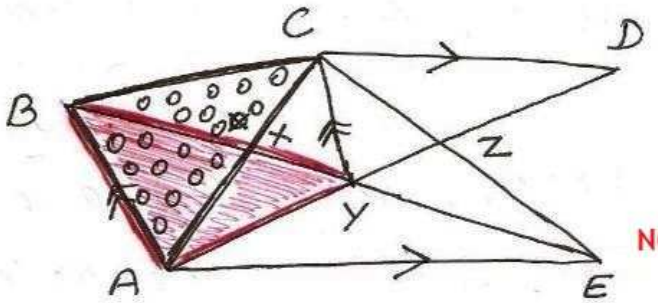
④



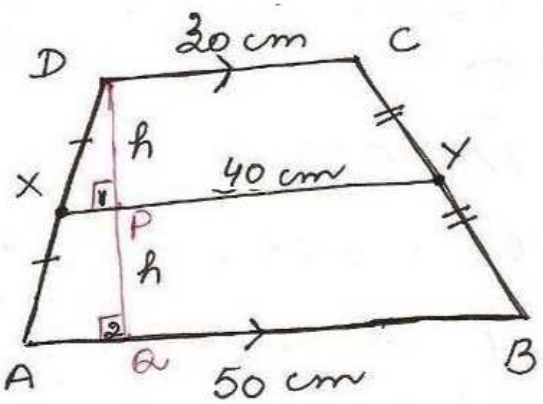
to prove
$ar(CBX) = ar(AXY)$

Proof $ar(\triangle CBA) = ar(\triangle YAB]$
[$\triangle$s on same base and between same || lines]

$ar(\triangle CBA) - ar(\triangle XBA) = ar(\triangle YAB) - ar(\triangle XBA)$

$\Rightarrow ar(CBX) = ar(AXY)$

⑤



to prove
$ar(DCYX) = \frac{7}{9} ar(XYBA)$
const - draw $DQ \perp AB$

proof
$XY = \frac{1}{2}(AB+DC)$
$= \frac{1}{2}(50+30)$
$= \frac{1}{2} \times 80$
$= 40cm$

$\frac{ar(trap\ DCYX)}{ar(trap\ XYBA)} = \frac{\frac{1}{2}(20+35)h}{\frac{1}{2}(35+50)h}$

$XY \parallel AB \parallel DC$
[$\because$ XY joins midpts of non parallel sides of trapezium]
$\angle 1 = \angle 2 = 90°$ (corresponding angles)
In $\triangle DQA$, X is midpt. of DA and $XP \parallel AQ$
$\therefore DP = PQ$ [converse of midpt theorem]

$\frac{ar(trap\ DCYX)}{ar(trap\ XYBA)}$

$= \frac{\frac{1}{2}(30+40)h}{\frac{1}{2}(40+50)h}$

$= \frac{70}{90}$

$= \frac{7}{9}$