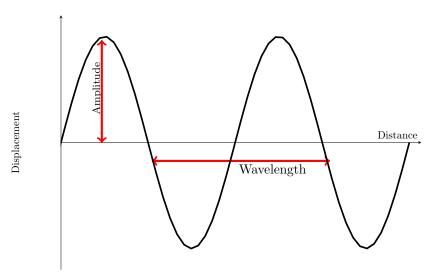
Progressive and stationary waves

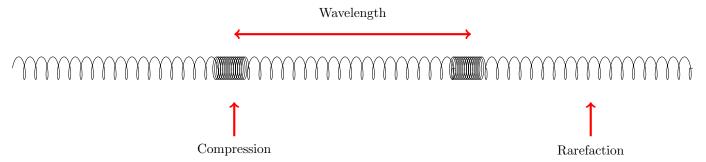
1 Progressive waves

1.1 Transverse wave



Wave direction and energy are perpendicular

1.2 Longitudinal wave



Wave direction and energy are parallel

1.3 Definitions

Displacement - Distance from equilibrium to the position of the particle

Amplitude - The maximum displacement of a particle

Wavelength - The distance from a point on a wave to the same point on the next wave

Complete cycle - The cycle from one point of maximum displacement to the next section of maximum displacement

Period - The time for 1 complete cycle

Frequency - The number of complete cycles per second

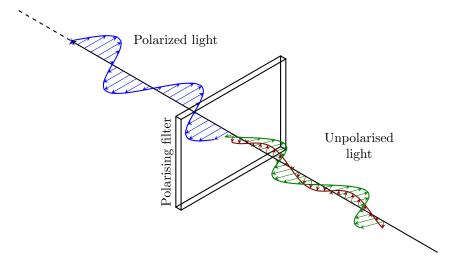
1.4 Polarisation

Polarised light all travels in the same direction

Unpolarised light travels in all directions

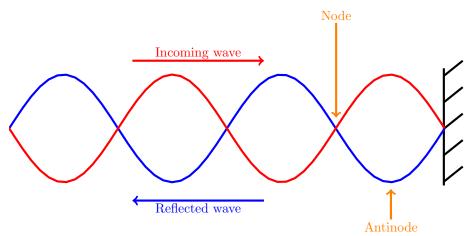
Unpolarised light can be polarised using a polarising filter which contains stripes, only allowing one direction of light through

Only transverse waves can be polarised



2 The superposition of waves and stationary waves

Stationary waves are formed when a wave collides with itself after reflection



When both waves are at equilibrium there is a **node**

When one wave is at a maximum and one at a minimum there is an antinode

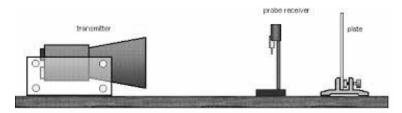
2.1 Sound



Dust heaps are made at nodes and dips are made at antinodes

 λ =Distance between the nodes $\times 2$

2.2 Microwaves



The receiver can be moved to find areas of nodes or antinodes

2.3 Harmonics

Harmonic	Pattern	# of Loops	Length-Wavelengt Relationship
1st	\Leftrightarrow	1	L = 1/2 • λ
2nd	\longleftrightarrow	2	L = 2/2• \lambda
3rd	\longleftrightarrow	3	L = 3 / 2 • \lambda
4th	\longleftrightarrow	4	L = 4 / 2 • A
5th	\longleftrightarrow	5	L = 5 / 2 • A
6th	()()()()	6	L = 6 / 2 • \lambda