



Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 1: Acids and Alkalis

Acids

- Have a pH below 7
 - They contain free H⁺ (hydrogen) ions
- Can be corrosive and harmful

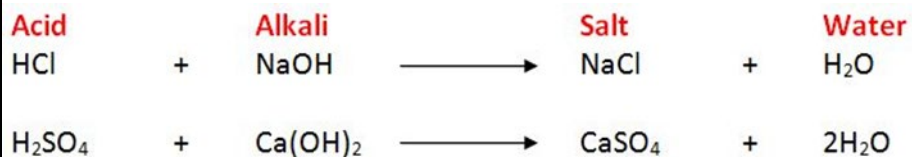


Bases/Alkalis

- Have a pH above 7
- They contain free OH⁻ (hydroxide) ions
- Can be irritants
- Bases are soluble, alkalis are insoluble

Neutral

- Have a pH of 7
- The H⁺ and OH⁻ react forming water
- A neutralisation reaction is when an acid and alkali react producing a salt and water.



Examples of pH Conditions:

pH 2	pH 4	pH 5	pH 7	pH 7.4	pH 10	pH 12
gastric juices	tomato juice	human urine	pure water	human blood	hand soap	household bleach

base	acid	salt
calcium hydroxide	hydrochloric acid	calcium chloride
magnesium oxide	nitric acid	magnesium nitrate
copper oxide	sulfuric acid	copper sulfate
ammonia	nitric acid	ammonium nitrate
potassium hydroxide	sulfuric acid	potassium sulfate

Metal		Acid		Salt
sodium hydroxide	reacts with	hydrochloric acid	to make	sodium chloride
copper oxide	reacts with	hydrochloric acid	to make	copper chloride
sodium hydroxide	reacts with	sulfuric acid	to make	sodium sulfate
zinc oxide	reacts with	sulfuric acid	to make	zinc sulfate



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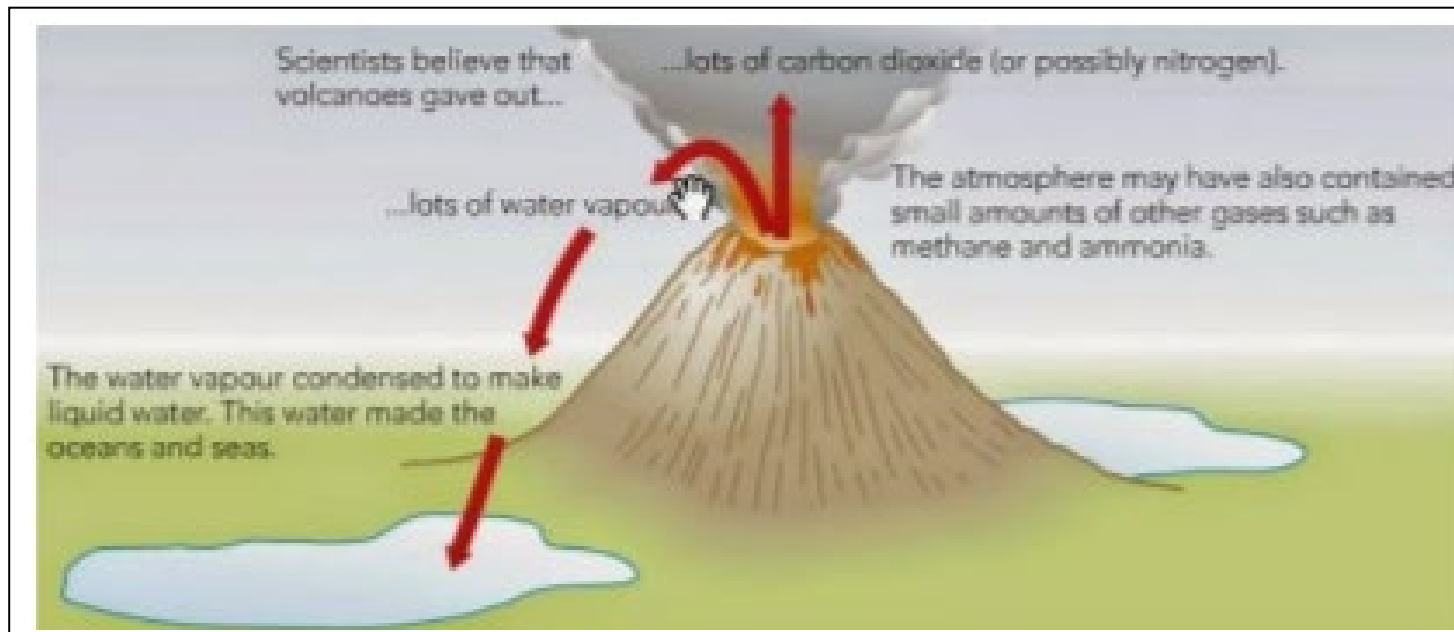
Topic 2: The Earth's Atmosphere

The Earth's first atmosphere

One theory suggests that the Earth's atmosphere originated from volcanoes erupting

Volcanoes kept erupting releasing steam (water vapour) and carbon dioxide. Volcanoes also produced nitrogen which gradually built up in the atmosphere and they may have been small amounts of methane and ammonia

The early atmosphere was nearly all carbon dioxide



The Earth's changing atmosphere

As the Earth cooled and the surface became more solid the water vapour condensed forming the first seas and oceans. Carbon dioxide was removed from the atmosphere by being dissolved into the new oceans.

Algae and sea plants evolved removing carbon dioxide from the atmosphere by photosynthesis. Photosynthesis produced oxygen.

Over the next billion years plants and algae continued to produce oxygen to a level which animals can evolve.

Sea creatures used dissolved carbon dioxide in the form of carbonates to produce bones and shells. When they died their bodies and bones formed layers of sedimentary rocks or formed fossils fuels which contain 'locked up' carbon.



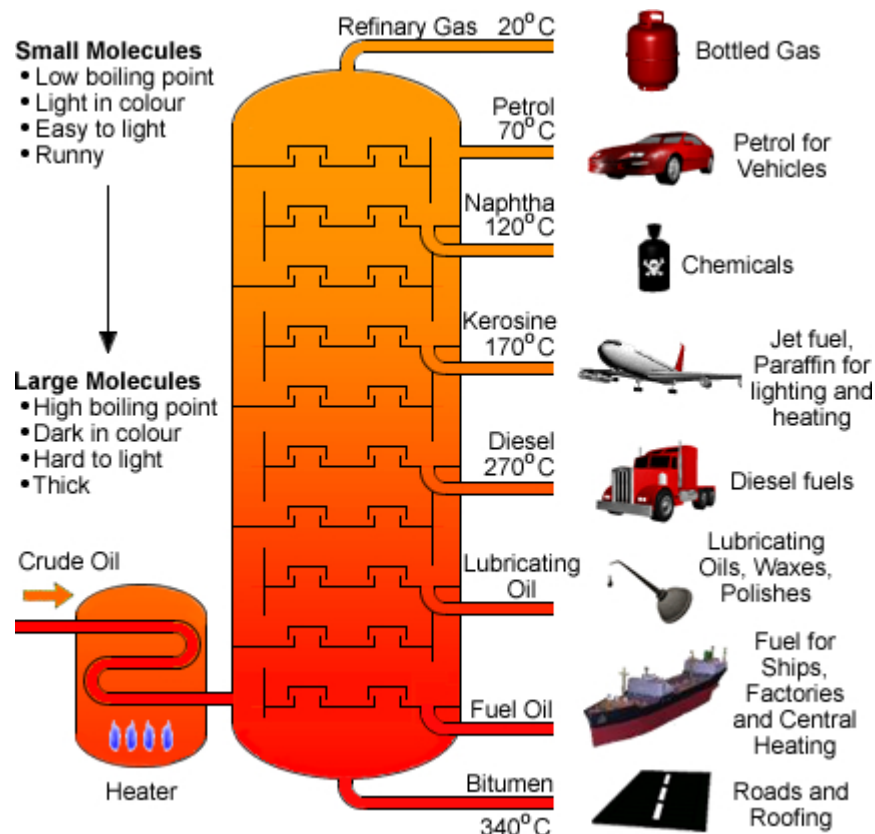
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Topic 3: Fractional distillation of crude oil

Fractional distillation

Fractional distillation is used to **separate** a mixture of long-chain hydrocarbons in crude oil into smaller, more useful fractions.

Hydrocarbons have different boiling points depending on their chain length. **Each fraction contains hydrocarbons of a similar chain length.** These fractions will boil at different temperatures due to the difference in sizes of the molecules. The different parts of crude oil are called fractions because they are a small part of the original mixture.



Crude oil is heated and enters at all column called a **fractioning column**. The column is **hot at the bottom** and decreases in temperature toward the top. As the crude oil is heated, it begins to evaporate and its vapours begin to rise up through the column. These vapours condense at the different fractions.

Short chain hydrocarbons are found at the top of the column, they have low **boiling points** are very **flammable** and are not **viscous**, they are thin.

Long chain hydrocarbons are found at the bottom of the fractional distillation column. These hydrocarbons are thick (viscous) are not very flammable and have high boiling points



Vocabulary	Wider Research	Apply
<ol style="list-style-type: none">1. Acidic2. Alkaline3. Neutral4. Neutralisation5. Reaction6. Hydrogen7. Hydroxide8. Corrosive9. Irritant10. Sulphuric11. Hydrochloric12. Nitric13. Volcanoes14. Carbon dioxide15. Water vapour16. Methane17. Ammonia18. Condense19. Oceans20. Crude oil21. Fractional distillation22. Fractions23. Petrol24. Diesel25. Bitumen26. Boiling point27. Flammable28. Viscosity	<p>Acids, Alkalis and Neutralisation –</p> <p>https://www.bbc.co.uk/bitesize/topics/zn6hvcw</p> <p>Earth's atmosphere</p> <p>https://www.bbc.co.uk/bitesize/guides/zg4qfcw/revision/1</p> <p>https://www.bbc.co.uk/bitesize/topics/z3fv4wx</p> <p>Crude oil</p> <p>https://www.bbc.co.uk/bitesize/guides/zh8tng8/revision/1</p>	<p><u>Acids and Alkalis:</u></p> <ol style="list-style-type: none">1. Create a pH scale and research common household items such as toothpaste, cleaners, oranges and coca cola. On your pH scale, add the pH of your selected household items.2. Create word equations to show the reactants and products of the following:<ul style="list-style-type: none">• Calcium hydroxide + Hydrochloric acid• Magnesium oxide + Nitric acid• Copper oxide + Sulphuric acid• Potassium hydroxide + Hydrochloric acid <p><u>The Earth's Atmosphere:</u></p> <ol style="list-style-type: none">1. Create a diagram to show how we think the Earth's first atmosphere was created2. Produce a timeline to show how the Earth's atmosphere has changed over time.3. What gases make up today's atmosphere <p><u>Fractional distillation:</u></p> <ol style="list-style-type: none">1. Create a series of diagrams to show fractional distillation of crude oil is carried out2. Investigate the uses of the different fractions from crude oil