HW

Exercise 6.4

Q1. We have $\Delta ABC \sim \Delta DEF$.

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

$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} \quad \left(\frac{BC}{EF}\right)^2$.

$\Rightarrow \frac{64}{121} = \frac{(BC)^2}{(15.4)^2} = \frac{BC^2}{237.16}$.

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

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

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

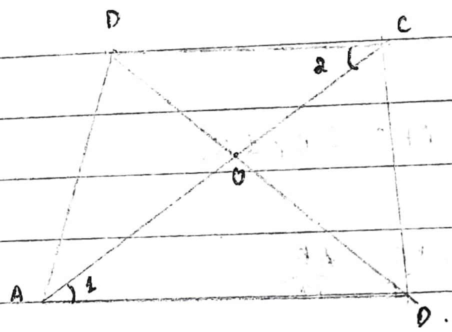
Q2. ABCD is a trapezium with $AB \parallel DC$ and $AB = 2CD$.

In ΔAOB and ΔCOD,

$\angle AOB = \angle COD$.

$\angle 1 = \angle 2$.

$\therefore \Delta AOB \sim \Delta COD$.



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

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

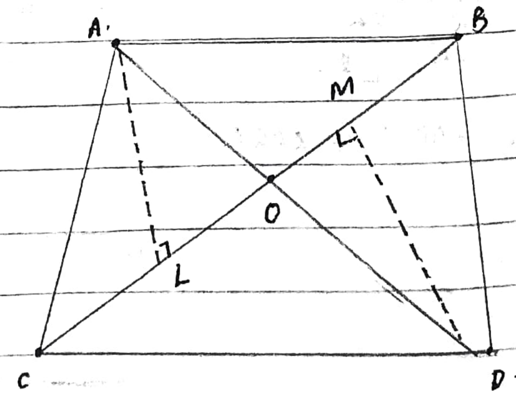
$\Rightarrow ar\,\Delta AOB : ar\,\Delta COD = 4:1$

Q3. Draw $AL \perp BC$ and $DM \perp BC$. In ΔALO and ΔDMO,

$\angle ALO = \angle DMO$.

$\angle AOL = \angle DOM$.

$\therefore \Delta ALO \sim \Delta DMO$.



$\Rightarrow \frac{AL}{DM} = \frac{AO}{DO}$ ....(i).

$\frac{ar(\Delta ABC)}{ar(\Delta DBC)} = \frac{\frac{1}{2} \times BC \times AL}{\frac{1}{2} \times BC \times DM}$.

Q3. $\frac{AL}{DM} = \frac{AO}{DO}$

Q4. $\Delta ABC \sim \Delta DEF$.

ar ΔABC = ar ΔDEF.

$\Delta ABC \cong \Delta DEF$.

$$\frac{ar\,\Delta ABC}{ar\,\Delta DEF} = \frac{AB^2}{DE^2} = \frac{AC^2}{DF^2} = \frac{BC^2}{EF^2}.$$

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

$\Rightarrow$ $AB^2 = DE^2$, $AC^2 = DF^2$, $BC^2 = EF^2$.

$AB = DE$, $AC = DF$, $BC = ER$.

$\therefore$ $\Delta ABC \cong \Delta DEF$.