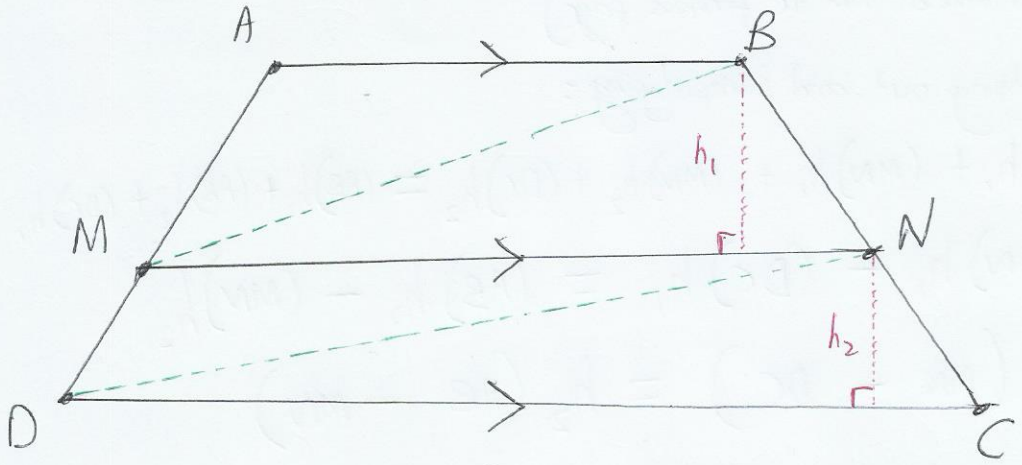
Sulong

B1



Firstly, let h_1 = Perpendicular drop from B to MN = height of Trapezium ABNM

h_2 = Perpendicular drop from N to DC = height of Trapezium MNCD

Note that this means that, $(h_1 + h_2)$ = height of Trapezium ABCD.

We proceed as follows:

Note: |ABNM| means area of quadrilateral ABNM

Since we're given that $|ABNM| = |MNCD|$

Area of a Trapezium

$$\frac{1}{2} \times (AB+NM) \times h_1 = |ABNM| = |MNCD| = \frac{1}{2} \times (MN+CD) \times h_2$$

or just,

$$\frac{1}{2} \times (AB+NM) \times h_1 = \frac{1}{2} \times (MN+CD) \times h_2$$

Rewriting,

$$\frac{(DC+MN)}{(AB+MN)} = \frac{h_1}{h_2} \quad \text{---- (1)}$$

From the diagram above, we also see that:

$$|ABNM| + |MNCD| = |ABCD|$$

Looking at the whole area divided into two area parts

We get (by using the formula for the area of a trapezium):

$$\left(\frac{1}{2} \times (AB+MN) \times h_1\right) + \left(\frac{1}{2} \times (DC+MN) \times h_2\right) = \left(\frac{1}{2} \times (AB+DC) \times (h_1+h_2)\right)$$