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HOME ASSIGNMENTS

Ex-6.4

1. Let $\Delta ABC \sim \Delta DEF$ and theire areas be, respectively 64 cm^2 and 121 cm^2, If EF - 15.4 cm. Find BC.

Ans. We have $\Delta ABC \sim \Delta DEF$

So, $\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$

$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{BC}{EF}\right)^2 \Rightarrow \frac{64}{121} = \frac{(BC)^2}{(15.4)^2} = \frac{BC^2}{237.16}$

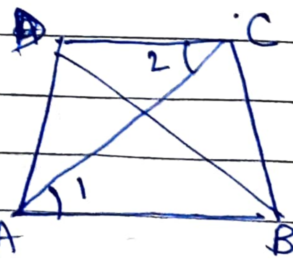
$\Rightarrow 121\ BC^2 = 237.16 \times 64$

$\Rightarrow BC^2 = \frac{15178.24}{121} = 125.44$

$\Rightarrow BC = \sqrt{125.44} = 11.2$ cm

2. Diagonals of treapezium ABCD with AB ∥ DC intersect each other at the point O. If AB = 2CD, find the reatio of the areas of treiangles AOB & COD.

~~ABCD is a~~ In ΔAOB & ΔCOD,



$\angle AOB = \angle COD$ [VOA]

$\angle 1 = \angle 2$ [alt int angles]

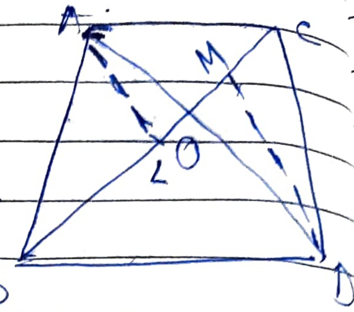
$\therefore \Delta ADB \sim \Delta COD$

$\therefore \frac{ar(\Delta AOB)}{ar(\Delta COD)} = \frac{AB^2}{CD^2}$

$= \frac{(2CD)^2}{CD^2} = \frac{4CD^2}{CD^2} = \frac{4}{1}$

ar ΔAOB : are ΔCOD = 4 : 1

3. In the given figure, ABC & DBC are two triangles on the same base BC. If AD intersects BC at O, show that: $\frac{ar(ABC)}{ar(DBC)} = \frac{AO}{DO}$



Ans. Construction - Draw $AL \perp BC$ & $DM \perp BC$

Proof - In $\triangle ALO$ & $\triangle DMO$,

$\angle ALO = \angle DMO$ [90°]

$\angle AOL = \angle DOM$ [VOA]

$\therefore \triangle ALO \sim \triangle DMO$ [by AA]

$\Rightarrow \frac{AL}{DM} = \frac{AO}{DO}$

Now, $\frac{ar(\triangle ABC)}{ar(\triangle DBC)} = \frac{\frac{1}{2} \times BC \times AL}{\frac{1}{2} \times BC \times DM}$

$= \frac{AL}{DM} = \frac{AO}{DO}$

4. If ~~area~~ the areas of two similar triangles are equal, prove that they are congruent.

Given - $\triangle ABC \sim \triangle DEF$, $ar(\triangle ABC) = ar(\triangle DEF)$

To proove - $\triangle ABC \cong \triangle DEF$

Proof - $\frac{ar \triangle ABC}{ar \triangle DEF} = \frac{AB^2}{DE^2} = \frac{AC^2}{DF^2} = \frac{BC^2}{EF^2}$

$1 = \frac{AB^2}{DE^2} = \frac{AC^2}{DF^2} = \frac{BC^2}{EF^2}$

$AB^2 = DE^2$; $AC^2 = DF^2$, $BC^2 = EF^2$

$AB = DE$, $AC = DF$, $BC = EF$

$\therefore \Delta ABC \cong \Delta DEK$