH ₄ Cl	(NH ₄) ₂ S	(NH ₄)OH	NH ₄ NO ₃	(NH ₄) ₂ SO ₄	(NH ₄) ₃ PO ₄

(18)

2. Correct the following formulae if necessary

Iron II carbonate

FeCO₃

Fe₂(CO₃)₃

FeCO₃

Sodium chloride

NaCl₂

NaCl

Copper II oxide

Cu₂O

CuO

Barium hydroxide

 BaOH_2 $\text{Ba}(\text{OH})_2$

Iron II sulfate

 FeSO_4

Yr10

Sodium hydrogencarbonate

 NaHCO_3

Yr10

Iron III chloride

 FeCl_3 FeCl_3

Silver carbonate

 AgCO_3 Ag_2CO_3

(8)

3. Give the **chemical names** for the following formulae.

FORMULA

NAME

 ZnSO_4

zinc sulfate

 NH_4Br

ammonium bromide

Yr10

 $\text{Cu}(\text{HCO}_3)_2$ ~~copper dihydrogencarbonate~~ CaCO_3

Calcium carbonate

Write the correct formulae for compounds formed from the following hypothetical ions.

	V^-	W^{2-}	X^{3-}
A^+	AV	A_2W	A_3X
B^{2+}	BV_2	BW	B_3X_2