

METAL ACID REACTIONS

Answer all the questions below then check your answers

1 Name 3 common mineral acids.

2 What do all acids contain in their formula?

a. What is a salt?

3 Write a general equation to show what forms when a metal reacts with an acid?

4 Complete the all the word equations below

(Recall that- Hydrochloric Acid- Always produces a salt called a chloride)

i. iron + hydrochloric acid →

ii zinc + hydrochloric acid →

2 Using sulfuric acid.

(Recall that- sulfuric Acid- Always produces a salt called a sulfate)

i calcium + sulphuric acid →

ii magnesium + sulphuric acid →

3 Using nitric acid

(Recall that- nitric Acid- Always produces a salt called a nitrate)

i magnesium + Nitric acid →

ii calcium + Nitric acid →

4 Complete the following equations:

i zinc + sulphuric acid →

ii aluminium + hydrochloric acid →

b. Write symbolic equations for some of these reactions. Use the table below to help you

ion	formula
chloride	Cl^-
nitrate	NO_3^-
sulfate	SO_4^{2-}

5. In each of these equations where the acid reacts with a metal where is the hydrogen gas that is produced coming from?

a. Write an ion-electron half equation to show how the hydrogen is produced.

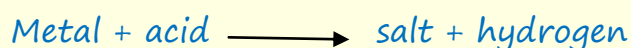
i. Is the reaction which produces hydrogen an oxidation or a reduction reaction?

b. What happens to the metal in these reactions, is it oxidised or reduced?

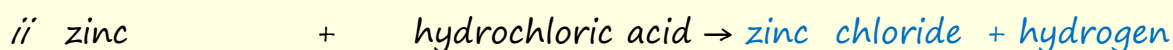
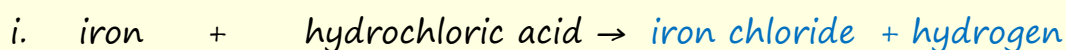
i. Write an ion-electron equation to show how magnesium ions are oxidised when they react with hydrochloric acid.

Answers

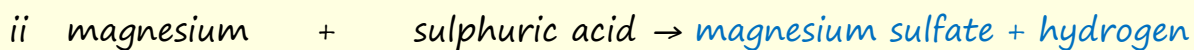
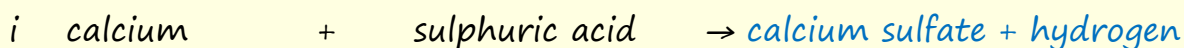
- 1 Name 3 common mineral acids. *Hydrochloric, nitric, sulfuric acids*
- 2 What do all acids contain in their formula? *Hydrogen ions, $H^+_{(aq)}$*
- a. What is a salt? *General definition which covers most examples is: a salt is an acid where the hydrogen in the acid is replaced by a metal.*
- 3 Write a general equation to show what forms when a metal reacts with an acid?



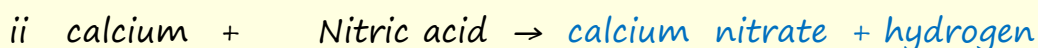
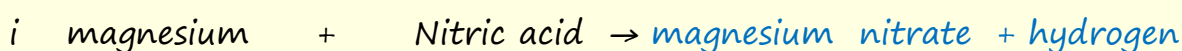
- 4 Complete the word equations below



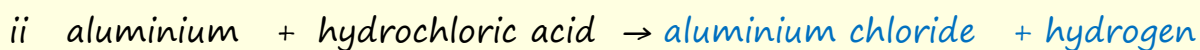
- 2 Using Sulphuric acid



- 3 Using nitric acid



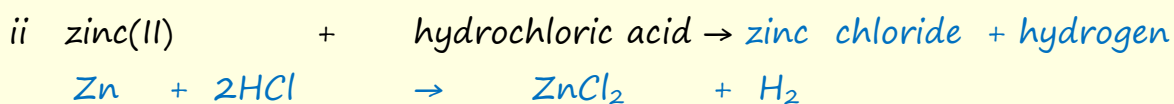
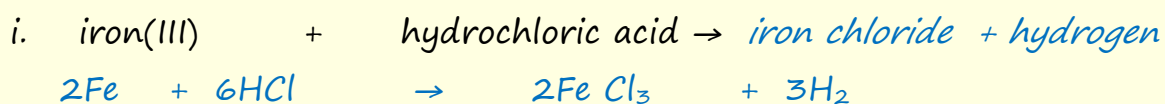
4 Complete the following equations:



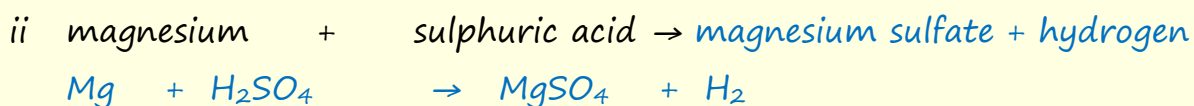
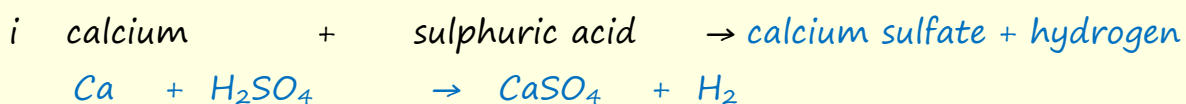
b. Write symbolic equations for some of these reactions. Use the table below to help you

ion	formula
chloride	Cl^-
nitrate	NO_3^-
sulfate	SO_4^{2-}

4b



2 Using sulphuric acid



3 Using nitric acid

i magnesium + Nitric acid → magnesium nitrate + hydrogen



ii calcium + Nitric acid → calcium nitrate + hydrogen

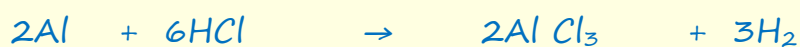


4 Complete the following equations:

i zinc(II) + sulphuric acid → zinc sulfate + hydrogen

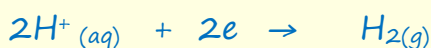


ii aluminium + hydrochloric acid → aluminium chloride + hydrogen



5. In each of these equations where the acid reacts with a metal where is the hydrogen gas that is produced coming from? *It comes from the acid, the hydrogen ions in the acid are reduced to form hydrogen gas.*

a. Write an ion-electron half equation to show how the hydrogen is produced.



i. Is the reaction which produces hydrogen an oxidation or a reduction reaction? *Reduction, it's a gain of electrons (remember OILRIG)*

b. What happens to the metal in these reactions, is it oxidised or reduced? *The metal atoms are oxidised when they react with the acid. They lose electrons and form positively charged metal ions.*

i. Write an ion-electron equation to show how magnesium ions are oxidised when they react with hydrochloric acid.

