

# The electromagnetic spectrum

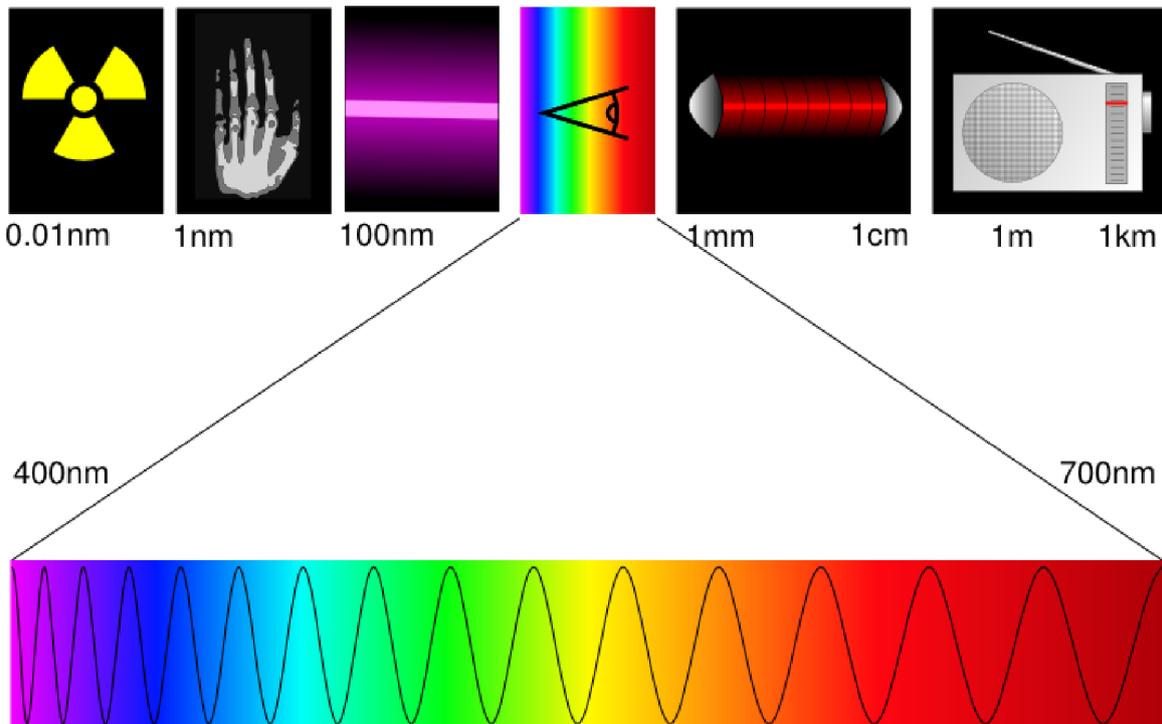
Select the correct answer from the text below each question:

- Gamma rays travel faster than visible light.  
true false
- All electromagnetic waves travel at the same speed in a vacuum.  
true false
- The speed of light in a vacuum is...  
31 ms<sup>-1</sup> 300 ms<sup>-1</sup> 300,000,000 ms<sup>-1</sup> infinite
- White light is a mixture of colours that can be split into the visible spectrum by a ...  
rainbow prison migraine prism
- Which of the following has the highest frequency?  
ultraviolet microwaves x-rays radiowaves
- Which of the following has the highest frequency?  
visible light microwaves infrared radiowaves
- Which of the following has the longest wavelength?  
gamma rays visible light ultraviolet radiowaves
- Which of the following has the shortest wavelength?  
gamma rays visible light ultraviolet radiowaves
- Which of the following has the lowest frequency?  
ultraviolet microwaves radiowaves x-rays
- These waves have the longest wavelength and are used to carry signals for radar, TV and radio  
radiowaves ultraviolet microwaves infrared
- These rays are absorbed by bones and teeth but pass through flesh  
radiowaves x-rays visible light infrared
- These waves are used to cook food (they are absorbed by water molecules in the food)  
gamma rays x-rays micro-waves ultraviolet
- Our eyes are able to see waves in this part of the electromagnetic spectrum  
ultraviolet radio visible infrared
- Any warm object emits this wave. Night vision cameras are able to detect this type of wave.  
gamma rays visible light microwaves infrared
- These rays are emitted by the sun (and other white hot objects). Over-exposure to these rays can burn the skin and cause skin cancer.  
gamma rays ultraviolet microwaves infrared

Use the "The electromagnetic spectrum: bounce quiz" at the eChalk website to help you answer these questions.

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16. These rays have the shortest wavelength of all. They are emitted by some radioactive substances. They are often used in radiotherapy to kill cancer cells.  
**gamma rays    ultraviolet    infrared    microwaves**
17. Waves with a high frequency have a \_\_\_\_\_ wavelength  
**long    short**
18. The longer the wavelength the \_\_\_\_\_ the frequency  
**lower    higher**
19. Electromagnetic waves are \_\_\_\_\_ waves.  
**happy    noisy    transverse    longitudinal**
20. In \_\_\_\_\_ waves the vibrations are at right angles to the direction of the wave.  
**longitudinal    transverse**
21. In \_\_\_\_\_ waves the vibrations are in the same direction as the direction of the wave.  
**longitudinal    transverse**
22. Electromagnetic waves can travel through a vacuum.  
**true    false**
23. Sound waves are part of the electromagnetic spectrum.  
**true    false**
24. Light waves, water waves, microwaves and the 'Mexican wave' are all examples of \_\_\_\_\_ waves.  
**electromagnetic    transverse    longitudinal**



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# (Answers) The electromagnetic spectrum

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