

AQA Physics GCSE

4.6.2 - Electromagnetic Waves

Flashcards

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What type of spectrum do
electromagnetic waves form?



What type of spectrum do electromagnetic waves form?

A continuous spectrum.



Order the types of electromagnetic radiation from lowest to highest frequency.



Order the types of electromagnetic radiation from lowest to highest frequency.

- Radio waves
- Microwaves
- Infrared
- Visible Light
- Ultraviolet
 - X-rays
- Gamma Rays



How do the speeds of EM radiation differ
in a vacuum and in air?



How do the speeds of EM radiation differ in a vacuum and in air?

Electromagnetic waves all travel at the same speed in a vacuum and in air.



What property of waves in different mediums causes refraction? (**Higher**)



What property of waves in different mediums causes refraction? (Higher)

- Velocity
- Wave speed is slower in denser materials, causing refraction



In which direction (relative to the normal) do waves refract when entering a denser medium?



In which direction (relative to the normal) do waves refract when entering a denser medium?

- They bend towards the normal
- The angle of refraction is less than the angle of incidence



What type of waves can be produced by oscillations in an electrical circuit?
(Higher)



What type of waves can be produced by oscillations in an electrical circuit? (Higher)

Radio waves.



How can radio waves create an alternating current in a circuit? (Higher)



How can radio waves create an alternating current in a circuit? (Higher)

When radio waves are absorbed, they can induce oscillations in a circuit with the same frequency as the waves themselves.



Where do gamma rays originate from?



Where do gamma rays originate from?

They originate from changes in the
nuclei of atoms.



What health effects can ultraviolet waves cause?



What health effects can ultraviolet waves cause?

- They can cause the skin to age prematurely
- They can increase the risk of developing skin cancer



What health effects can X-rays and Gamma rays cause?



What health effects can X-rays and Gamma rays cause?

- They are ionising radiation so can cause mutations in genes
- They can lead to increased risk of developing various cancers



Give three practical uses for infrared radiation.



Give three practical uses for infrared radiation.

1. Electrical heaters
2. Cooking food
3. Infrared cameras



Give two practical uses for microwave radiation.



Give two practical uses for microwave radiation.

1. Satellite communications
2. Cooking food



Give two practical uses for radio waves.



Give two practical uses for radio waves.

1. Television transmission
2. Radio transmission



What wave phenomenon is used by
lenses to form an image?
(Physics only)



What wave phenomenon is used by lenses to form an image? **(Physics only)**

Refraction.



How does a convex lens form an image? (Physics only)



How does a convex lens form an image? (Physics only)

Parallel rays of light are refracted and brought together at a point known as the principal focus.



What is meant by the focal length of a lens?
(Physics only)



What is meant by the focal length of a lens? (Physics only)

The distance from the lens to the principal focus.



What is the difference between the image produced by a convex and a concave lens?
(Physics only)



What is the difference between the image produced by a convex and a concave lens? (Physics only)

- Convex lenses can produce real or virtual images
- Concave lenses can only produce virtual images



Why does magnification not have a unit?
(Physics only)



Why does magnification not have a unit? (Physics only)

- It is the ratio between image height and object height
 - Ratios do not require units



What symbol is used to represent a convex lens in a ray diagram?
(Physics only)



What symbol is used to represent a convex lens in a ray diagram? (Physics only)



What symbol is used to represent a concave lens in a ray diagram?
(Physics only)



What symbol is used to represent a concave lens in a ray diagram? (Physics only)



What determines the colour of visible light waves?

(Physics only)



What determines the colour of visible light waves?
(Physics only)

The wavelength and frequency of the
light waves.



What colour of visible light has the
highest frequency?
(Physics only)



What colour of visible light has the highest frequency? (Physics only)

Blue



What colour of visible light has the
largest wavelength?
(Physics only)



What colour of visible light has the largest wavelength? **(Physics only)**

Red



What is meant by the term ‘specular reflection’?
(Physics only)



What is meant by the term ‘specular reflection’?
(Physics only)

Reflection from a smooth surface in a
single direction.



What is meant by the term 'diffuse reflection'?

(Physics only)



What is meant by the term 'diffuse reflection'?
(Physics only)

Reflection from a rough surface which
causes scattering.



How does a red colour filter work? (Physics only)



How does a red colour filter work? (Physics only)

- A red filter absorbs all wavelengths of light other than those in the red range of the spectrum
- This means only red light passes through the filter



What determines the colour of an
opaque object?
(Physics only)



What determines the colour of an opaque object?

(Physics only)

- Different objects reflect different wavelengths of light by different amounts
- The wavelengths that are most strongly reflected determine the colour



What happens to the wavelengths of light that aren't reflected by an opaque object?
(Physics only)



What happens to the wavelengths of light that aren't reflected by an opaque object? **(Physics only)**

Any wavelengths that aren't reflected are absorbed by the object.



What colour does an object appear if all wavelengths are reflected by equal amounts?
(Physics only)



What colour does an object appear if all wavelengths are reflected by equal amounts? **(Physics only)**

White



What colour does an object appear if all wavelengths are absorbed?
(Physics only)



What colour does an object appear if all wavelengths are absorbed? (Physics only)

Black

