Physics 11
Unit 7.2
Wave Phenomena

Review

The Four Uniform Acceleration Equations

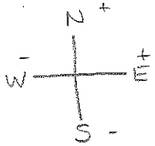
1) $V_f = V_i + at$

2) $d = \frac{V_i + V_f}{2} \cdot t$

3) $d = V_i t + \frac{1}{2} a t^2$

4) $V_f^2 = V_i^2 + 2ad$

Ex: What is ∄ V_i of a car accelerating east at $3.0\ m/s^2$ for 5.0s and reaching a V_f of 25.0 m/s east.



$a = 3.0\ m/s^2$

$t = 5.0s$

$V_f = 25.0\ m/s$

$V_i = ?$

$V_f = V_i + at$

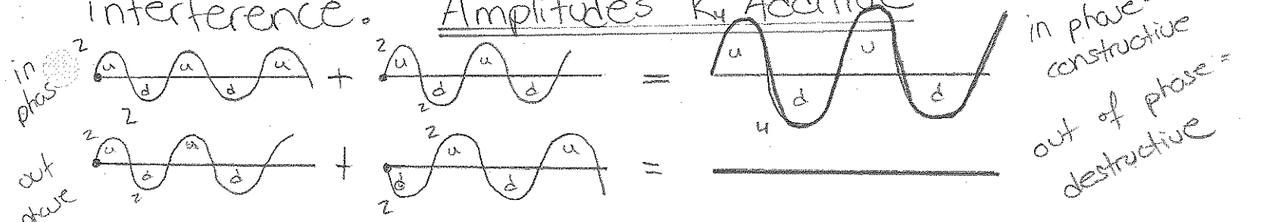
$25.0\ m/s = V_i + (3.0\ m/s^2)(5.0s)$

$25 = V_i + 15$

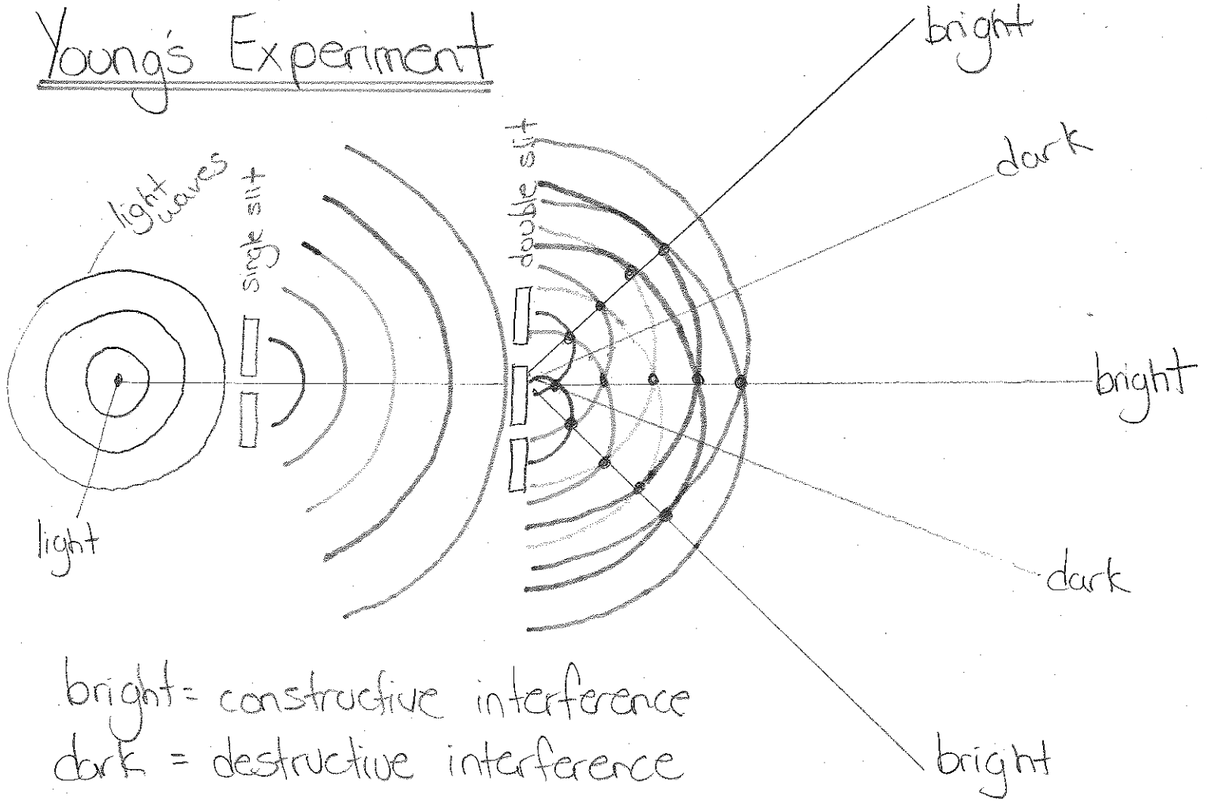
$10 = V_i$ | $10\ m/s = V_i$

New

Waves R nrg transmitted by disturbances [often vibrations]
There R several important properties of waves incl. Reflection/Refraction as well as constructive/destructive interference. Amplitudes R+/- Additive

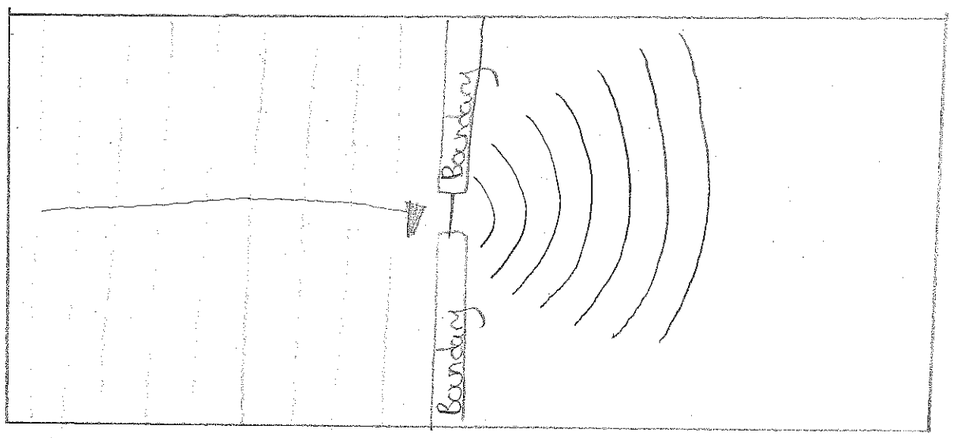


Young's Experiment



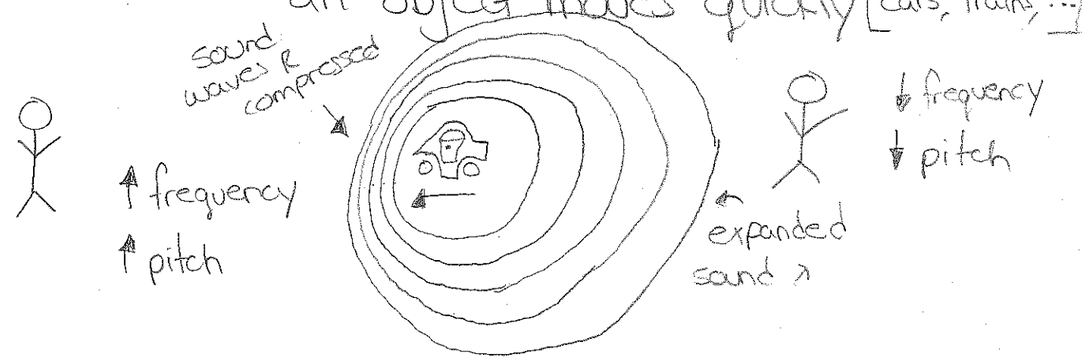
bright = constructive interference
dark = destructive interference

Another Wave Property... Diffraction



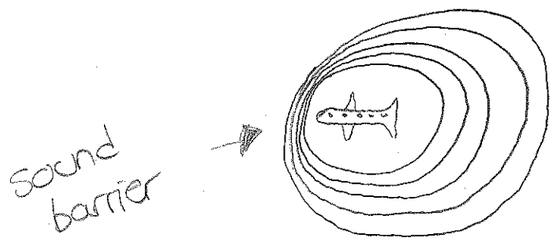
Diffraction: occurs when a wave spreads out as it travels thru a gap or passes an obstacle

Doppler Effect → sound waves R compressed as an object moves quickly [cars, trains, ...]



normal sound
normal frequency
normal pitch

Sound Barrier → An extreme case of the Doppler Effect; very fast moving objects (planes) compress sound waves into a wall/barrier - slows down planes



Sonic Boom → when an object (plane) travels faster than sound it gets ahead of the compression. It creates a cone called a shock wave & when shock wave passes you - you hear a sonic boom.

[cracking whips cause mini sonic booms]