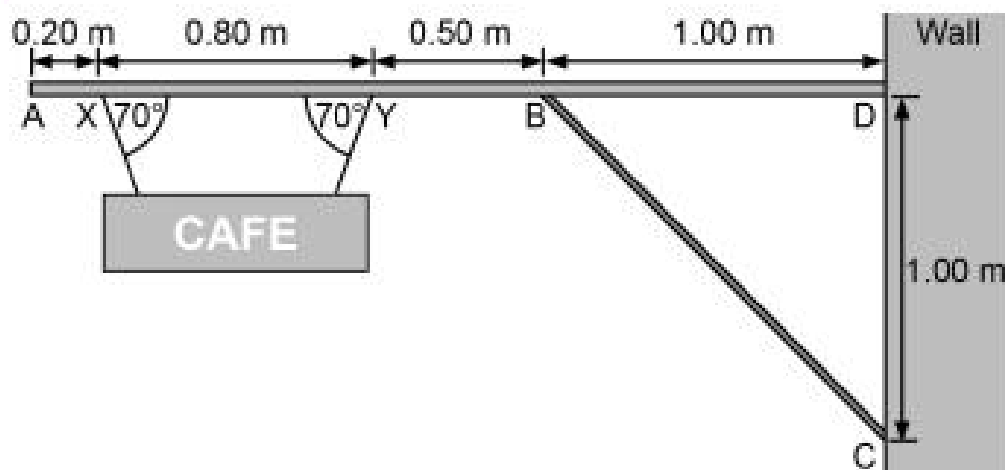


Question 4

(7 marks)



A uniform horizontal 2.50 m beam AD of mass 15.0 kg is attached to the front wall of a shop. It is strengthened and supported by a steel bracket BC that is attached to the beam AD at point B, 1.00 m from end D, and to the wall at point C, 1.00 m below end D.

Beam AD supports a uniform sign of mass 4.00 kg. The sign is attached to beam AD at points X and Y using two light steel cables. They are 0.20 m and 1.00 m respectively from end A, both making angles of 70.0° to beam AD. The light steel cables are attached at equal distance from the centre of the sign as shown in the diagram above.

- (a) Calculate the tension in each of the light steel cables supporting the sign. (3 marks)

Answer _____ N

- (b) Calculate the compression force in the steel bracket BC, if the force only acts along BC. (4 marks)