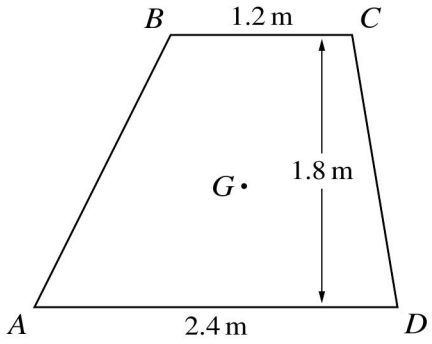

ABCD is a uniform lamina in the shape of a trapezium which has centre of mass *G*. The sides *AD* and *BC* are parallel and 1.8 m apart, with *AD* = 2.4 m and *BC* = 1.2 m (see diagram).

(i) Show that the distance of *G* from *AD* is 0.8 m. [4]

The lamina is freely suspended at *A* and hangs in equilibrium with *AD* making an angle of 30° with the vertical.

(ii) Calculate the distance *AG*. [2]

With the lamina still freely suspended at *A* a horizontal force of magnitude 7 N acting in the plane of the lamina is applied at *D*. The lamina is in equilibrium with *AG* making an angle of 10° with the downward vertical.

(iii) Find the two possible values for the weight of the lamina. [5]