Leave blank

4.

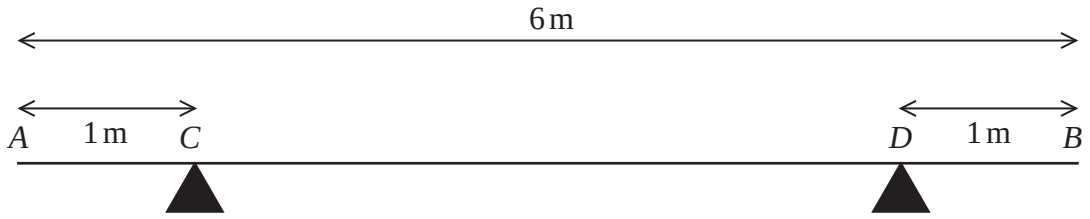

Figure 2

A metal girder *AB* has weight *W* newtons and length 6 m. The girder rests in a horizontal position on two supports *C* and *D* where *AC* = *DB* = 1 m, as shown in Figure 2.

When a force of magnitude 900 N is applied vertically upwards to the girder at *A*, the girder is about to tilt about *D*.

When a force of magnitude 1500 N is applied vertically upwards to the girder at *B*, the girder is about to tilt about *C*.

The girder is modelled as a non-uniform rod whose centre of mass is a distance *x* metres from *A*.

Find the value of *x*.

(6)

Leave blank

Question 4 continued

Q4

(Total 6 marks)