26 7 21

Triangles (Continue)

* EX-6.4 :-

1. $\Delta ABC \sim \Delta DEF$

$\therefore \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{BC^2}{EF^2}$

$\frac{64}{121} = \frac{BC^2}{(15.4)^2}$ $\qquad \frac{8}{11} = \frac{BC}{15.4}$ $\qquad \therefore BC = \frac{8 \times 15.4}{11} = 11.2cm$

2. ABCD is a trapezium with AB∥DC and AB = 2CD

In ΔAOB and ΔCOD,

$\angle AOB = \angle COD$ (VOA), $\angle 1 = \angle 2$ (Alternate angles)

$\therefore \Delta AOB \sim \Delta COD$ (AA)

$\frac{ar\,\Delta AOB}{ar\,\Delta COD} = \frac{AB^2}{CD^2} = \frac{2(\cancel{CD})^2}{\cancel{CD^2}} = \frac{4}{1} = 4:1.$

3. ABC and DBC are 2 Δ on the same base BC.

Cons :- Draw $AM \perp BC$ and $DN \perp BC$

Proof :- In ΔAOM and ΔDON,

$\angle AOM = \angle DON$ (VOA), $\angle AMO = \angle DNO$ (Each 90°)

$\therefore \Delta AOM \sim \Delta DON$ (AA)

$\therefore \frac{AM}{DN} = \frac{AO}{DO}$ $\qquad \frac{ar\,\Delta ABC}{ar\,\Delta DBC} = \frac{\cancel{1/2} \times \cancel{BC} \times AM}{\cancel{1/2} \times \cancel{BC} \times DN} = \frac{AM}{DN}$

But, $\frac{AM}{DN} = \frac{AO}{DO}$ (As proved)

$\therefore \frac{ar\,\Delta ABC}{ar\,\Delta DBC} = \frac{AO}{DO}$

4. Consider $\Delta ABC \sim \Delta DEF$ and ar ΔABC = ar ΔDEF

To prove - $\Delta ABC \cong \Delta DEF$

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

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

$\therefore AB^2 = DE^2, \quad AC^2 = DF^2, \quad BC^2 = EF^2$

$\therefore AB = DE, \quad AC = DF, \quad BC = EF$

$\therefore \triangle ABC \cong \triangle DEF$ (SSS Congruence Rule)