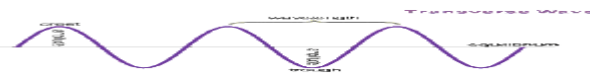
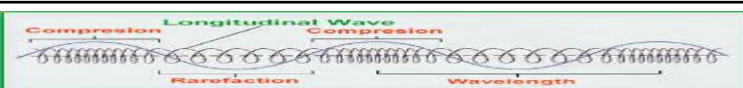
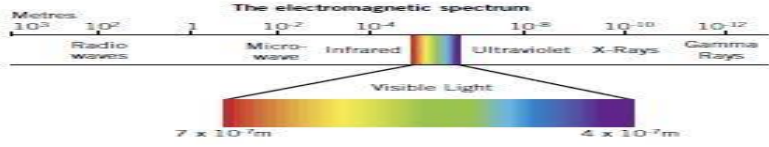
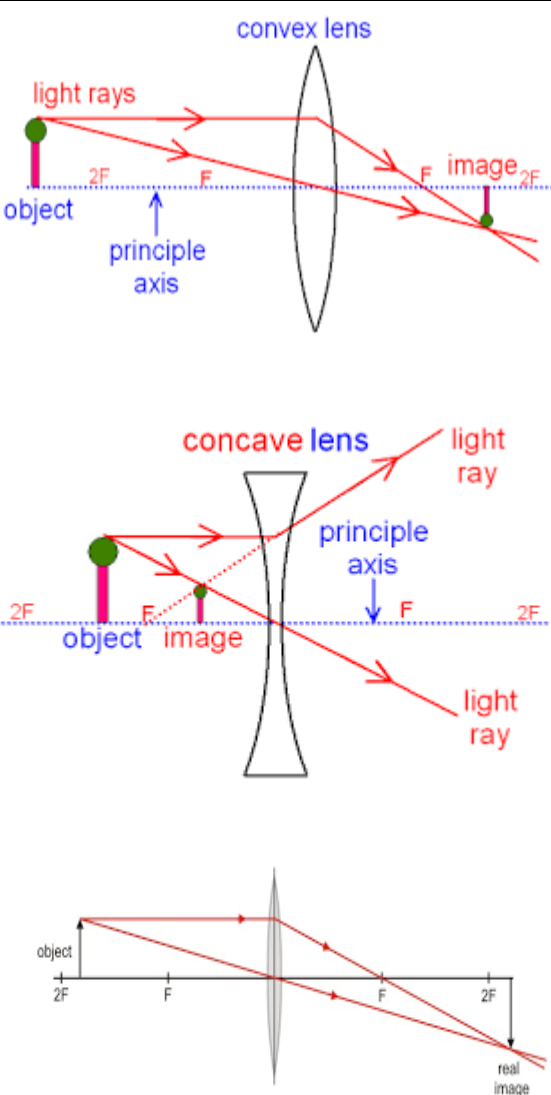


Wave equations			Transverse and Longitudinal waves			Key Vocabulary		
1	$v = f \lambda$	wave speed = frequency $\times$ wavelength. wave speed, v , in metres per second, m/s frequency, f , in hertz, Hz wavelength, λ , in metres, m	1	Transverse wave		1	Wave	Any disturbance that transmits energy through matter or space.
			2	Longitudinal wave		2	Medium	A solid, liquid or gas that is vibrated
			3	Reflection	When waves are reflected the angle of is the same as the angle of reflection. The angle of incidence is the angle between the incoming wave and the normal. The angle of reflection is the angle between the reflected wave and the normal. The normal is usually show by a dotted line.	3	Transverse Wave	The oscillations are perpendicular to the direction of energy transfer.
2	$T = 1/ f$	period = $1/$ frequency period, T , in seconds, s frequency, f , in hertz, Hz	4	Specular or diffuse	Specular reflection happens when a wave is reflected in a single direction, Diffuse reflection when a wave is reflected in many directions	4	Longitudinal Wave	The oscillations are parallel to the direction of energy transfer.
			Electromagnetic waves and refraction and light			5	Wavelength	The distance between any adjacent crests or compressions in a series of waves.
Required Practical's – RP 8 – Waves – ripple tank RP 9 – Reflection and refraction RP 10 – Infra-red radiation and absorption			1	Electromagnetic spectrum		6	Frequency	The number of waves produced in a given amount of time.
			2	Refraction	When a wave crosses a boundary between materials at an angle it changes direction –it's refracted. Refraction depends on speed of the wave and density of the material.	7	Wave Speed	wave speed (metre per second) = frequency (hertz) $\times$ wavelength (metre)
			3	Radio waves	Radio waves are a type of electromagnetic radiation with wavelengths in the electromagnetic spectrum longer than infrared light. Radio waves are made by oscillating charges Radio waves are extensively used for communication.			
			4	Using EM waves	Satellites, Microwaves, Temperature monitoring, Data transmission, sun tanning, Medicine. EM radiation can be harmful to people. Radiation dose is measured in sieverts.			

Ray diagrams



Lenses and visible light

1	Concave	A concave lens caves inwards. It causes parallel rays of light to spread out (diverge).
2	Convex	A convex lens bulges outwards. It causes rays of light parallel to the axis to spread out (converge) at the principle focus.
3	Ray diagrams	A ray diagram shows how light travels, including what happens when it reaches a surface. In a ray diagram, you draw each ray as: a straight line; with an arrowhead pointing in the direction that the light travels.
4	Light	Visible light is made up of a range of different colours (white light) ROYGBIV. Primary colours – red, green and blue.
5	Radiation	Every object absorbs and emits infra-red radiation. A Leslie cube can be used to investigate IR emission. Black bodies are the ultimate emitters of radiation, and absorbers of radiation.

Sound waves

1	Sound waves	Sound travels as a wave. Sound waves are caused by vibrating objects. Sound is a type of longitudinal wave. It travels faster in solids than liquids and faster in liquids than gases. Sound does not travel through a vacuum.
2	Ultra sound	Ultra sound is sound with frequencies greater than 20,000Hz. Ultra sound can be used in hospitals for pre-natal scanning of a foetus and industrial imaging such as finding flaws in materials.
3	Exploring earth's structure using sound	There are two types of seismic waves (P and S). P waves can travel through the core of the earth, S waves cannot. P waves are longitudinal and S waves are transverse.

Key Vocabulary

1	Diffraction	The bending of waves around a barrier or through an opening.
2	Reflection	The angle of incidence equals the angle of reflection. The normal is a line drawn at right angles
3	Refraction	Waves pass through a different medium and change direction
4	Decibel (dB)	The most common unit used to express loudness.
5	Frequency	Number of oscillations per second (Hz)
6	Time Period	one complete cycle of vibration to pass a given point
7	Oscillation	A motion that repeats itself - IE vibrations