



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
- Can be corrosive and harmful

**Bases/Alkalis**

- Have a pH above 7
- Can be irritants
- Bases are soluble, alkalis are insoluble

**Safety**

Acid and alkalis can be extremely dangerous  
This depends on the type of acid and its concentration  
The more concentrated the solution the dangerous it can be



**RECACTIONS OF ACID**

A **BASE** is a substance that can react with an acid to make a neutral solution. This is called **NEUTRALISATION**. Bases that are soluble in water are called alkalis

Neutralisation reactions produce **WATER** and a **SALT**



For example



**INDICATORS**

If you want to know if something is an acid or and alkali then you have to use an indicator. Indicator contain a dye that turn different colours in acidic and alkaline solutions.

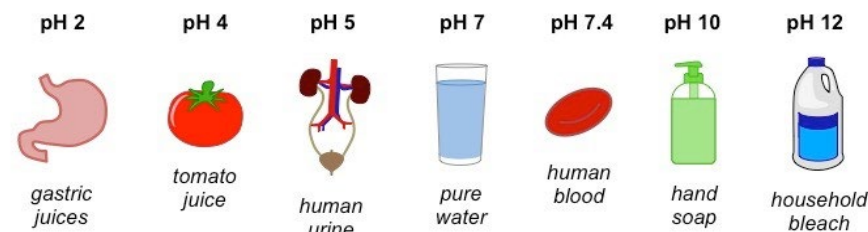
**LITMUS PAPER** is a type of indicator. It can be either **PINK** paper or **BLUE** paper

- In **ACID BLUE** paper turns **PINK**
- In **ALKALI PINK** paper turns **BLUE**

**UNIVERAL INDICATOR** is used to show acid or alkaline a solution is. The **PH SCALE** shows to colour of universal indicator in solution of different pH



**Examples of pH Conditions:**





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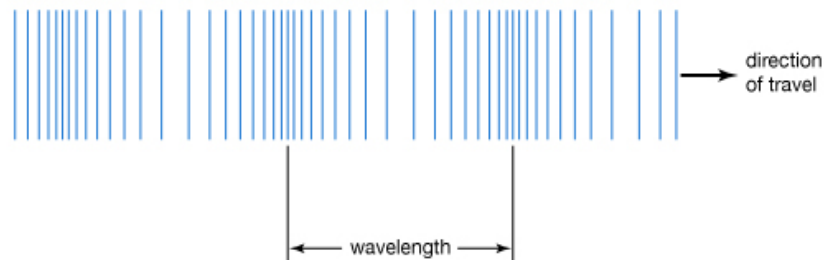
**Topic 2: Sound**

**SOUND**

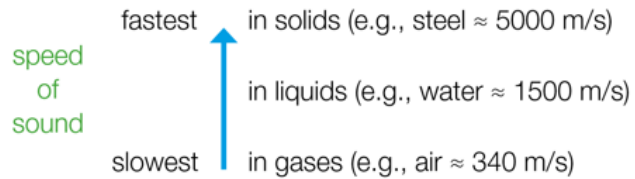
Sound is produced by vibrations, which make air molecules vibrate

Sound is a longitudinal wave

**Longitudinal waves**



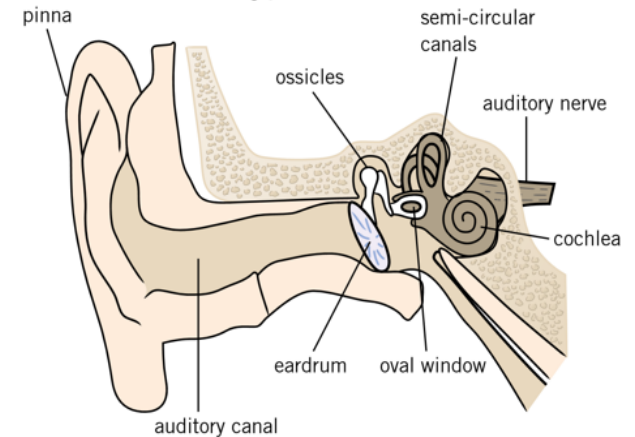
**SOUND WAVES**



Sound waves can be reflected from a surface. A reflected sound wave is heard as an echo. The time delay of an echo can be used to work out the distance to an object

**HEARING SOUND**

Your ear is made of many specially adapted structures that detect and transmit sound waves, allowing you to hear noises.



Part of ear	Structure	Function
outer ear	<b>pinna</b>	directs sound into auditory canal
	<b>auditory canal</b>	sound travels through it to reach the eardrum
	<b>eardrum</b>	vibrates and passes vibrations to the ossicles
middle ear	<b>ossicles</b>	tiny bones that <b>amplify</b> sound
inner ear	<b>cochlea</b>	filled with thousands of tiny hairs and liquid – sound makes the hairs move, which sends an electrical signal to your brain
	<b>semi-circular canals</b>	helps you keep your balance



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### Topic 3: Light

#### HOW DOES LIGHT TRAVEL

**Luminous** objects are sources of light.

**Non-luminous** objects do not produce their own light.

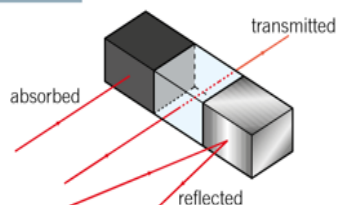
When light hits an object it can be **absorbed, reflected, or transmitted.**

If an object is:

**transparent** – most light is transmitted

**translucent** – light is scattered

**opaque** – no light is transmitted so a shadow is produced.



Light can travel through gases, some solids and liquids, and completely empty space (a vacuum).

The speed of light in a **vacuum** is about 300 000 km/s.

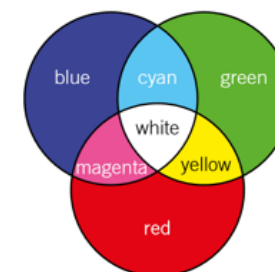
#### COLOURED LIGHT

A **prism** refracts different colours of light by different amounts. This disperses light into a continuous **spectrum** of colours.

The **primary colours** of light are **red, green, and blue.**

**Secondary colours** are produced when any two primary colours are mixed.

**Filters** subtract colours from white light, so that only one colour of light is transmitted.



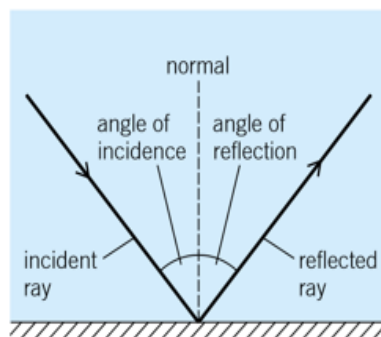
Objects appear to be different colours because they reflect some colours of light and absorb others.

Black objects absorb all colours and white objects reflect all colours.

#### REFLECTION AND REFRACTION

The **law of reflection** states that:

The **angle of incidence** is equal to the **angle of reflection.**

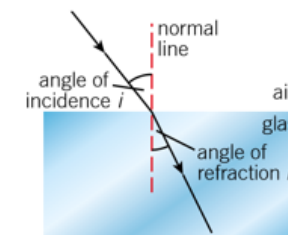


**Refraction** is when light changes direction when it travels from one **medium** (material, such as air or water) to another.

Refraction happens because light travels at different speeds in different materials.

Rays of light will be refracted:

- towards the **normal** if they slow down, such as going from air to glass
- away from the normal if they speed up, such as going from water to air.





Vocabulary	Wider Research	Apply
<ol style="list-style-type: none"><li>1. Acidic</li><li>2. Alkaline</li><li>3. Neutral</li><li>4. Neutralisation</li><li>5. Reaction</li><li>6. Corrosive</li><li>7. Irritant</li><li>8. Sulfuric</li><li>9. Hydrochloric</li><li>10. Nitric</li><li>11. Litmus paper</li><li>12. Universal indicator</li><li>13. pH Scale</li><li>14. Longitudinal</li><li>15. Transverse</li><li>16. Echo</li><li>17. Ear</li><li>18. Speed of sound</li><li>19. Speed of light</li><li>20. Transparent</li><li>21. Translucent</li><li>22. opaque</li><li>23. Reflection</li><li>24. Refraction</li></ol>	<p>Acids, Alkalis and Neutralisation – <a href="https://www.bbc.co.uk/bitesize/topics/zn6hvcw">https://www.bbc.co.uk/bitesize/topics/zn6hvcw</a></p> <p>pH Scale and Indicators – <a href="https://www.youtube.com/watch?v=ckbsHM2igT0">https://www.youtube.com/watch?v=ckbsHM2igT0</a></p> <p>Transverse and Longitudinal Waves – <a href="https://www.bbc.co.uk/bitesize/topics/zw982hv">https://www.bbc.co.uk/bitesize/topics/zw982hv</a></p> <p>Properties of Light – <a href="https://www.youtube.com/watch?v=d7yTlp4gBTI">https://www.youtube.com/watch?v=d7yTlp4gBTI</a></p> <p>Properties of Sound - <a href="https://www.youtube.com/watch?v=gdGyvGPZ1G0">https://www.youtube.com/watch?v=gdGyvGPZ1G0</a></p>	<p><u>Acids and Alkalis:</u></p> <ol style="list-style-type: none"><li>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.</li><li>2. Create word equations to show the reactants and products of the following:<ul style="list-style-type: none"><li>• Calcium hydroxide + Hydrochloric acid</li><li>• Magnesium oxide + Nitric acid</li><li>• Copper oxide + Sulphuric acid</li><li>• Potassium hydroxide + Hydrochloric acid</li></ul></li></ol> <p><u>Sound:</u></p> <ol style="list-style-type: none"><li>1. Using your ideas of how sound travels in different materials, explain why sounds travel faster in solids then they do in gases</li></ol> <p><u>Light:</u></p> <ol style="list-style-type: none"><li>1. Using the ideas of refraction, explain why objects under water appear in a different location than they actually are.</li></ol>