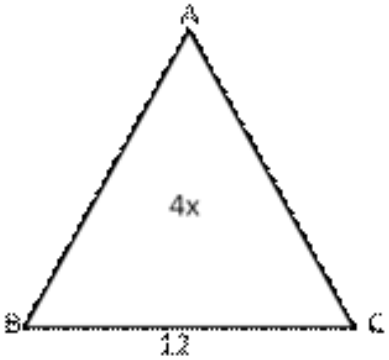
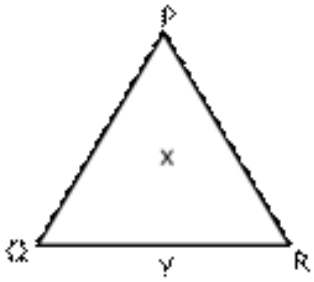
Exercise 4C

Question 3:
Given: ΔABC ~ ΔPQR,
area of ΔABC = 4 area of ΔPQR.
Let area of ΔPQR = x. Then area of ΔABC = 4x.
We know that the ratio of the areas of two similar triangle is equal to the ratio of the square of their corresponding sides.





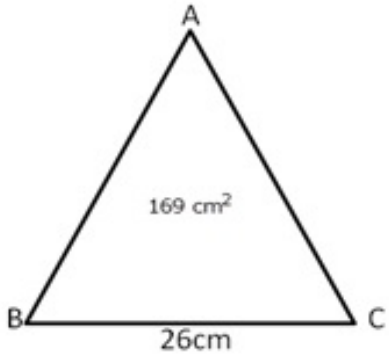
$$\therefore \frac{\text{area of } \Delta ABC}{\text{area of } \Delta PQR} = \frac{BC^2}{QR^2}$$

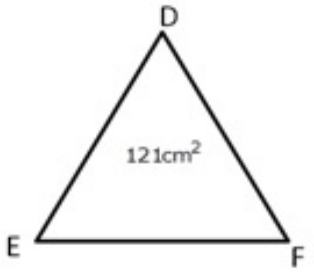
$$\frac{4x}{x} = \frac{(12)^2}{QR^2} \Rightarrow 4 = \frac{(12)^2}{y^2}$$

$$\Rightarrow 4y^2 = 144$$

Hence. QR = 6 cm

Question 4:
Given: ΔACB ~ ΔDEF such that ar(ΔABC) = 169cm^2 and ar(ΔDEF) = 121cm^2





We know that the ratio of the area of similar triangles is equal to the ratio of the square of their corresponding sides.

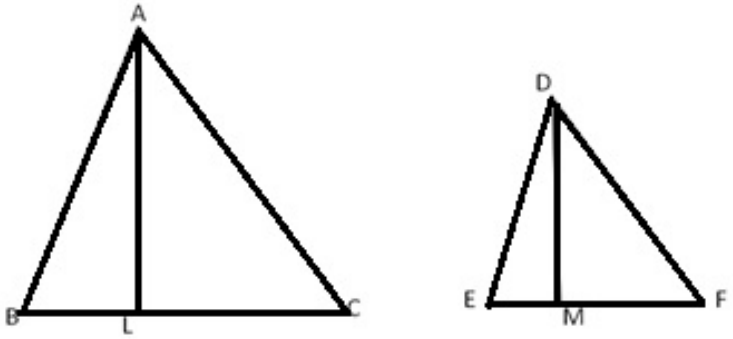
$$\therefore \frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF} = \frac{BC^2}{EF^2} \Rightarrow \frac{169}{121} = \frac{(26)^2}{EF^2}$$

$$EF^2 = (26)^2 \times \frac{121}{169}$$

$$EF = \sqrt{(26)^2 \times \frac{121}{169}} = 26 \times \frac{11}{13} = 22\,cm$$

Hence, the longest side of smallest triangle side is 22 cm.

Question 5:



Given: ΔACB ~ ΔDEF

ar(ΔABC) = 100cm^2 and ar(ΔDEF) = 49cm^2

Let AL and DM be the corresponding altitude of ABC and DEF respectively such that AL = 5 cm and let DM = x cm

We know that the ratio of the area of two similar triangles is equal to the ratio of the square of corresponding altitudes.

$$\therefore \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AL^2}{DM^2}$$

$$\Rightarrow \frac{100}{49} = \frac{(5)^2}{x^2}$$

$$\Rightarrow x^2 = (5)^2 \times \frac{49}{100}$$

$$\Rightarrow x = \sqrt{(5)^2 \times \frac{49}{100}}$$

$$\Rightarrow x = 5 \times \frac{7}{10} = 3.5\,cm$$

$$\text{Hence, } DM = 3.5\,cm$$

Therefore, the required altitude is 3.5 cm

********** END **********