

Geometry Revision_1

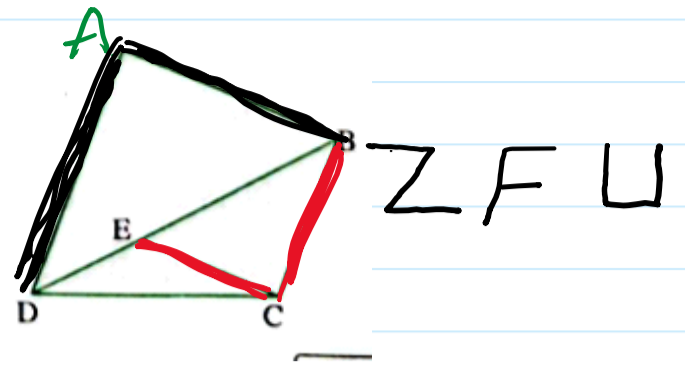
Friday, October 17, 2025 5:50 PM

In the opposite figure :

ABCD is a quadrilateral

, $E \in \overline{BD}$ where $\frac{AB}{DA} = \frac{CE}{BC}$, $\frac{BD}{DA} = \frac{EB}{BC}$

Prove that : (1) $\overline{AD} \parallel \overline{BC}$ (2) $\overline{AB} \parallel \overline{CE}$



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$\frac{AB}{DA} = \frac{CE}{BC} \Rightarrow \frac{AB}{CE} = \frac{DA}{BC}$ (1) \rightarrow similar

$\frac{BD}{DA} = \frac{EB}{BC} \Rightarrow \frac{BD}{EB} = \frac{DA}{BC}$ (2) \rightarrow S

From (1) & (2) $\Rightarrow \frac{AB}{CE} = \frac{BD}{EB} \rightarrow$ S

$\therefore \triangle ABD \sim \triangle CEB$

$\therefore m(\angle A) = m(\angle C)$ & $m(\angle B) = m(\angle E) \Rightarrow m(\angle D) = m(\angle B)$

$\therefore m(\angle ADB) = m(\angle DBC) \rightarrow$ Alternate angle

$\therefore \overline{AD} \parallel \overline{BC} \#(1)$

$\therefore m(\angle ABE) = m(\angle BEC) \rightarrow$ Alternate angles

$\therefore \overline{AB} \parallel \overline{CE} \#(2)$

ABCD, XYZL are two similar polygons. If M is the midpoint of BC, N is the midpoint of YZ, AM = 4 cm, XN = 9 cm.
prove that : area of polygon ABCD : area of polygon XYZL = 16 : 81

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ABCD ~ polygon XYZL

$$\frac{\text{side}^2}{\text{side}^2} = \frac{A_{ABCD}}{A_{XYZL}} = \frac{16}{81}$$

$$\left(\frac{AB}{xy}\right)^2 = \left(\frac{BC}{yz}\right)^2 = \left(\frac{CD}{zl}\right)^2 = \left(\frac{DA}{lx}\right)^2 = \frac{A_{poly ABCD}}{A_{poly XYZL}}$$

$$\therefore \frac{AB}{xy} = \frac{BC}{yz} \rightarrow \textcircled{S}$$

M & N are midpoint of BC & yz

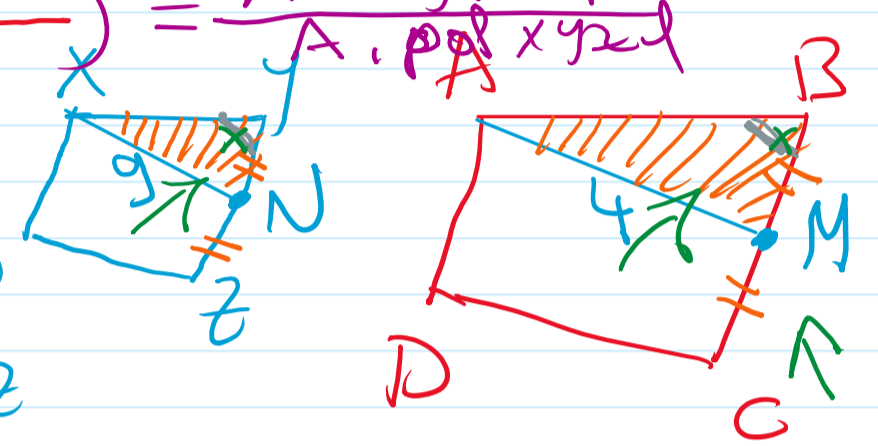
$$\therefore \frac{AB}{xy} = \frac{BM}{yN} \rightarrow \textcircled{S}$$

$$\therefore m(\angle B) = m(\angle y) \rightarrow \textcircled{A}$$

$\therefore \triangle XYN \sim \triangle ABM$

$$\frac{xy}{AB} = \frac{yN}{BM} = \frac{xN}{AM} = \frac{4}{9}$$

$$\frac{AB^2}{xy^2} = \frac{A.P. ABCD}{A.P. XYZL} = \frac{4^2}{9^2} = \frac{16}{81} \quad \textcircled{\neq}$$



SSS
 SAS
~~AAS~~
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