A Level Physics
Waves

there are 2 types of progressive waves:
- Transverse

(these are things such as electromagnetic waves)
- Longitudinal

(the most common example is sound waves)

Transverse waves oscillate perpendicular to the direction of motion while longitudinal waves oscillate parallel to the direction of motion.

only transverse waves can be plane polarised
polarisation means the waves remain in one plane
only waves parallel to the slit pass through it without being interfered
when you have two polaroid filters only light passes through when the slits are parallel but when at a perpendicular angle no light gets through the filters.

- Displacement - the distance away a particle is from the equilibrium point
- amplitude - maximum displacement of a vibrating particle. for transverse waves this means the height of a crest or trough.
- wavelength - the least distance between two adjacent vibrating particles with same displacement and velocity
- period - time it takes for one entire wave to move past a fixed point
- frequency - the amount of cycles in one second

wave speed can be calculated using:

$$v = f\lambda$$

v = velocity
f = frequency
λ = wavelength

Phase difference is the fraction of a cycle between two particles vibrating at the same frequency.
This is measured in radians
the formula is

$$\text{phase difference} = \frac{2\pi d}{\lambda}$$

The conversion between degrees and radians is: