(1) (i) let $a = 7$, $b = 24$, $c = 25$

$a^2 + b^2 = 7^2 + 24^2$

$= 49 + 576$

$= 625$

$c^2 = 25^2$

$= 625$

$\because a^2 + b^2 = c^2$

$\therefore$ 7, 24, 25 are sides of a rt. $\triangle$

length of hyp. = 25cm

(ii) let $a = 3$, $b = 8$, $c = 9$

$a^2 + b^2 = 3^2 + 8^2$

$= 9 + 64$

$= 73$

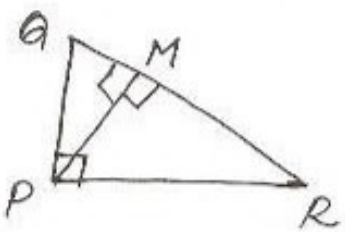
$c^2 = 9^2$

$= 81$

$\because a^2 + b^2 \neq c^2$

3, 8, 9 are not sides of right $\triangle$.

(2)



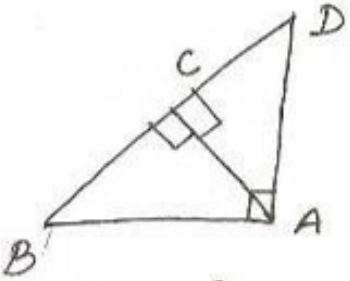
To show $PM^2 = QM \cdot MR$

Proof – $\triangle QMP \sim \triangle PMR$ (*)

$\Rightarrow \frac{QM}{PM} = \frac{MP}{MR}$

$\Rightarrow PM^2 = QM \cdot MR$

(3)



To show $AB^2 = BC \cdot BD$

$AC^2 = BC \cdot DC$

$AD^2 = BD \cdot CD$

Proof

$\triangle BCA \sim \triangle BAD$ (*)

$\Rightarrow \frac{BC}{BA} = \frac{AB}{DB}$

$\Rightarrow AB^2 = BC \cdot BD$

$\triangle BCA \sim \triangle ACD$ (do)

$\Rightarrow \frac{BC}{AC} = \frac{AC}{DC}$

$\Rightarrow AC^2 = BC \cdot DC$

$\triangle DCA \sim \triangle DAB$ (do)

$\Rightarrow \frac{CD}{AD} = \frac{AD}{BD}$

$\Rightarrow AD^2 = BD \cdot CD$

NCERT solutions by Dev Anoop (Bathinda)

* [If a perpendicular is drawn from the vertex of a right triangle to the hypotenuse then the triangles on both sides of the perpendicular are similar to the whole triangle and to each other]