CLASS 10 MATHS ASSIGNMENT CHAPTER 13 SIMILARITY Continuation----

General direction for the students :-Whatever be the notes provided , everything must be copied in the Maths Copy and then do the Home work in the same Copy.

AREAS OF SIMILAR TRIANGLES

THEOREM: The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides. i.e If $\Delta ABC \sim \Delta PQR \Rightarrow ar\ \Delta ABC : ar\ \Delta PQR = AB^2 : PQ^2 = AC^2 : PR^2 = BC^2 : QR^2$

RESULTS:

1. The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding Medians.

2. The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding Altitudes.

3. The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding Perimeters.

4. The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding Internal bisectors.

MAPS AND MODELS

Let the map is drawn with a scale factor k, then

1. The length of the actual figure= $k \times length\ of\ the\ figure\ in\ the\ map.$

2. The Area of the actual figure= $k^2 \times Area\ \ of\ the\ figure\ in\ the\ map.$

Let the Model is made with a scale factor k , then

1. The length of the actual solid = $k \times length\ of\ the\ Model$.

2. The Surface Area of the actual solid= $k^2 \times Surface\ Area\ of\ the\ Model.$

3. The Volume of the actual solid = $k^3 \times Volume\ \ of\ the\ Model.$

Exercise 13.3

3. Given $\Delta ABC \sim \Delta DEF$, BC=3 cm , EF=4 cm , ar $\Delta ABC = 54\ sq\ cm$

$$\Rightarrow \frac{ar\ \Delta ABC}{ar\ \Delta DEF} = \frac{BC^2}{EF^2}$$

$$\Rightarrow \frac{54}{ar\ \Delta DEF} = \frac{9}{16}$$

$\Rightarrow ar\ \Delta DEF = 96\ sq.cm$ ans.

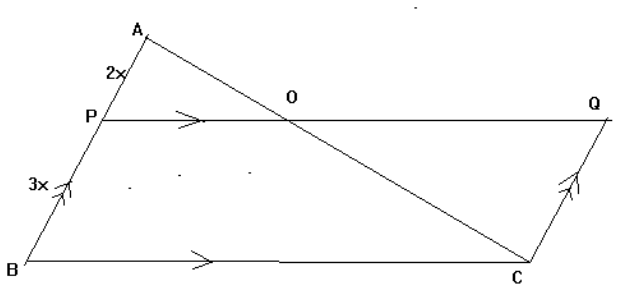
10. Given AP : PB= 2: 3

$\angle PAO = \angle BAC$ $common\ angle$

∠ABC=∠APO Corresponding angle

$\Rightarrow \Delta APO \sim \Delta ABC \quad (AA)$

$\Rightarrow \frac{ar\ \Delta APO}{ar\ \Delta ABC} = \frac{AP^2}{AB^2} \quad \Rightarrow \frac{ar\ \Delta APO}{ar\ \Delta ABC} = \frac{4}{25}$ ans.



Consider $\Delta APO \ and \ \Delta QOC$

$\angle PAO = \angle OCQ \quad (Alternate\ angle)$

$\angle POA = \angle COQ$ (V.O.A)

$\Rightarrow \Delta APO \sim \Delta CQO \quad (AA)$

$\Rightarrow \frac{ar\ \Delta APO}{ar\ \Delta CQO} = \frac{AO^2}{CO^2} \quad \Rightarrow \frac{ar\ \Delta APO}{ar\ \Delta CQO} = \frac{AP^2}{PB^2}$ (BPT)

$\Rightarrow \frac{ar\ \Delta APO}{ar\ \Delta CQO} = \frac{2^2}{3^2} \quad \Rightarrow 4:9 \ \ ans.$

***** For further explanation of above points and more solutions refer the video.**

Home work : Questions from the exercise upto question number 11.