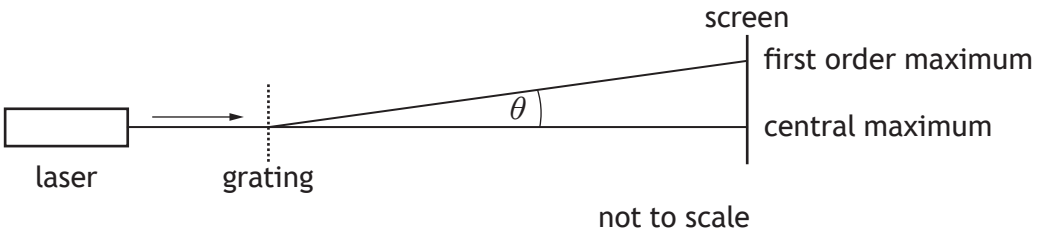
10. An experiment is carried out to determine the wavelength of light from a laser.



not to scale

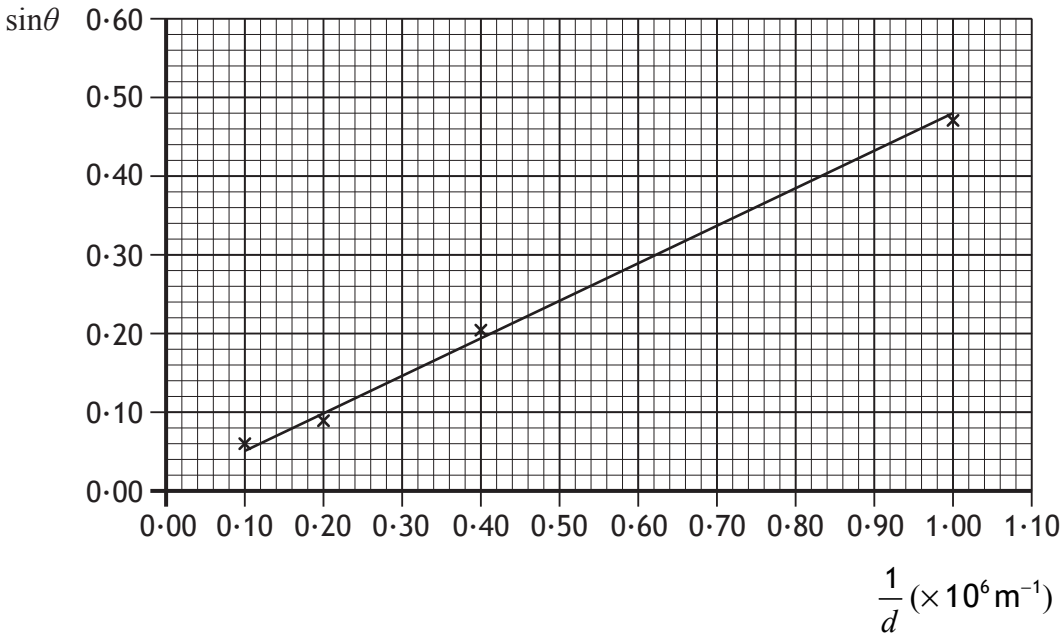
(a) Explain, in terms of waves, how a maximum is formed. **1**

(b) The experiment is carried out with four gratings.

The separation of the slits d is different for each grating.

The angle between the central maximum and the first order maximum θ, produced by each grating, is measured.

The results are used to produce a graph of $\sin\theta$ against $\frac{1}{d}$.



10. (b) (continued)

(i) Determine the wavelength of the light from the laser used in this experiment. **3**

Space for working and answer

(ii) Determine the angle θ produced when a grating with a spacing d of $2{\cdot}0 \times 10^{-6}$ m is used with this laser. **3**

Space for working and answer

(c) Suggest **two** improvements that could be made to the experiment to improve reliability. **2**