

Word and Chemical Problems

1. Hydrochloric acid (HCl) + Magnesium metal (Mg) → Magnesium chloride + H₂



2. Sulfuric Acid (H₂SO₄) and Magnesium metal (Mg) → Magnesium sulfate + H₂



3. Nitric Acid (HNO₃) and Zinc Metal (Zn) → Zinc nitrate + H₂



4. Sulfuric Acid (H₂SO₄) and Sodium Metal (Na) → Sodium sulfate + H₂



Acids You Need to know...

Phosphoric Acid – H₃PO₄
Nitric Acid – HNO₃
Sulphuric Acid – H₂SO₄
Carbonic Acid – H₂CO₃
Hydrochloric Acid - HCl

Worksheet 2

Acid + Metal Reactions

1. Write an equation (both word equation and chemical formula equation) for the reaction between Phosphoric Acid (H₃PO₄) and Magnesium metal (Mg).

Word:

Phosphoric acid + Magnesium → Magnesium phosphate + H₂

Chemical:



2. Write an equation (both word equation and chemical formula equation) for the reaction between Hydrochloric Acid and Aluminium metal.

Word:

Hydrochloric acid + Aluminium \rightarrow Aluminium chloride + H_2

Chemical:



3. Write an equation (both word equation and chemical formula equation) for the reaction between Carbonic Acid and Aluminium metal.

Word:

Carbonic acid + Aluminium \rightarrow Aluminium carbonate + H_2

Chemical:



4. Write an equation (both word equation and chemical formula equation) for the reaction between Sulfuric Acid and Aluminium metal.

Word:

Sulfuric acid + Aluminium \rightarrow Aluminium sulfate + H_2

Chemical:



5. Write an equation (both word equation and chemical formula equation) for the reaction between Phosphoric Acid and Nickel metal.

Word:

Phosphoric acid + Nickel \rightarrow Nickel phosphate + H_2

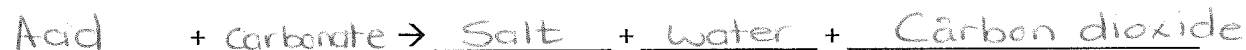
Chemical:



Acids and Carbonates

▶ Acids react with Carbonates to produce Carbon dioxide (CO_2) as well as Salt and Water.

▶ The general formula is:

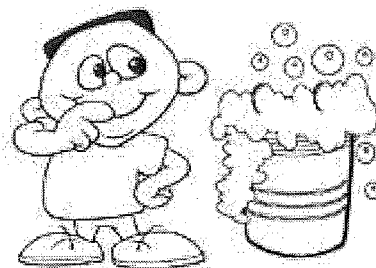


▶ Note:

◦ A Carbonate is CO_3^{2-}

An example of this type of reaction is calcium carbonate and hydrochloric acid:

▶ Hydrochloric acid + calcium carbonate \rightarrow calcium chloride + water + carbon dioxide



Vinegar + Sodium hydrogen carbonate \rightarrow Sodium ethanoate + water + carbon dioxide

Carbon Dioxide Bottle Rocket

Ingredients:

- 2 + sps Baking Soda
- 60 ml Vinegar
- 600 ml Drink bottle
- to fit Rubber stopper

Describe what happened scientifically:

baking soda + vinegar reacted together, creating CO_2 gas which caused the rubber stopper to shoot out as it built up.

1. Add vinegar to bottle, then add bicarb, shake bottle + release stopper.

Word and Chemical Problems

1. Sodium Hydrogencarbonate + Sulphuric Acid \rightarrow

Word:

Sodium Hydrogencarbonate + Sulphuric acid \rightarrow Sodium Sulphate + water + carbon dioxide

Chemical:



2. Sodium Carbonate + Sulphuric Acid →

Word:

Sodium carbonate + Sulphuric acid → Sodium sulphate + water + carbon dioxide

Chemical:



3. Iron (III) Carbonate + Carbonic Acid →

Word:

Iron (III) carbonate + Carbonic acid → Iron carbonate + water + Carbon dioxide

Chemical:

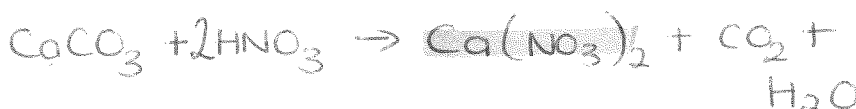


4. Calcium Carbonate + Nitric Acid →

Word:

Calcium carbonate + Nitric acid → Calcium nitrate + water + Carbon dioxide

Chemical:



Acids You Need to know...

Phosphoric Acid – H_3PO_4

Nitric Acid – HNO_3

Sulphuric Acid – H_2SO_4

Carbonic Acid – H_2CO_3

Hydrochloric Acid - HCl

Worksheet 3

1. Magnesium Carbonate + Hydrochloric Acid →

Word:

Magnesium carbonate + Hydrochloric acid → Magnesium chloride + water + carbon dioxide

Chemical:



2. Magnesium Carbonate + Phosphoric Acid →

Word:

Magnesium carbonate + Phosphoric acid → Magnesium phosphate + Carbon dioxide + water

Chemical:



3. Aluminium Carbonate + Sulfuric Acid →

Word:

Aluminium carbonate + Sulfuric acid → Aluminium sulphate + Carbon dioxide + water

Chemical:



4. Magnesium Hydrogencarbonate + Hydrochloric Acid →

Word:

Magnesium hydrogencarbonate + hydrochloric acid → Magnesium chloride + water + carbon dioxide

Chemical:



5. Aluminum Hydrogencarbonate + Sulfuric Acid →

Aluminium hydrogencarbonate + Sulfuric acid →

Word:

Aluminium sulfate + water + Carbon dioxide

Chemical:



6. Potassium Hydrogencarbonate + Sulfuric Acid →

Word:

Potassium hydrogencarbonate + Sulfuric acid → potassium sulfate + water + carbon dioxide

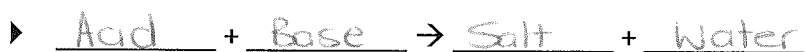
Chemical:



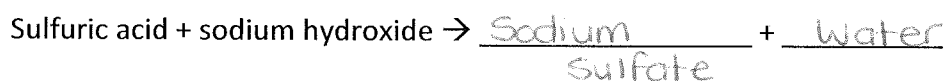
Acids and Bases

- ▶ Acids and base neutralise each other when mixed.
- ▶ They change each other into harmless substances such as water and a Salt.

Neutralisation reactions take the form:

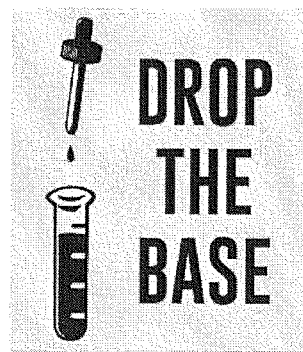


An example of this type of reaction is:



Acid and Base Reaction

Describe what happened scientifically:



Word and Chemical Problems:

1. Aluminium Hydroxide + Hydrochloric Acid → Aluminium Chloride + Water

Word:

Chemical:



2. Potassium Oxide + Nitric Acid → Potassium Nitrate + Water

Word:



3. Iron (III) Oxide + Sulphuric Acid → Iron Sulphate + Water

Word:

Chemical:



4. Copper (II) Oxide + Phosphoric Acid → Copper phosphate + Water

Word:

Chemical:



Worksheet 4

1. ~~Potassium Oxide + Nitric Acid →~~

Word:

Chemical:

2. ~~Iron(III) Oxide + Sulphuric Acid →~~

Word:

Chemical:

Acids You Need to know...

Phosphoric Acid – H_3PO_4

Nitric Acid – HNO_3

Sulphuric Acid – H_2SO_4

Carbonic Acid – H_2CO_3

Hydrochloric Acid - HCl

3. ~~Copper(II) Oxide + Phosphoric Acid~~ →

Word:

Chemical:

4. Sodium Oxide + Sulfuric Acid → Sodium sulphate + Water

Word:

Chemical:



5. Zinc Hydroxide + Hydrochloric Acid → Zinc chloride + water

Word:

Chemical:



6. Potassium Hydroxide + Nitric Acid → Potassium nitrate + water

Word:

Chemical:



7. Iron(III) Hydroxide + Sulphuric Acid → Iron sulphate + water

Word:

Chemical:



8. Aluminium Hydroxide + Hydrochloric Acid → Aluminium chloride + water

Word:

Chemical:



9. Barium Hydroxide + Carbonic Acid → Barium carbonate + water

Word:

Chemical:



10. Copper(II) Hydroxide + Phosphoric Acid → Copper phosphate + water

Word:

Chemical:



11. Magnesium Hydroxide + Nitric Acid → Magnesium nitrate + water

Word:

Chemical:

