

b) In quadrilateral MART we have:

$[MO]$ is the perp. bisector of $[AT]$ at O (proved)

So, O is the midpt of $[AT]$

And R is the symmetric of M w.r.t O (given)

Then, O is the mid pt of $[MR]$.

Hence, quadrilateral MART is a parallelogram (having its diagonals bisect each other at same midpt)

but, $\triangle MAT$ is isosceles at M (given)

So, $MA = MT$ (legs of a isosceles \triangle)

Thus, parallelogram MART is a rhombus (parallelogram + equal adjacent sides)

c) MATH is a parallelogram (given)

Then, $MH = AT$ (opp. sides in a parallelogram are equal)

but, O is the midpt of $[AT]$ (proved)

Then, $AT = 2OT$

Thus, $MH = 2OT$ (by substitution)

3) In quadrilateral TOMI we have:

I is the midpt of MH (given)

So, $MH = 2MI$.

but $MH = 2OT$ (proved)

So, $2MI = 2OT$ (by comparison)

Then, $MI = OT$ (half of equals are equal)

And MATH is a parallelogram (given)

So, $(MH) \parallel (AT)$ (opp. sides of a parallelogram are parallel)

Then, $(MI) \parallel (OT)$ (parts of parallel are parallel)

And $[MO] \perp [AT]$ is perp. bisector of $[AT]$ at O (proved)

Then $\widehat{MOT} = 90^\circ$

Thus, TOMI is a rectangle (having a pair of equal & parallel sides + 90° angle).