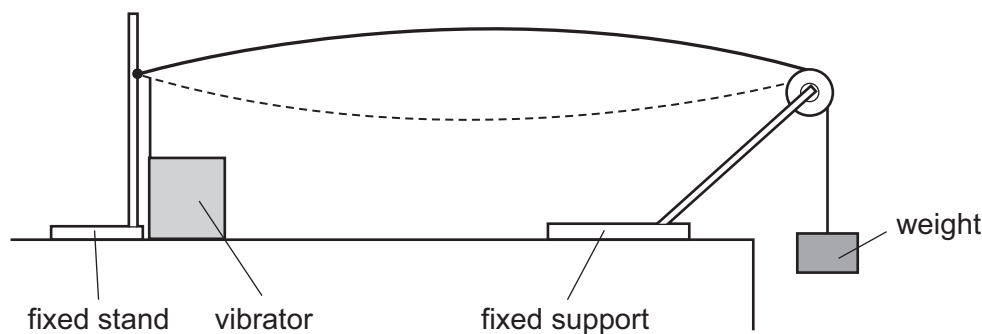


- 27 The diagram shows a steel wire clamped at one end. The other end is attached to a weight hanging over a pulley.



A vibrator is attached to the wire near the clamped end. A stationary wave with one loop is produced. The frequency of the vibrator is  $f$ .

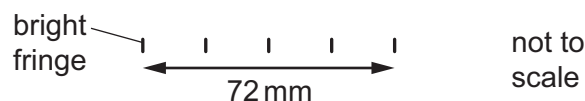
Which frequency should be used to produce a stationary wave with two loops?

- A  $\frac{f}{4}$       B  $\frac{f}{2}$       C  $2f$       D  $4f$
- 28 A parallel beam of light of wavelength 600 nm is incident normally on a diffraction grating. The grating has 300 lines per millimetre.

What is the total number of intensity maxima from the grating?

- A 1      B 3      C 11      D 13
- 29 A pattern of interference fringes is produced using a red laser, a double slit and a screen. The screen is 3.5 m from the double slit. The light from the laser has a wavelength of 640 nm.

The pattern of fringes is shown.



What is the separation of the slits?

- A  $1.2 \times 10^{-4} \text{ m}$       B  $1.6 \times 10^{-4} \text{ m}$       C  $3.1 \times 10^{-5} \text{ m}$       D  $3.3 \times 10^{-9} \text{ m}$