Assignment I (ICSE-2019 CLASS 10)

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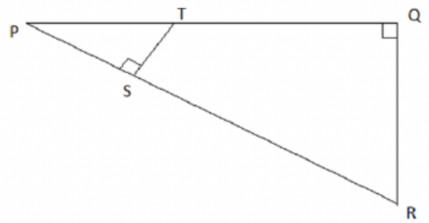
ICSE-2019 CLASS 10

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.*



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*

$\therefore \triangle PQR \sim \triangle PST$ *(By AA criterion)*

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

Now,

$$\frac{Ar\triangle PQR}{Ar\triangle PST}$$

$= \frac{1}{2} \times PQ \times QR \,/ \frac{1}{2} \times PQ \times QR$

$= \frac{5}{2} \times \frac{5}{2} = \frac{25}{4}$ $[\because \frac{PQ}{PS} = \frac{QR}{ST}]$

Taking the reciprocals on both sides

$\frac{Ar\triangle PST}{Ar\triangle PQR} = \frac{4}{25}$

Now deducting both sides by 1,

$1 - \frac{Ar\triangle PST}{Ar\triangle PQR} = 1 - \frac{4}{25}$

$\implies \frac{Ar\triangle PQR - AR\triangle PST}{Ar\triangle PQR} = \frac{25-4}{5}$

$\implies \frac{Arofquadrilateral SRQT}{Arof\triangle PQR} = \frac{21}{25}$

THE END