3.

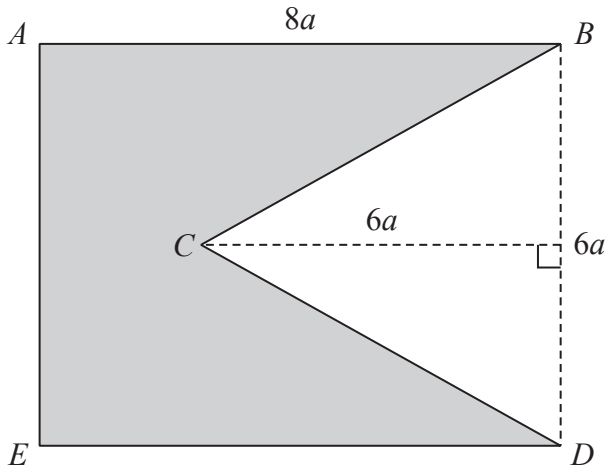


Figure 1

The uniform lamina $ABDE$ is in the shape of a rectangle with $AB = 8a$ and $BD = 6a$.
The triangle BCD is isosceles and has base $6a$ and perpendicular height $6a$.
The template $ABCDE$, shown shaded in Figure 1, is formed by removing the triangular lamina BCD from the lamina $ABDE$.

(a) Show that the centre of mass of the template is $\frac{14}{5}a$ from AE.

(5)

The template is freely suspended from A and hangs in equilibrium with AB at an angle of $\theta°$ to the downward vertical.

(b) Find the value of θ, giving your answer to the nearest whole number.

(3)

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Question 3 continued

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Question 3 continued

(Total for Question 3 is 8 marks)