ical Experiment
- Light Waves: Reflection and Refraction.

Background information.
As we know, light travels from one place to another as waves. We can use equipment such as a light box kit to investigate how light waves interact when reflecting and refracting. Light box kits contain concave (curved inwards) objects, convex (curved outwards) objects, prisms and planes that can be used to demonstrate how light is reflected or refracted.

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Aim:

To investigate the way light reflects or bounces off a medium and the way it refracts or passes through a medium.

Hypothesis:

Light waves from the light box will reflect or refract depending on the used medium, such as mirrors, lenses and prisms.

Materials:
- Light box kit
- Convex and concave lenses
- Prisms and planes
- Battery pack
- White A4 paper

Method:
Set up of light box kit.

1. Connect your light box to your battery pack as shown by your teacher
2. Place the black plastic light distributor down with the single open shaft facing downwards.

3. Place a sheet of white paper down in front of the light box.
4. Choose a coloured square of your choice.
5. Close the sides of the box making sure no light escapes.

Experiment 1.

6. Place a concave mirror in front of the light box and fill in the table below.
7. Flip over the concave mirror so it faces backwards and fill in the table below.
8. Place down the plane mirror so that it faces the light box and fill in the table below.

Experiment 2.

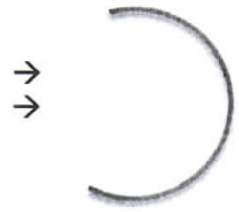
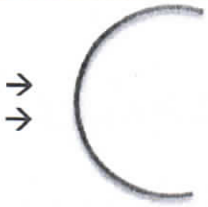
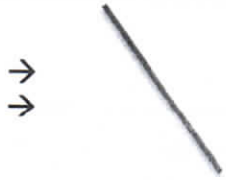
9. Place the concave lense in front of the light box (on the horizontal) and fill in the table below.
10. Place the convex lense in front of the light box (on the horizontal) and fill in the table below.
11. Place down the rectangular plane in front of the light box (on the diagonal) and fill in the table below.
12. Place the prism in front of the light box and fill in the table below.

Experiment 3.

13. Start with a convex lens and hold it close to your eye. Slowly move the lense away from your face until your arm is completed outstretched. Record what you see in the space below.
14. Repeat the action for concave lenses and describe the difference between the two lenses.

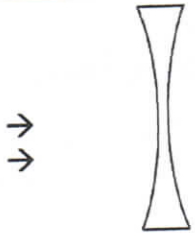
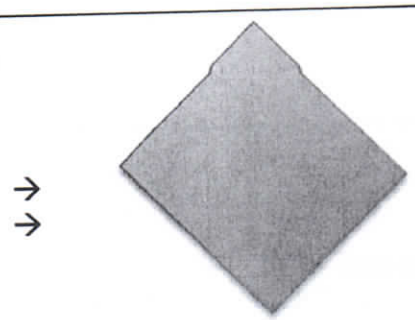
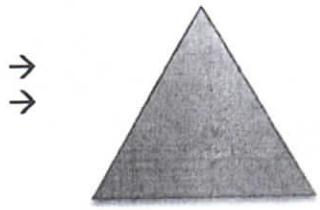
Results:

Experiment 1. Mirrors

Top view	What happened to the rays? Reflection or refraction?	Plane, convex or concave surface?
	Reflection	Concave
	Reflection	Convex
	Reflection	Plane

Experiment 2. Lens & Prisms

Top view	What happens to the rays? Reflection or refraction?	Lens or prism? Convex or concave?
		

	Refraction	Convex Lens
	Refraction	Concave Lens
	Refraction	Prism
	Refraction	Prism

Discussion:

Question 1: Describe the difference between reflection and refraction based on what you saw in your results.

Reflection is light bouncing off and object in the direction it came from, and refraction is light passing through an object, possibly being distorted.

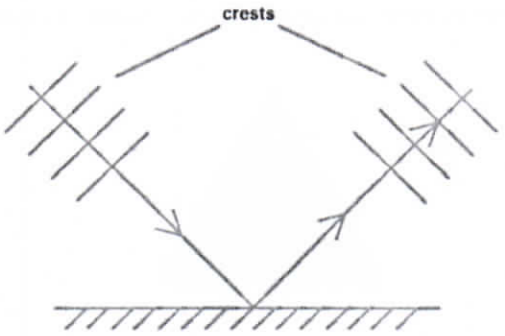
Question 2: Describe the effect concave and convex lenses have on the light that passes through them.

The light bends to the shape of the object, resulting in the light travelling in a different direction

Question 3. Does the distance from the object alter the way the light bends? Explain your response.

Question 4. The following image demonstrates what feature of light waves and why?

It shows how light reflects off a medium and how the light travels through a wave, giving the wavelength of the wave.



Conclusion: (summarise the experiment, refer to and describe results, state if the hypothesis was support or not and why and acknowledge any errors made and how they could have impacted results).

The light reflected and refracted through the mediums, supporting the hypothesis. The room could have been darker to make the light more visible. The light reflected off the mirrors and refracted through prisms.