2 A non-uniform L-shaped beam of weight 10 N is attached to a wall using a hinge, as shown in Fig. 2.1. The beam is held at rest using a cord, such that the longer part of the beam is horizontal. The weight of the beam acts at a point on the beam that is at a horizonal distance of x away from the hinge. The tension in the cord is 5.0 N.
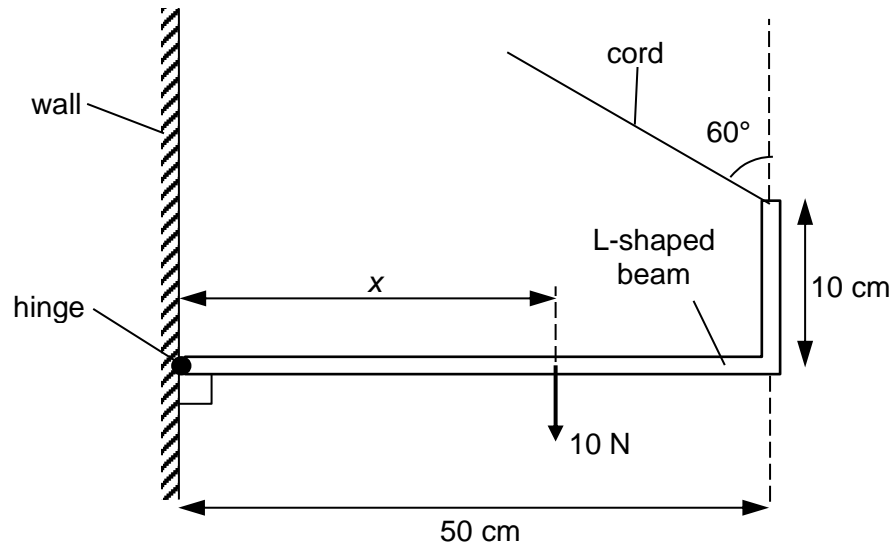

Fig. 2.1

(a) Determine the value of x.

x = ………………..……... cm [2]

(b) **(i)** On Fig. 2.1, draw and label

    1. the tension T acting on the beam due to the cord, and

[1]

    2. the contact force R acting on the beam due to the hinge.

[1]

(b) **(ii)** Show that the magnitude of *R* is 8.7 N.

[2]

[Total: 6]