



MATHS

BOOKS - ICSE

PYTHAGORAS THEOREM

3 Marks Questions

1. A ladder 13 m long rests against a vertical wall. If the foot of the ladder is 5 m from the foot of the wall, find the distance of the other end of the ladder from the ground.

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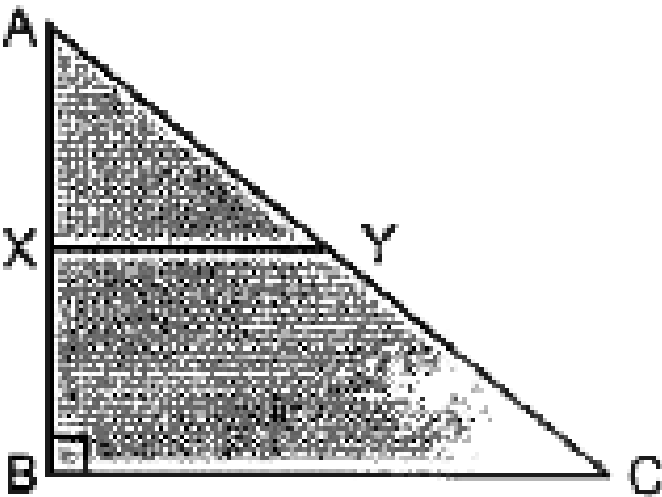
2. In $\triangle ABC$, $AB = AC = x$, $BC = 10\text{cm}$ and the area of triangle is 60cm^2 . Find x .

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3. Two poles of heights 6 m and 11 m stand on a plane ground. If the distance between their feet is 12m, find the distance between their tops.

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4. In the given figure, $\angle B = 90^\circ$, $XY \parallel BC$, $AB = 12\text{cm}$, $AY = 8\text{cm}$ and $AX:XB = 1:2$. Find the lengths of AC and BC.



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5. In a quadrilateral ABCD, $\angle B = 90^\circ$ and $\angle D = 90^\circ$. Prove that :

$$2AC^2 - AB^2 = BC^2 + CD^2 + DA^2$$



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6. Diagonals of rhombus ABCD intersect each other at point O. Prove that

:

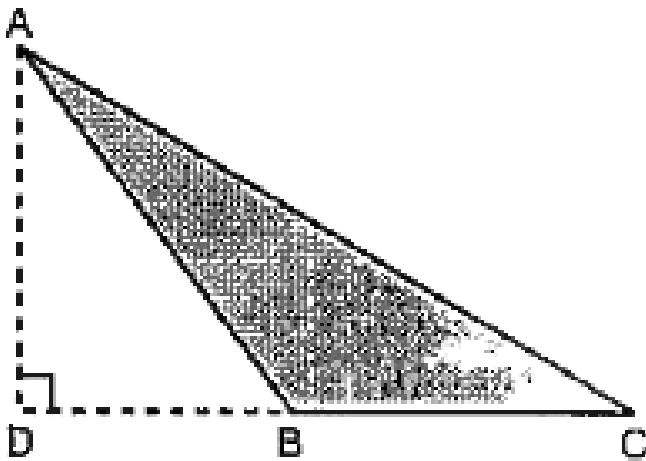
$$OA^2 + OC^2 = 2AD^2 - \frac{BD^2}{2}$$



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7. In the figure $AB = BC$ and AD is perpendicular to CD . Prove that :

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



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8. In an isosceles triangle ABC, $AB = AC$ and D is a point on BC produced.

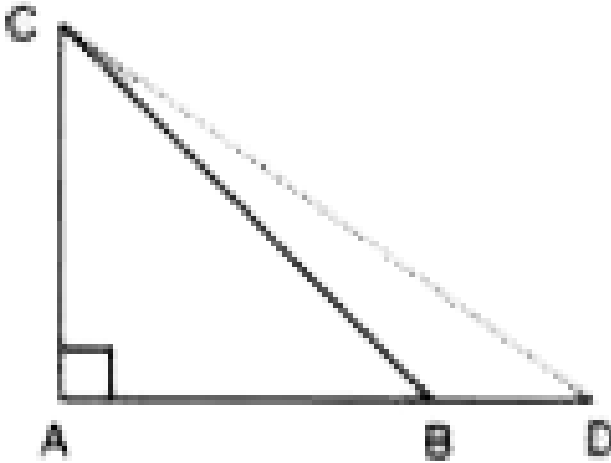
Prove that :

$$AD^2 = AC^2 + BD \cdot CD$$

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9. In triangle ABC, angle $A = 90^\circ$, $CA = AB$ and D is a point on AB produced. Prove that:

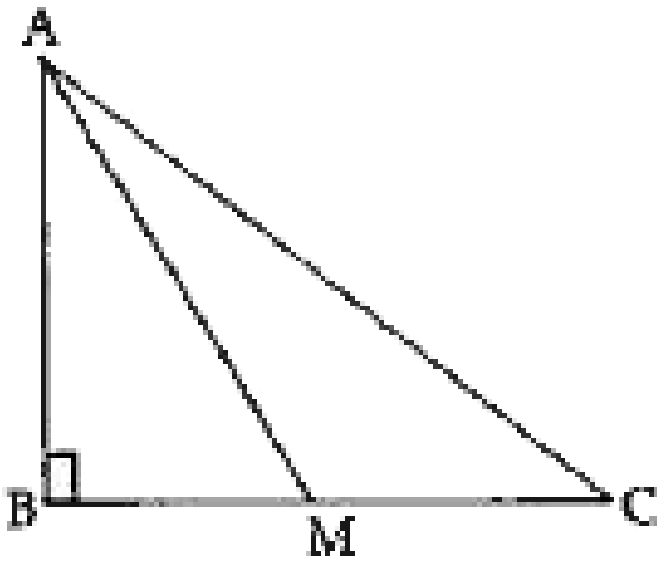
$$DC^2 - BD^2 = 2AB \cdot AD.$$



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10. ABC is a triangle, right angled at B, M is a point on BC. Prove that :

$$AM^2 + BC^2 = AC^2 + BM^2$$

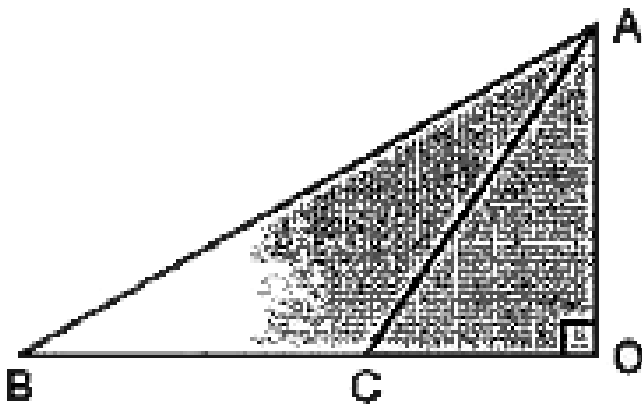


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4 Marks Questions

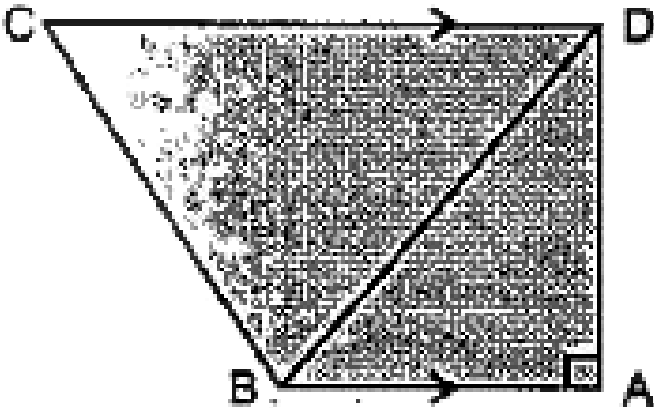
1. In triangle ABC, given below, $AB = 8$ cm, $BC = 6$ cm and $AC = 3$ cm.

Calculate the length of OC



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2. In the given figure, $AB \parallel CD$, $AB = 7\text{cm}$, $BD = 25\text{cm}$ and $CD = 17\text{cm}$, find the length of side BC.



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3. In $\triangle ABC$, $\angle B = 90^\circ$, find the sides of the triangle, if :

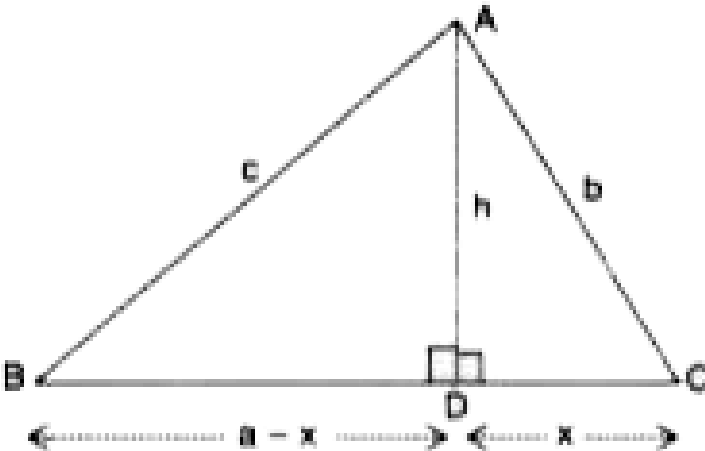
(i) $AB = (x - 3)cm$, $BC = (x + 4)cm$ and $AC = (x + 6)cm$

(ii) $AB = xcm$, $BC = (4x + 4)cm$ and $AC = (4x + 5)cm$

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4. In the figure, given below, $AD \perp BC$.

Prove that : $c^2 = a^2 + b^2 - 2ax$.



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5. M and N are the mid-points of the sides QR and PQ respectively of a ΔPQR , right-angled at Q. Prove that :

(i) $PM^2 + RN^2 = 5MN^2$

(ii) $4PM^2 = 4PQ^2 + QR^2$

(iii) $4RN^2 = PQ^2 + 4QR^2$

(iv) $4(PM^2 + RN^2) = 5PR^2$



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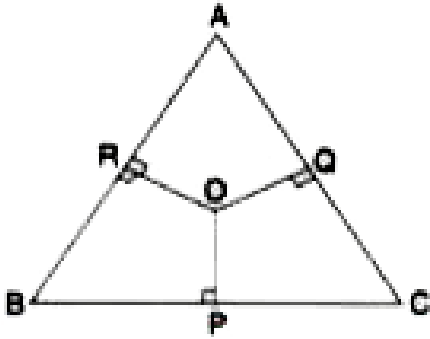
6. O is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.



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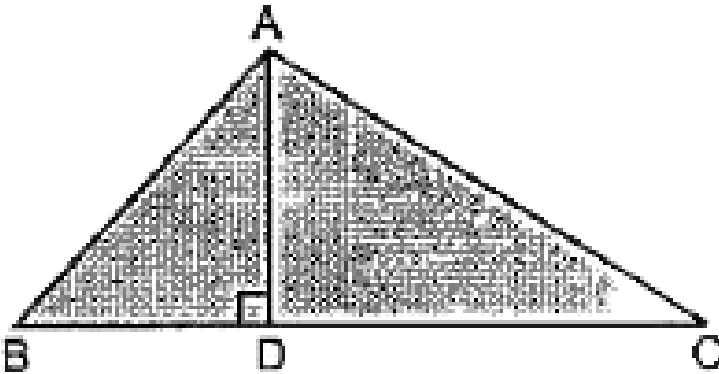
7. In the following figure, OP, OQ and OR are drawn perpendiculars to the sides BC, CA and AB respectively of triangle ABC. Prove that :

$$AR^2 + BP^2 + CQ^2 = AQ^2 + CP^2 + BR^2$$



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8. In the following figure, AD is perpendicular to BC and D divides BC in the ratio 1 : 3.

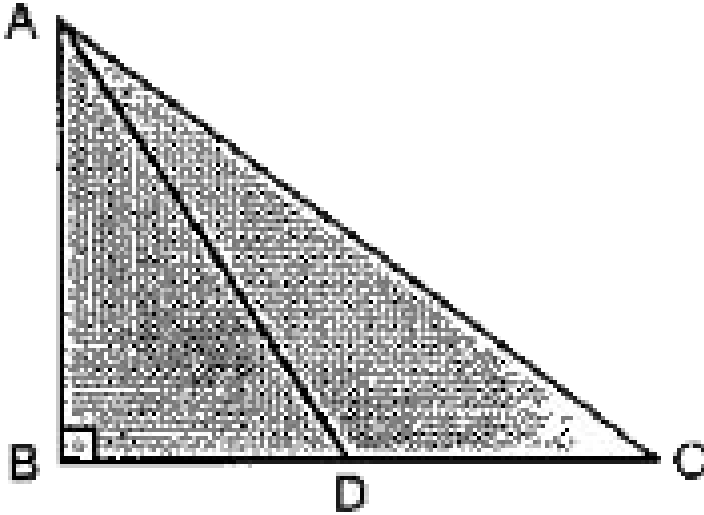


Prove that : $2AC^2 = 2AB^2 + BC^2$

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9. In the given figure, triangle ABC is a right triangle with $\angle B = 90^\circ$ and D is mid-point of side BC. Prove that :

$$AC^2 = AD^2 + 3CD^2$$



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