Light and Waves topic summary

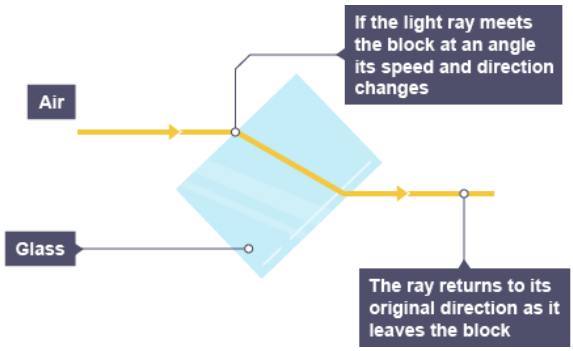
Name: _____

Success Criteria:

I can:	Tick off
♦ State that refraction can cause a change of direction of light as the light passes from one material to another	
♦ Carry out an experiment to show that light changes direction as it travels through a glass block	
♦ State that lenses all affect the direction of light	
♦ State that there are many practical applications of refraction in everyday life e.g. corrective lenses in glasses, in magnifying glasses and in optical instruments	
♦ Research a practical application of refraction in everyday life	
♦ Teach others in my class about the practical application of refraction in everyday life	
♦ State what a prism is	
♦ State what a convex lens is	
♦ State what a concave lens is	
♦ Carry out an experiment to show the effect that concave and convex lenses have on rays of light	
♦ State the meaning of diverging	
♦ State the meaning of converging	
♦ Identify the focal point of a lens	
♦ Carry out an experiment to show the effect that a prism has on a ray of light	
♦ Identify the seven colours of the spectrum	
♦ Explain how a visible spectrum is produced as light passes through a prism	
♦ Describe the electromagnetic spectrum as a family of waves	
♦ State the names of the waves that make up the electromagnetic spectrum: Gamma Rays, X-Rays, Ultraviolet, Visible Light, Infrared, Microwaves, Television and Radio.	
♦ Research one application of an electromagnetic waves beyond the visible in everyday life, giving advantages and limitations of that application	

Refraction of Light

- Refraction causes light to change direction as the light passes from one material to another



Describe, or draw a labelled diagram, to show how you could show the refraction of light through a glass block.

→ Include the names of the pieces of equipment

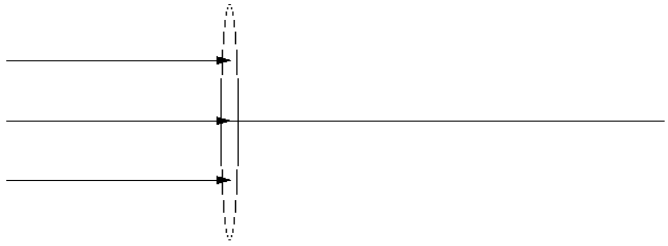
→ Include the result you would expect

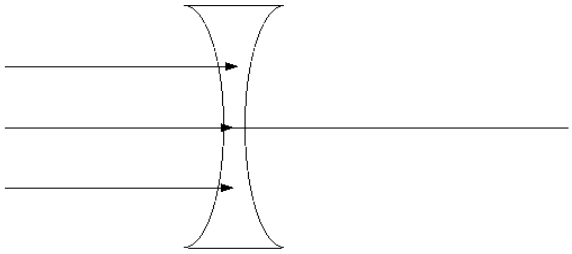
Practical Applications of Refraction of Light

Describe one use of refraction in e.g. corrective lenses in glasses, in magnifying glasses and in optical instruments

Concave and convex lenses

Using a ruler, complete the diagrams below to show what happens when light travels through the different lenses.
Label the type of lens (concave or convex) and focal point





Use the diagrams above to explain:

→ Diverging

→ Converging

Prisms and light

Describe, or draw a labelled diagram, to show how you could use a prism to separate white light into the 7 different colours of the spectrum

→ Include the names of the pieces of equipment
→ Include the result you would expect

Light is refracted when it enters the prism, and each colour is refracted by a different amount. This means that the light leaving the prism is spread out into its different colours

State the 7 colours of the spectrum (ROYGBOV)

→

Electromagnetic Spectrum

The electromagnetic spectrum is a family of waves all of which have different uses

Name of wave	Use in Everyday Life
Radio waves	Television signals
Microwaves	Cooking, mobile phones
Infrared	Optical fibre communication
Ultraviolet	Detecting forged bank notes
X-rays	Medical images of bones
Gamma radiation	Killing cancer cells

Limitations of applications

Write down the advantages and limitations of one application of electromagnetic waves

→ Application

→ Advantages

→ Limitations