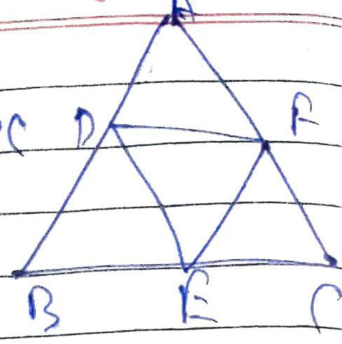
CW



5A D and E are midpoints of ΔABC

$\therefore DE \parallel AC$ & $DE = \frac{1}{2} AC$

In ΔBED & ΔBCA

$\angle BED = \angle BCA$ [corresponding angle]

$\angle BDE = \angle BAC$

$\angle EBD = \angle CBA$ (common)

$\therefore \Delta BED \sim \Delta BCA$ (AAA)

$\frac{ar(\Delta BED)}{ar(\Delta BCA)} = \frac{1}{4}$

$\Rightarrow ar(\Delta BED) = \frac{1}{4} ar(\Delta BCA)$

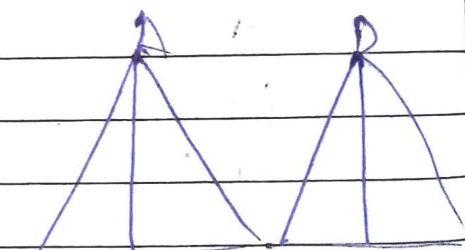
$ar(\Delta CFE) = \frac{1}{4} ar(CBA)$

$ar(\Delta DEF) = ar(ABC) - [ar(BED) + ar(CFE) + ar(ADF)]$

$\Rightarrow ar(DEF) = ar(ABC) - \frac{3}{4} ar(ABC) = \frac{1}{4} ar(ABC)$

~~$\Rightarrow ar(DEF) = ar(ABC) - \frac{3}{4} ar($~~

$\Rightarrow \frac{ar(DEF)}{ar(ABC)} = \frac{1}{4}$



6A $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AB^2}{DE^2}$ — (1)

$\frac{AB}{DE} = \frac{BC}{EF}$

$\Rightarrow \frac{AB}{DE} = \frac{2BP}{2EQ}$

$\Rightarrow \frac{AB}{DE} = \frac{BP}{EQ}$

In ΔABP & ΔDEQ

$\frac{AB}{DE} = \frac{BP}{EQ}$

& $\angle B = \angle E$

by SAS $\Delta ABP \sim \Delta DEQ$

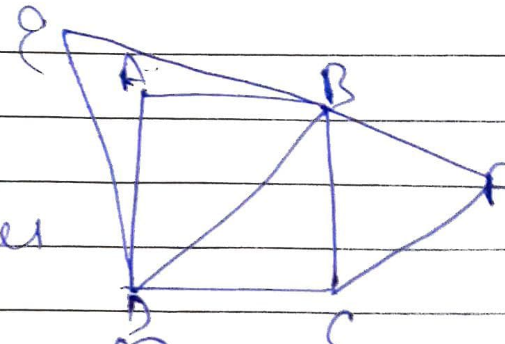
$\Rightarrow \frac{AB}{DE} = \frac{AP}{DQ}$

$\Rightarrow \frac{AB^2}{DE^2} = \frac{AP^2}{DQ^2}$ ——— (11)

Comparing (1) & (2)

$\frac{ar(\triangle ABC)}{ar(DEF)} = \frac{AP^2}{DQ^2}$

7A In $\triangle DEB$ & $\triangle CBF$ are equilateral $\triangle$



$\therefore$ Their corresponding sides are in equal ratio

In square ABCD $DB = BC\sqrt{2}$ ——— (1)

$\therefore \frac{A(CBF)}{A(DEB)} = \frac{\frac{\sqrt{3}}{4} \times (BC)^2}{\frac{\sqrt{3}}{4} \times (DB)^2}$

$\therefore \frac{A(CBF)}{A(DEB)} = \frac{\frac{\sqrt{3}}{4} \times (BC)^2}{\frac{\sqrt{3}}{4} \times (BC\sqrt{2})^2}$

$\therefore \frac{A(CBF)}{A(DEB)} = \frac{1}{2}$

8Q ABC & BDE are two equilateral $\triangle$, D is mid point of BC. Ratio of areas of $\triangle$ ABC & BDE is

A (c) 4:1

9Q. Sides of two similar $\triangle$ are in ratio 4:9 Areas of these $\triangle$ are in ratio

A. (d) 16:81