**4.**

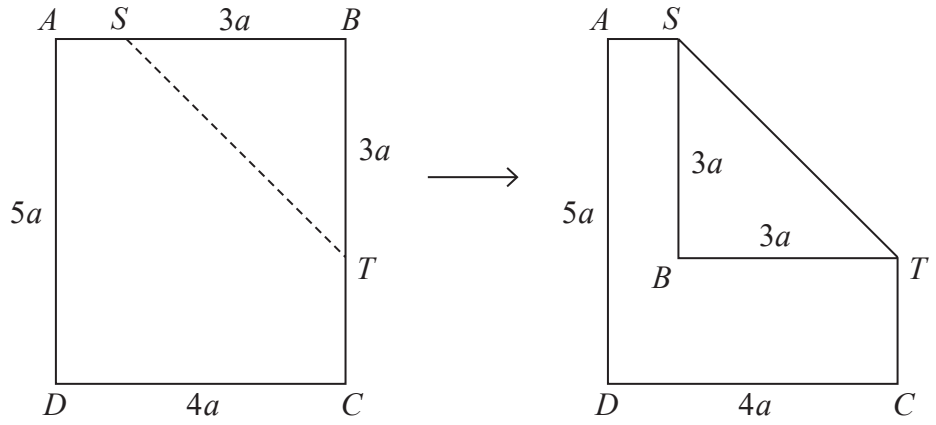



**Figure 2** **Figure 3**

The uniform rectangular lamina $ABCD$, shown in Figure 2, has $DC = 4a$ and $AD = 5a$

The points $S$ on $AB$ and $T$ on $BC$ are such that $SB = BT = 3a$

The lamina is folded along $ST$ to form the folded lamina $L$, shown in Figure 3.

The distance of the centre of mass of $L$ from $AD$ is $d$.

(a) Show that $d = \frac{71}{40}a$

**(5)**

The weight of $L$ is $4W$. A particle of weight $W$ is attached to $L$ at $C$.

The folded lamina $L$ is freely suspended from $S$.

A force of magnitude $F$, acting parallel to $DC$, is applied to $L$ at $D$ so that $AD$ is vertical.

(b) Find $F$ in terms of $W$

**(4)**

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**Question 4 continued**

**(Total for Question 4 is 9 marks)**