4) Ans: In the given figure, lines PQ and RS intersect at point T, such that $\angle PRT = 40^\circ$, $\angle RPT = 95^\circ$ and $\angle TSQ = 75^\circ$ in $\triangle PRT$.

$\angle PRT + \angle RPT + \angle PTR = 180^\circ$

[Angle sum property of a triangle]

$\Rightarrow 40^\circ + 95^\circ + \angle PTR = 180^\circ$

$\Rightarrow 135^\circ + \angle PTR = 180^\circ$

$\angle PTR = 180^\circ - 135^\circ = 45^\circ$

$\angle PTR = \angle STQ$

$\angle STQ = 45^\circ$

Now, in $\triangle STQ$

$\angle STQ + \angle TSQ + \angle SQT = 180^\circ$

$\Rightarrow 45 + 75 + \angle SQT = 180$

$\angle SQT = 180 - 120 = 60$

Hence, $\angle SQT = 60$

5.) In the given fig, lines $PQ \perp PS$ $PQ \parallel SR$, $\angle SQR = 28$ and $\angle QRT = 65$

$\angle PQR = \angle QRT$ [Alternate angles]

$\Rightarrow x + 28 = 65$

$\Rightarrow x = 65 - 28 = 37$

In $\triangle PQS$

$\angle SPQ + \angle PQS + \angle QSP = 180$

$\Rightarrow 90 + 37 + y = 180$

$\Rightarrow 127 + y = 180$

$y = 180 - 127 = 53$

Hence $x = 37$ and $y = 53$.

6.) In $\triangle PQR$

$\angle PRS$

(Ex) $= \angle QPR + \angle PQR$

$2y = \angle QPR + 2x$

$\angle QPR = 2y - 2x$

$= 2(y - x)$ — (1)

In $\triangle QTR$

Ex $\angle TRS$

$\angle TRS = \angle QTR + \angle TQR$

$\Rightarrow y = x + \angle QTR$

$\angle QTR = y - x$ — (2)

Hence

$$\angle QTR = \frac{1}{2}\angle QPR$$

from (1)

$$\angle QPR = 2(y - x)$$

$$\angle QPR = 2\angle QTR$$

$$\frac{\angle QPR}{2} = \angle QTR.$$