Triple Science, Higher Tier

P6 Waves Revision Checklist

Topic	Content	✓
Properties of Waves	Describe the differences between transverse and longitudinal waves. Explain that ripples on water surfaces are transverse, while sound waves in air are longitudinal. Describe evidence that shows it is the wave that travels, not the particles in a medium.	
	Describe waves in terms of amplitude, wavelength, frequency, and period. Use the equations $T = 1/f$ and $v = f\lambda$ to calculate wave speed, frequency, wavelength, and period. Identify amplitude and wavelength from diagrams and describe methods to measure the speed of sound in air and the speed of ripples on a water surface.	
	Required practical activity 8: make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid and take appropriate measurements.	
Reflection and Refraction	Construct and interpret ray diagrams to show the reflection of waves at a boundary. Describe how waves can be reflected, absorbed, or transmitted at a material boundary.	
	Required practical activity 9: investigate the reflection of light by different types of surface and the refraction of light by different substances.	
Sound Waves and Ultrasound	Describe how sound waves travel through solids by causing vibrations. Explain how the ear drum converts sound waves into vibrations that are detected as sound. Explain why sound transmission is limited to a specific frequency range and how this affects human hearing. State the range of human hearing (20 Hz - 20 kHz),	
Waves for Detection and Exploration	Explain how ultrasound waves are used in medical and industrial imaging by reflecting at material boundaries. Describe how seismic waves (P-waves and S-waves) provide evidence for the Earth's internal structure. Explain how echo sounding is used to detect objects in deep water and measure depth.	

Classroom 42

Triple Science, Higher Tier

P6 Waves Revision Checklist

Topic	Content	✓
Electromagnetic Waves	Describe the electromagnetic spectrum as a continuous range of transverse waves. Identify the order of waves from radio waves to gamma rays in terms of wavelength and frequency. State that all electromagnetic waves travel at the same speed in a vacuum.	
	Explain how different materials absorb, transmit, refract, or reflect electromagnetic waves depending on wavelength. Construct wave front diagrams to show refraction at a boundary and describe how changes in speed affect wave direction.	
	Required practical activity 10 : investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.	
	Explain how radio waves can be produced by oscillations in electrical circuits and how they induce currents when absorbed. Describe how gamma rays originate from changes in atomic nuclei. Evaluate the risks of exposure to ultraviolet, X-rays, and gamma rays, explaining how ionising radiation can cause mutations and increase cancer risk.	
	Describe applications of different electromagnetic waves: radio waves for communication, microwaves for satellite transmission, infrared for heating, visible light for fibre optics, ultraviolet for lamps, X-rays for medical imaging, and gamma rays for cancer treatment. Explain why each type of wave is suited to its use.	
Lenses and Visible Light	Explain how convex lenses focus light and concave lenses diverge light. Construct and interpret ray diagrams for convex and concave lenses. Use the equation magnification = image height / object height to calculate magnification. Compare how lenses are used in glasses, microscopes, and cameras.	
	Visible Light - Explain how objects appear coloured based on the reflection, absorption, and transmission of different wavelengths of visible light. Describe how colour filters work and explain the difference between transparent, translucent, and opaque materials.	
Black Body Radiation	Emission and Absorption of Infrared Radiation - Describe how all objects emit and absorb infrared radiation, with hotter objects emitting more in a given time. Explain why a black body is the best possible emitter and absorber of radiation.	
	Perfect Black Bodies and Radiation - Explain how the intensity and wavelength of radiation depend on temperature. Describe how the Earth's temperature is influenced by radiation absorption, emission, and reflection. Use diagrams to explain the balance between incoming and outgoing radiation in real-world examples such as climate change.	

Classroom 42

Triple Science, Foundation Tier

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Electromagnetic Waves	Describe the electromagnetic spectrum as a continuous range of transverse waves. Identify the order of waves from radio waves to gamma rays in terms of wavelength and frequency. State that all electromagnetic waves travel at the same speed in a vacuum.	
	Required practical activity 10 : investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.	
	Changes in atoms and the nuclei of atoms can result in electromagnetic waves being generated or absorbed over a wide frequency range. Describe how gamma rays originate from changes in atomic nuclei. Evaluate the risks of exposure to ultraviolet, X-rays, and gamma rays, explaining how ionising radiation can cause mutations and increase cancer risk.	
	Describe applications of different electromagnetic waves: radio waves for communication, microwaves for satellite transmission, infrared for heating, visible light for fibre optics, ultraviolet for lamps, X-rays for medical imaging, and gamma rays for cancer treatment.	
Lenses and Visible Light	Explain how convex lenses focus light and concave lenses diverge light. Construct and interpret ray diagrams for convex and concave lenses. Use the equation magnification = image height / object height to calculate magnification. Compare how lenses are used in glasses, microscopes, and cameras.	
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Black Body Radiation	Emission and Absorption of Infrared Radiation - Describe how all objects emit and absorb infrared radiation, with hotter objects emitting more in a given time. Explain why a black body is the best possible emitter and absorber of radiation.	

Double Science, Higher Tier

P6 Waves Revision Checklist

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	Required practical activity 7: make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid and take appropriate measurements.	
Electromagnetic Waves	Describe the electromagnetic spectrum as a continuous range of transverse waves. Identify the order of waves from radio waves to gamma rays in terms of wavelength and frequency. State that all electromagnetic waves travel at the same speed in a vacuum.	
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Double Science, Foundation Tier

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