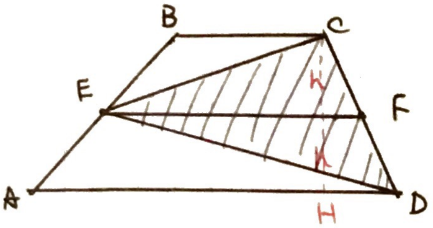


Area of trapezium $= 2 \times$ Shaded area

$EF // BC // AD$ E, F is the midpoint of AB, CD

$\therefore EF = \frac{1}{2}(BC + AD)$

shaded Area: $\frac{1}{2} \times EF \times h + \frac{1}{2} EF \times h$

$= EF \times h$

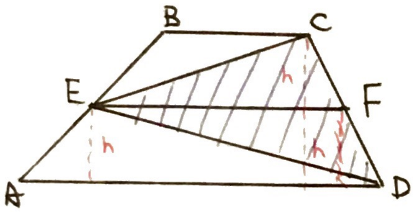
$= \frac{1}{2}(BC + AD) \times h$

Area of trapezium $= \frac{1}{2}(BC + AD) \times 2h$

$= (BC + AD) \times h$

$\therefore$ Area of trapezium $= 2 \times$ shaded area

Method 1.



make F the midpoint of CD

$\because$ E is the midpoint of AB

$\therefore BC // EF // AD$

$\therefore EF = \frac{1}{2}(BC + AD)$

Area of $\triangle CED$ = Area of $\triangle CEF$ + Area of $\triangle DEF$

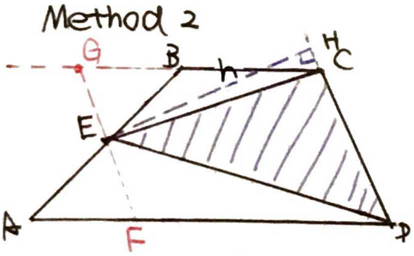
$= \frac{1}{2} EF \times h + \frac{1}{2} EF \times h$

$= EF \times h = \frac{1}{2} h (BC + AD)$

Area of $ABCD = \frac{1}{2} \times 2h \times (BC + AD) = h(BC + AD)$

$\Rightarrow$ Area of trapezium $= 2 \times$ shaded area

Method 2

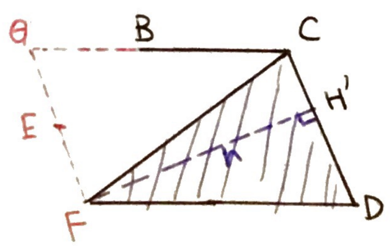


Extend CB; draw a line through E, parallel to CD, intersect with AD at F and intersect with the extention of CB on G

$\because BC // AD$ E is the midpoint

$\therefore \triangle AFE \cong \triangle BGE$

$\therefore$ Area of $\triangle AFE$ = Area of $\triangle BGE$



Area $\triangle AEF$ is now presented as Area $\triangle BEG$

The angle at the midpoint E is moved to the point F

$\because FG // HD \quad \therefore EH = FH' = h$

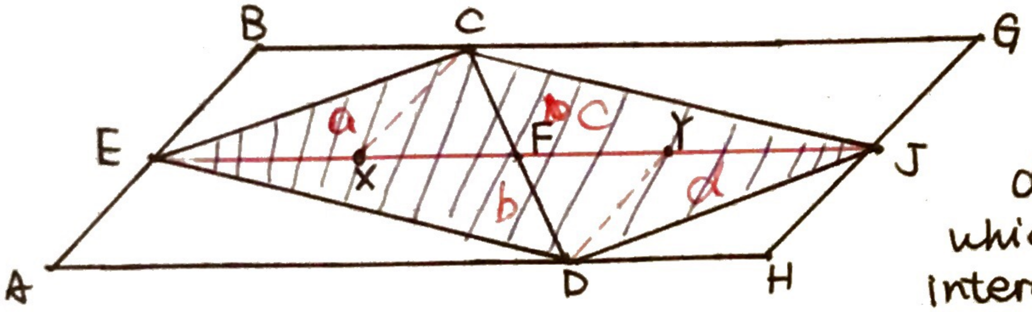
Area of shaded area $= \frac{1}{2} h \times CD$

Area of the parallelogram $= h \times CD$

Area of the parallelogram = area of trapezium

$\therefore$ area of trapezium $= 2 \times$ area of shaded area

Method. 3



The two trapeziums forms parallelogram

draw a line through C which is parallel with EB, intersect with EJ at X

draw a line through D, parallel with JH, intersect with EJ at Y

BG // EJ // AH $\quad$ ∴ quadrilateral BEXC, CXJG, AEYD and YDHJ are all parallelograms.

$S_{\square ABGH} = S_{\square BEXC} + S_{\square CXJG} + S_{\square EADY} + S_{\square YDHJ}$

$S_{\square BEXC} = 2S_{\triangle XCE} = 2a$ $\quad S_{\square CXJG} = 2S_{\triangle XCJ} = 2c$

$S_{\square AEYD} = 2S_{\triangle EYD} = 2b$ $\quad S_{\square YDHJ} = 2S_{\triangle YDJ} = 2D$

Area of ECJD = $a+b+c+d$

Area of ABGH = $2a+2b+2c+2d$

∴ Area of ABGH = 2 × Area of ECJD

∵ There are two trapeziums

∴ Area of one trapezium = $a+b+c+d$

Area of shaded area $= \frac{1}{2}(a+b+c+d)$

∴ Area of trapezium = 2 × shaded area