Superposition of waves

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Superposition

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1. A heavy rope is flicked upwards, creating a single pulse in the rope. Make a drawing of the rope and indicate the following in your drawing:

   (a) The direction of motion of the pulse

   (b) Amplitude

   (c) Pulse length

   (d) Position of rest

2. A pulse has a speed of $2.1\,ms^{-1}$. How far will it have travelled in 4s?

3. How long does it take a pulse to cover a distance of 200mm if its speed is $1\,ms^{-1}$?

4. The two pulses below approach each other at $1\,ms^{-1}$. Draw what the waveform would look like after 1s, 2s and 5s.
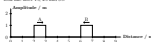
5. The following diagrams each show two approaching pulses. Redraw the diagrams to show what type of interference takes place, and label the type of interference.

   (a)

   (b)

1 To practise the principle of superposition.

2 To understand how stationary wave patterns are formed.

3 To know an application of standing waves.

REMINDER: Office hours are week 2 Tuesdays 3.45–5.0 p.m. in room 19.
Next office hours: Tuesday 6 March 2012

Superposition of waves, stationary waves

The formation of stationary waves by two waves of the same frequency travelling in opposite directions; the formula for the fundamental frequency in terms of tension and mass per unit length is not required. Simple graphical representation of stationary waves, nodes and antinodes on strings.

[AQA GCE AS and A Level Specification Physics A, 2009/10 onwards]

To write a *popular science* article on how scientists views on whether light is waves or particles have changed (Newton, Young, Planck/Einstein).

... and also to do a reading memo on `106-interference.pdf`, which will hopefully help with your article.