

# Longitudinal Waves

## Apparatus

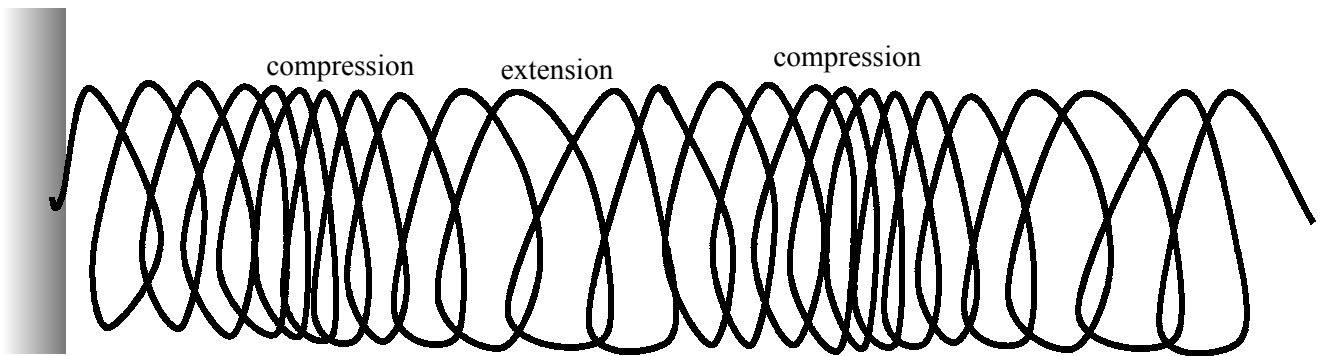
“slinky” or very large spring, fixed to the wall at one end

## Action

The students hold the slinky taut and horizontal. They send a longitudinal wave along the spring by pulling at the free end, and allowing it move back again by a few centimetres. They should recognize that this is a longitudinal wave. They then experiment with changing the amplitude of the waves, and the wave speed by changing the tension of the slinky. The tension can be changed by stretching the slinky more or less.

## The Physics

The amplitude of the wave does not effect the speed of the wave. The speed is determined by the medium it travels through, in particular it depends on the elastic and inertial properties of the medium, i.e. the tension and mass. You can change the wave speed on the slinky by stretching it more, and increasing the tension.



## Accompanying sheet

### Longitudinal Waves

Send a wave along the length of the slinky.

Does the amplitude of the wave affect the speed at which it moves?

How can you change the wave speed?

**Caution: Please do not stretch the slinky too much!**