



$OAB$  is a uniform lamina in the shape of a quadrant of a circle with centre  $O$  and radius  $0.8\text{ m}$  which has its centre of mass at  $G$ . The lamina is smoothly hinged at  $A$  to a fixed point and is free to rotate in a vertical plane. A horizontal force of magnitude  $12\text{ N}$  acting in the plane of the lamina is applied to the lamina at  $B$ . The lamina is in equilibrium with  $AG$  horizontal (see diagram).

(i) Calculate the length  $AG$ . [3]

(ii) Find the weight of the lamina. [5]