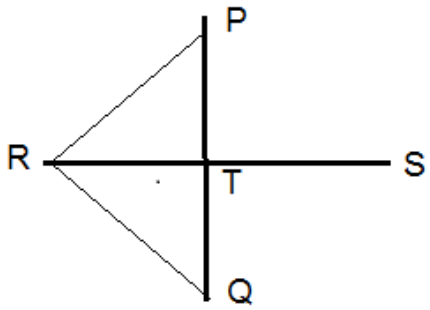
Answer on Question#39626 – Math - Trigonometry

Question.

Line PQ and line RS intersect at point T. PTR is congruent to RTQ. Prove line PQ is perpendicular to line RS.

Solution.



If triangle PTR is congruent to triangle RTQ, then $\angle PRT = \angle QRT \; and \; \angle PTR = \angle QTR$ as the angles adjacent to congruent (in our case common) side. On the other hand -

$\angle PTR = \angle QTS \;\; and \; \angle RTQ = \angle PTS$ because they are vertical angles.

So, we have: $\angle PTR = \angle QTS = \;\angle RTQ = \angle PTS = \frac{360^0}{4} = 90^0$ and therefore lines PQ and RS are perpendicular.