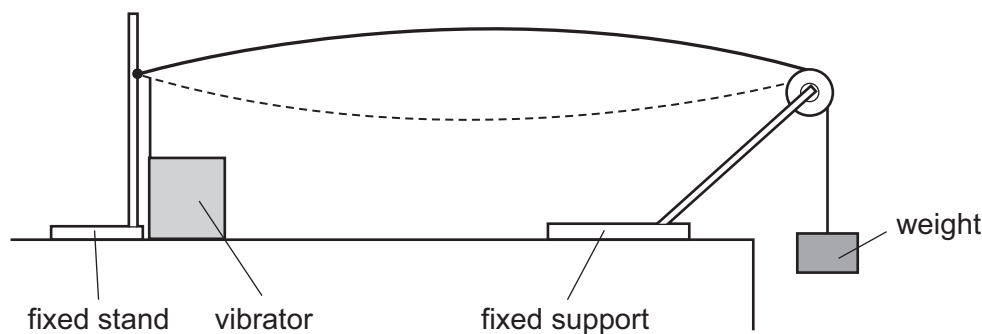


- 27 The diagram shows a steel wire clamped at one end. The other end is attached to a weight hanging over a pulley.

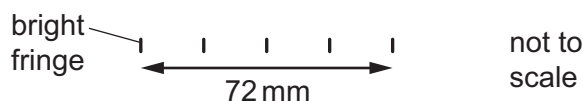


A vibrator is attached to the wire near the clamped end. A stationary wave with one loop is produced. The frequency of the vibrator is f .

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** $3.3 \times 10^{-9} \text{ m}$