Assignment I (ICSE-2019 CLASS 10)

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ICSE-2019 CLASS 10

Question: 6 (a)

(a) In the given figure, $\angle PQR = \angle PST = 90°$, PQ = 5 cm and PS = 2 cm.

(i) Prove that $\triangle PQR \sim \triangle PST$.

(ii)Find ratio of Area of $\triangle PQR$ *and Area of quadrilateral SRQT.*

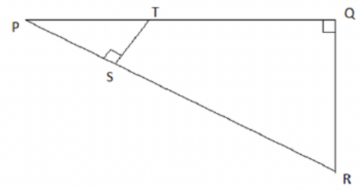

Figure 1: fig PQR

Solution:-

(i) To prove $\triangle PQR \sim \triangle PST$

consider $\triangle PQR$ *and* $\triangle PST$

$\angle PQR = \angle PST = 90°$ (given)

$\angle p$ *is common.*

$$\boxed{\therefore \triangle PQR \sim \triangle PST \ (By\ AAA\ criterion)}$$

(ii) To find the ratio of area of $\triangle PQR$ *and area of quadrilateral SQRT.*

$Now, Area\ of\ \triangle PQR\ is,$

$$\implies \frac{1}{2} \times PQ \times QR$$

from the given diagram we can say $\frac{PQ}{PS} = \frac{QR}{ST}$

PQ=5cm(given),QR=5cm(stated above)

$$\implies \frac{1}{2} \times 5 \times 5 = \frac{25}{2}$$

$Area\ of\ \triangle PST,$

$$\implies \frac{1}{2} \times PS \times ST$$

$PS = 2cm(given), ST = 2cm(statedabove)$

$$\implies \frac{1}{2} \times 2 \times 2 = \frac{4}{2}$$

Area of Quadrilateral SQRT = *Area of* $\triangle PQR$ − *Area of* $\triangle PST$,

$$\implies \frac{25}{2} - \frac{4}{2} = \frac{21}{2}$$

$Ratio, \frac{25/2}{21/2} = \frac{25}{21}$

$$\boxed{\therefore ratio = \frac{25}{21}}$$