CIE Physics GCSE

Topic 3.2 - Light

Flashcards

What happens when rays of light hit a plane mirror?

What happens when rays of light hit a plane mirror?

They are reflected.

What are the characteristics of an image formed from a plane mirror?

What are the characteristics of an image formed from a plane mirror?

- The same size as the object
- On the the same side of the mirror as the object
- An **inverted** (upside down) version of the object

When light is reflected, how do angles i and r compare?

When light is reflected how do angles i and r compare?

angle of incidence = angle of reflection

How are the angles of incidence and reflection measured?

How are the angles of incidence and reflection measured?

Relative to the normal.

What is a virtual image? (supplement)

What is a virtual image? (supplement)

An image produced on the same side of the lens as the object.

What is a real image? (supplement)

What is a real image? (supplement)

- An image produced on the opposite side of the lens from the object.
- A real image can be formed on a screen as the light rays cross after the lens.

What kind of image is produced by a plane mirror? (supplement)

What kind of image is produced by a plane mirror? (supplement)

A virtual image.

What is refraction?

What is refraction?

Refraction is the change in **speed** of a wave crossing a boundary between two media, resulting in a change in direction.

What property of a wave is **not** changed by refraction?

Which property of a wave is **not** changed by refraction?

The frequency

What is the critical angle?

What is the critical angle?

The angle of incidence which produces an angle of refraction of 90°.

What is internal reflection?

What is internal reflection?

When light reaches a boundary and is reflected back into the medium which it came from.

What is total internal reflection?

What is total internal reflection?

When a ray of light is fully reflected back into the medium it came from, when reaching a boundary between media.

When does total internal reflection occur?

When does total internal reflection occur?

When the angle of incidence is greater than the critical angle.

Define refractive index (supplement)

Define refractive index (supplement)

The ratio of the speed of light in a vacuum to the speed of light in any given medium.

Give the equations for refractive index (supplement)

Give the equations for refractive index (supplement)

$$\text{refractive index} = \frac{\sin(i)}{\sin(r)}$$

$$\text{refractive index} = \frac{1}{\sin(i)}$$

When light passes through a converging lens...

When light passes through a converging lens...

The light rays bend towards the normal, and meet at a **focal point**.

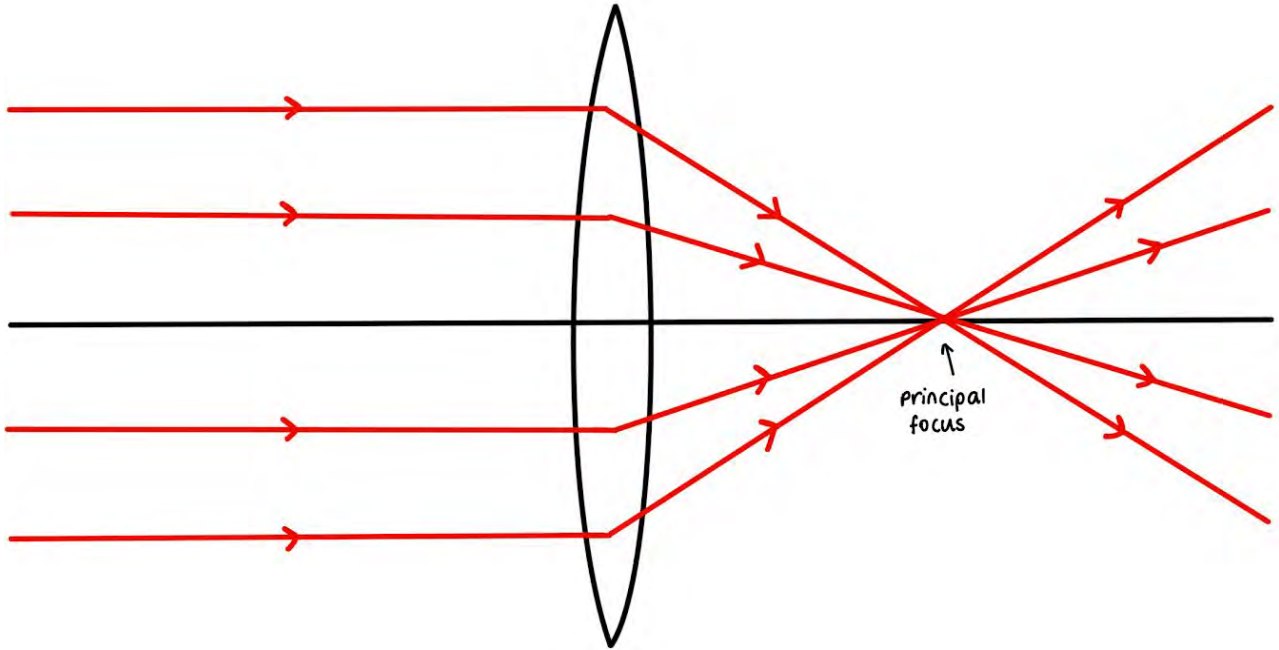
What is the principal focus of a lens?

What is the principal focus of a lens?

A focal point before a convex lens, from which the light rays appear to come from, or the focal point after a concave lens where all the rays meet.

Draw a diagram of light rays through a converging lens

Draw a diagram of light rays through a converging lens



How can lenses act as magnifying glasses?

How can lenses act as magnifying glasses?

By producing an enlarged, virtual image.

How does wavelength affect refraction?

How does wavelength affect refraction?

Shorter wavelength waves refract **more.**

What happens when white light is shone through a prism?

What happens when white light is shone through a prism?

It separates into a spectrum of all its coloured light components.

Why is white light separated by a prism?

Why is white light separated by a prism?

Each different coloured light wave has a different wavelength. The shortest wavelength light (blue) refracts the most while longer wavelengths (red) refract more, producing a spectrum.

List, in the correct order, the colour spectrum produced by the dispersion of white light

List, in the correct order, the spectrum of colours produced by the dispersion of white light

Red, orange, yellow, green, blue, indigo and violet.

What is monochromatic light?
(supplement)

What is monochromatic light? (supplement)

Light of a single frequency.