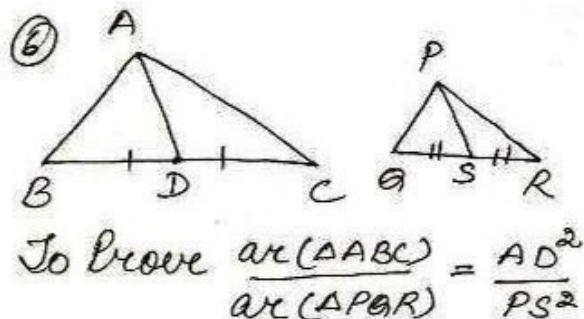


Ex 6.4



Proof $\triangle ABC \sim \triangle PQR$
 $\Rightarrow \angle B = \angle Q \dots \textcircled{i}$

$$\frac{AB}{PQ} = \frac{BC}{QR}$$

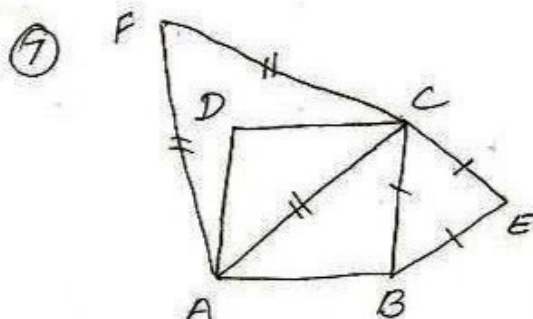
$$\frac{AB}{PQ} = \frac{BD}{QS} \quad \left[\begin{array}{l} D \text{ is midpt of } BC \\ S \text{ is midpt of } QR \end{array} \right] \dots \textcircled{ii}$$

using $\textcircled{i}, \textcircled{ii}$

$\triangle ABC \sim \triangle PQR$ by SAS prop.

$$\frac{AB}{PQ} = \frac{AD}{PS} \dots \textcircled{iii}$$

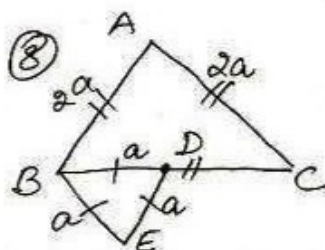
$$\begin{aligned} \frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle PQR)} &= \frac{AB^2}{PQ^2} \\ &= \left(\frac{AB}{PQ}\right)^2 \\ &= \left(\frac{AD}{PS}\right)^2 \quad (\text{us iii}) \\ &= \frac{AD^2}{PS^2} \end{aligned}$$



To Prove $\frac{\text{ar}(\triangle EBC)}{\text{ar}(\triangle FAC)} = \frac{1}{2}$

Proof let $AB = a$ units
 $AC = \sqrt{2}$ side
 $= \sqrt{2}a$ units

$$\begin{aligned} \frac{\text{ar}(\triangle EBC)}{\text{ar}(\triangle FAC)} &= \frac{\frac{\sqrt{2}}{4} s_1^2}{\frac{\sqrt{2}}{4} s_2^2} \\ &= \frac{a^2}{(\sqrt{2}a)^2} \\ &= \frac{a^2}{2a^2} \\ &= \frac{1}{2} \end{aligned}$$



$$\begin{aligned} \frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle DEB)} &= \frac{(2a)^2}{a^2} \\ &= \frac{4a^2}{a^2} \\ &= \frac{4}{1} \quad (C) \end{aligned}$$

⑨

$$\begin{aligned} \frac{\Delta I}{\Delta II} &= \frac{s_1^2}{s_2^2} \\ &= \left(\frac{s_1}{s_2}\right)^2 \\ &= \left(\frac{4}{9}\right)^2 \end{aligned} \quad \left| \begin{array}{l} = \frac{16}{81} \\ \therefore \text{reqd} \\ \text{ratio} = 16:81 \\ \textcircled{D} \end{array} \right.$$