Triangles Ex 4.6 Q1

Answer :

Given: ΔABC and ΔDEF are similar triangles

To find:

(i) If area of ΔABC = 16cm^2, area of ΔDEF = 25cm^2 and BC = 2.3 cm, Find EF.

(ii) If area of ΔABC = 9cm^2, area of ΔDEF = 64cm^2 and DE = 5.1 cm, Find AB.

(iii) If AC = 19cm and DF = 8cm, find the ratio of the area of two triangles.

(iv) If area of ΔABC = 36cm^2, area of ΔDEF = 64cm^2 and DE = 6.2 cm, Find AB.

(v) If AB = 1.2cm and DE = 1.4cm, find the ratio of the area of two triangles.

(i) We know that the ratio of areas of two similar triangles is equal to the ratio of squares of their corresponding sides.

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

$$\frac{16}{25} = \left(\frac{2.3}{EF}\right)^2$$

$$\Rightarrow \frac{4}{5} = \frac{2.3}{EF}$$

$$\boxed{EF = 2.875 \text{ cm}}$$

(ii) $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{AB}{DE}\right)^2$

$\frac{9}{64} = \left(\frac{AB}{DE}\right)^2$

$\Rightarrow \frac{3}{8} = \frac{AB}{5.1}$

$\boxed{AB = 1.9125 \text{ cm}}$

(iii) $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{AC}{DF}\right)^2$

$\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{19}{8}\right)^2$

$\boxed{\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{361}{64}\right)}$

(iv) $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{AB}{DE}\right)^2$

$\frac{36}{64} = \left(\frac{AB}{DE}\right)^2$

$\Rightarrow \frac{6}{8} = \frac{AB}{6.2}$

$\boxed{AB = 4.65 \text{ cm}}$

(V) $$\frac{ar(\Delta ABC)}{ar(\Delta DEF)}=\left(\frac{AB}{DE}\right)^2$$

$$\frac{ar(\Delta ABC)}{ar(\Delta DEF)}=\left(\frac{1.2}{1.4}\right)^2$$

$$\boxed{\frac{ar(\Delta ABC)}{ar(\Delta DEF)}=\frac{36}{49}}$$

Answer :

Given: ΔACB is similar to ΔAPQ.

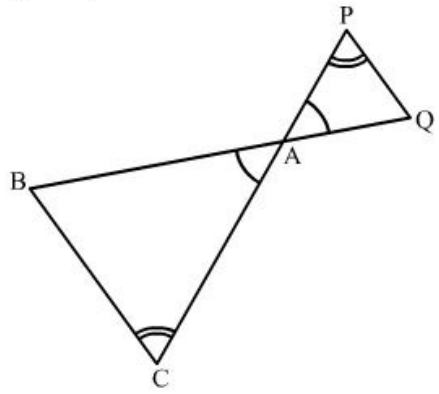
BC = 10 cm, PQ = 5cm, BA = 6.5cm and AP = 2.8 cm

TO FIND:

(1) CA and AQ

(2) Area of ΔACB : Area of ΔAPQ

(1) It is given that ΔACB ~ ΔAPQ.



We know that for any two similar triangles the sides are proportional. Hence

$$\frac{AB}{AQ}=\frac{BC}{PQ}=\frac{AC}{AP}$$

$$\frac{AB}{AQ}=\frac{BC}{PQ}$$

$$\frac{6.5}{AQ}=\frac{10}{5}$$

$$\boxed{AQ=3.25\text{ cm}}$$

Similarly,

$$\frac{BC}{PQ}=\frac{CA}{AP}$$

$$\frac{CA}{2.8}=\frac{10}{5}$$

$$\boxed{CA=5.6\text{ cm}}$$

(2) We know that the ratio of areas of two similar triangles is equal to the ratio of squares of their corresponding sides.

$$\frac{ar(\triangle ACQ)}{ar(\triangle APQ)}=\left(\frac{BC}{PQ}\right)^2=\left(\frac{10}{5}\right)^2=\left(\frac{2}{1}\right)^2=\frac{4}{1}$$

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