# MATHS

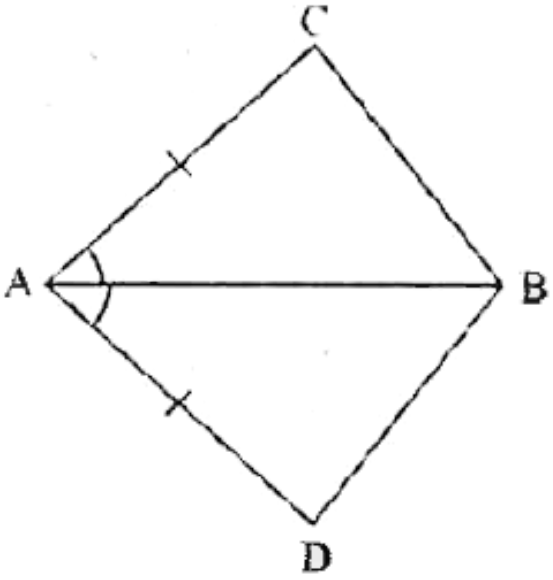
# BOOKS - CAMBRIDGE MATHS (KANNADA ENGLISH)

# TRIANGLES

## Exercise 5 1

**1.** AC = AD and AB biseets A. show that $\Delta ABC \cong \Delta ABD$. What can you say about

BC and BD?

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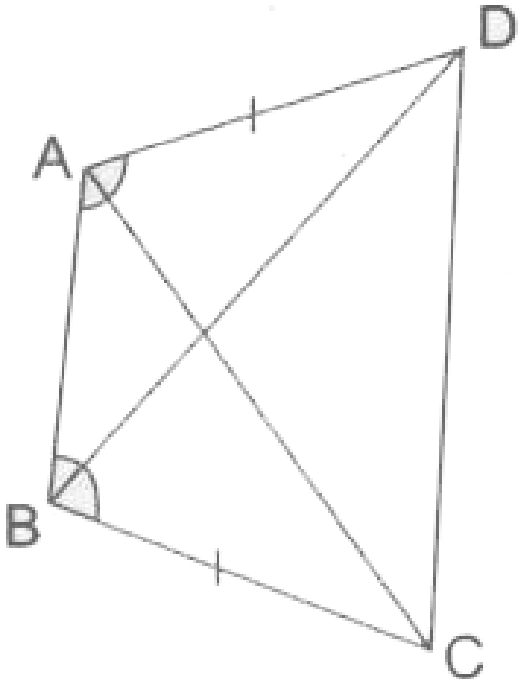
**2.** ABCD is a quadrilateral in which AD=BC and $\angle DAB = \angle CBA$. Prove that:

(i) $\triangle ABD \cong \triangle BAC$

(ii) BD = AC

(iii) $\angle ABD = \angle BAC$

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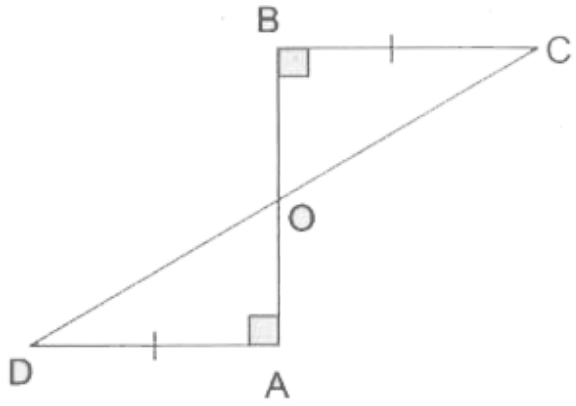
**3.** AD and BC are equal perpendiculars to a line segment AB. Show that CD bisects AB.

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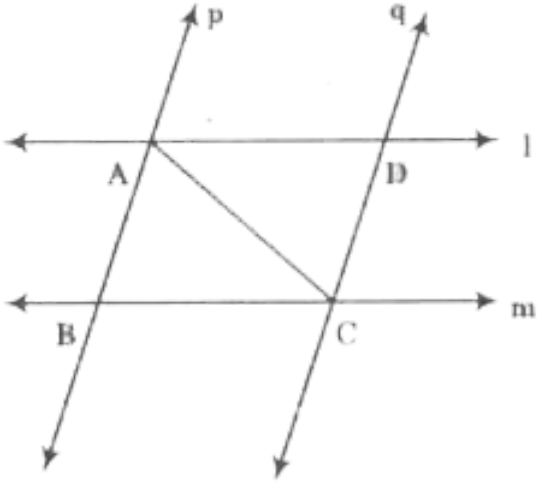
**4.** l and m are two parallel lines intersected by another pair of parallel lines p and q. Show

that $\triangle ABC \cong \triangle CDA$

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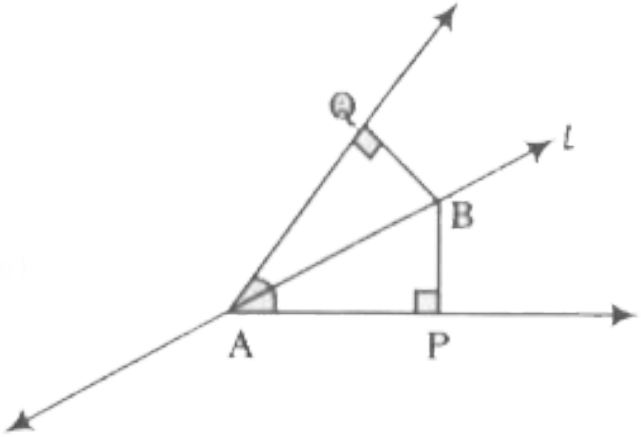
**5.** Line l is the bisector of an angle $\angle A$ and B is any point on li. BP and BQ are perpendicular forms B to the arms of $\angle A$. Show that:

$\triangle APB \cong \triangle AQB$

(ii) BP = BQ or B is equidisitant from the arms of $\angle A$.

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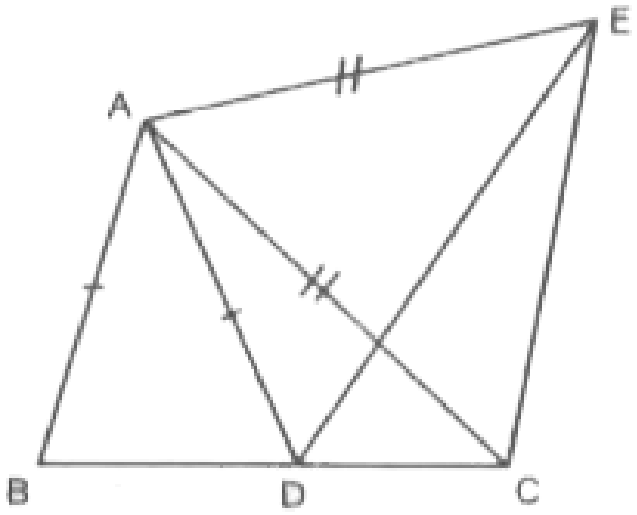
**6.** In given figure, AC=AE, AB=AD and $\angle BAD = \angle EAC$. Show that BC = DE.

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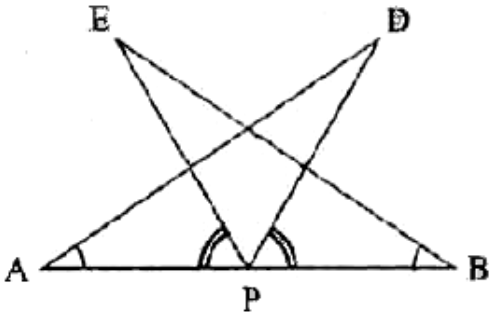
**7.** AB is line segment and P is its mid point. D and E are points on the same side of AB such that BAD = ABE and EPA = DPB show that

(i) $\Delta DAP \cong \Delta EBP$

(ii) AD = BE

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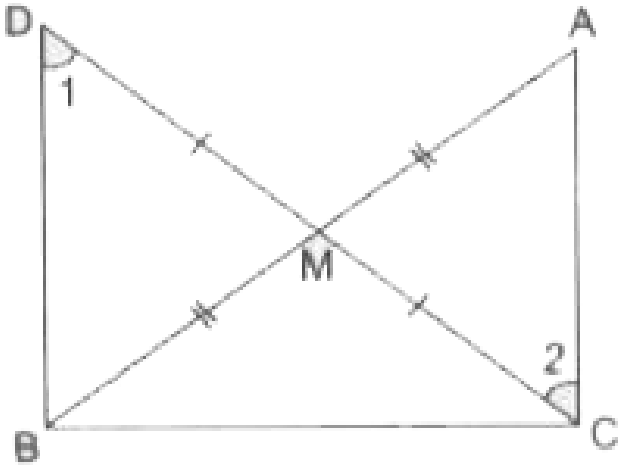
**8.** In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B. Show that

(i) $\triangle AMC \cong \triangle BMD$

(ii) $\angle DBC$ is a right angle.

(iii) $\triangle DBC \cong \triangle ACB$

(iv) $CM = \frac{1}{2}AB$

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Exercise 5 2

**1.** In an isosceles ABC, with AB = AC, the bisectors of $\angle B$ and $\angle C$ intersect each other at O. Joint A to O. Show that:

(ii) OB = OC

(ii) AO bisects $\angle A$

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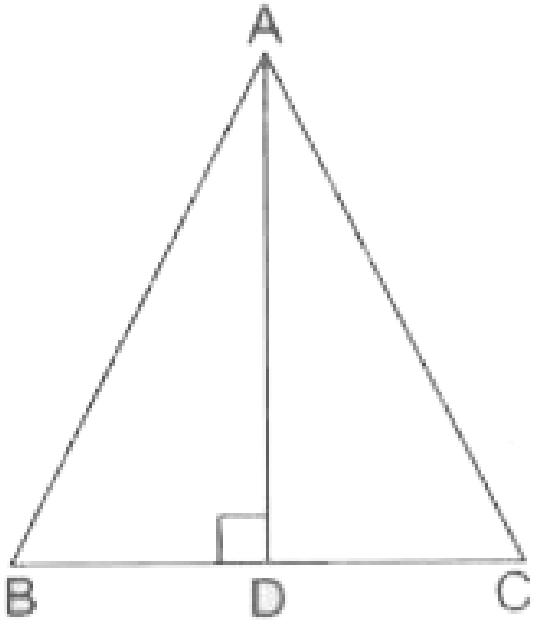
**2.** In $\triangle ABC, AD$ is the perpendicular bisector of BC. Show that $\triangle ABC$ is an

isosceles triangle in which AB = AC.

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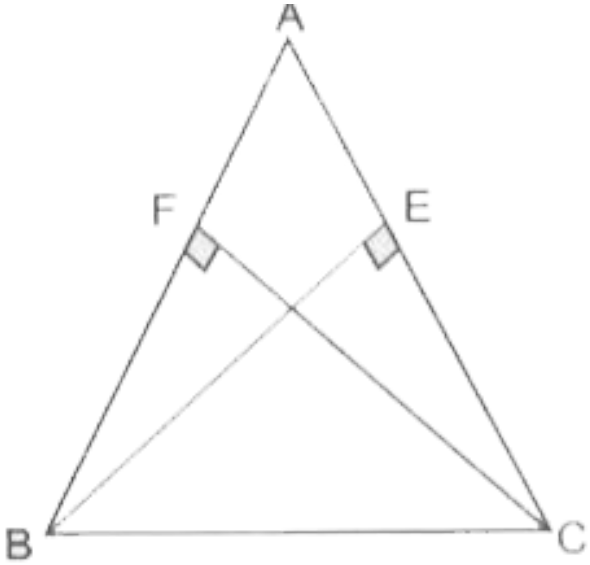
**3.** ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides

AC and AB respectively. Show that these altitudes are equal.

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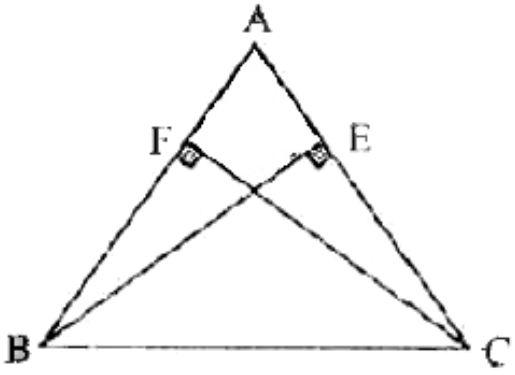
**4.** ABC is a triangle in which altitude BE and CF to sides AC and AB are equal. Show that

$\Delta ABE \cong \Delta ACF$

(ii) AB = AC, i.e., ABC is an isosceles triangle.

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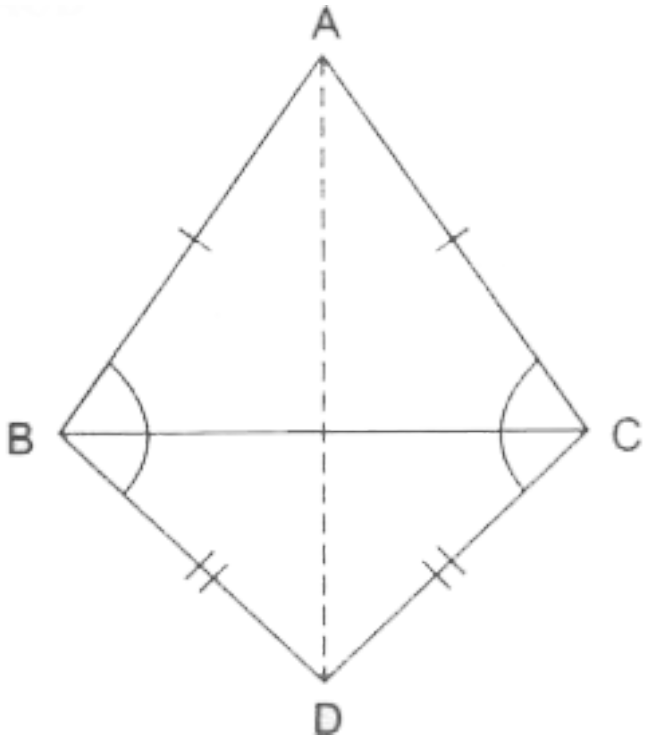
**5.** ABC and DBC are two isosceles triangles on the same base BC. Show that,

$\triangle ABD = \angle ACD$

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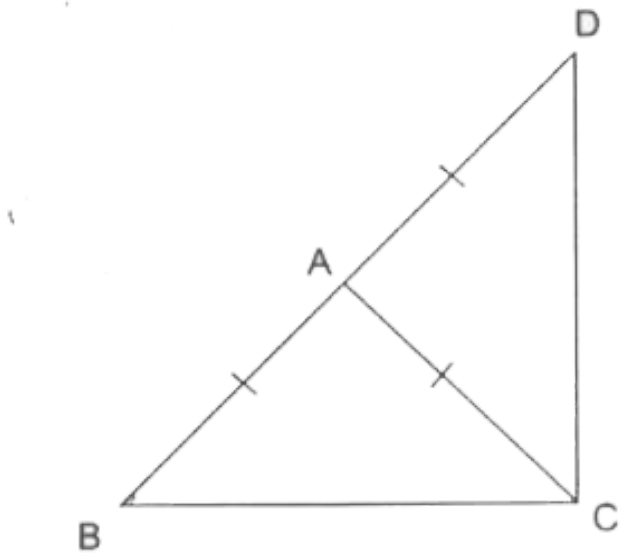
**6.** $\triangle ABC$ is an isosceles triangle in which AB= AC. Side BA is produced to D such that AD

= AB. Show that $\angle BCD$ is a right angle.

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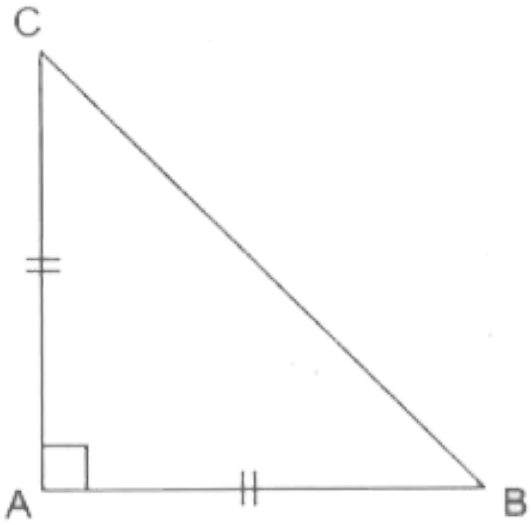
**7.** ABC is a right triangle in which $\angle A = 90^\circ$ and AB = AC. Find $\angle B$ and $\angle C$.

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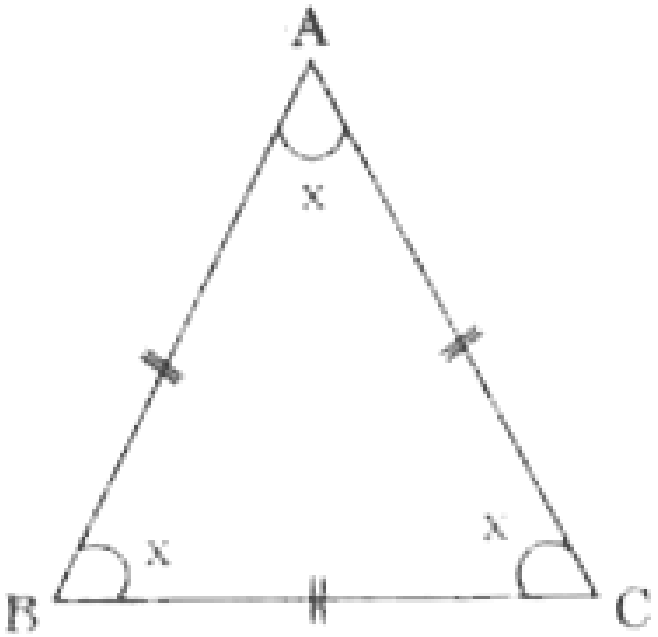
**8.** Show tht the angles of an equilateral triangle are $60^\circ$ each.

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Exercise 5 3

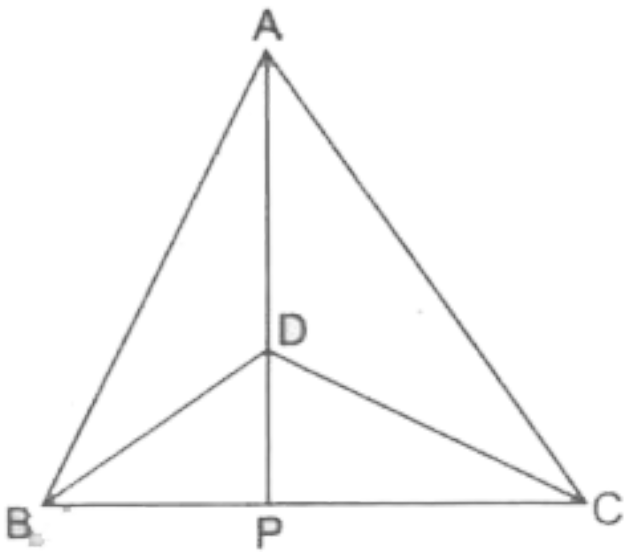
**1.** $\triangle ABC$ and $\triangle DBC$ are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that:

(i) $\triangle ABD \cong \triangle ACD$

(ii) $\triangle ABP \cong \triangle ACP$

(iii) AP bisects $\angle A$ as well as $\angle D$

(iv) AP is the perpendicular bisector of BC.

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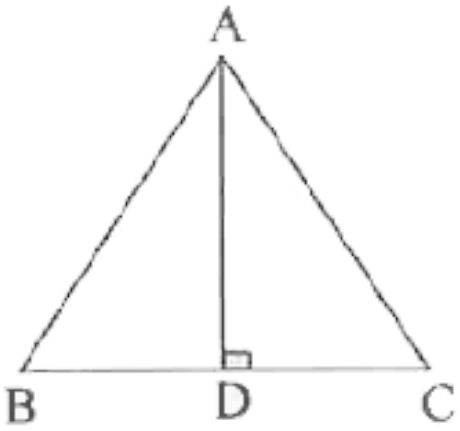
**2.** AD is an altiude of an isosceles triangle ABC in which AB = AC. Show that

(i) AD bisects BC (ii) AD bisects A.

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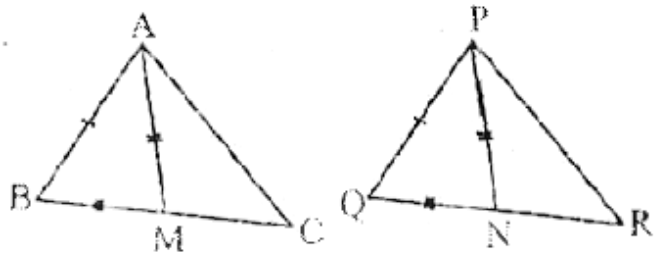
**3.** Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of $\Delta$ PQR. Show that

$\Delta ABM \cong \Delta PQN$

(ii) $\Delta ABC \cong \Delta PQR$

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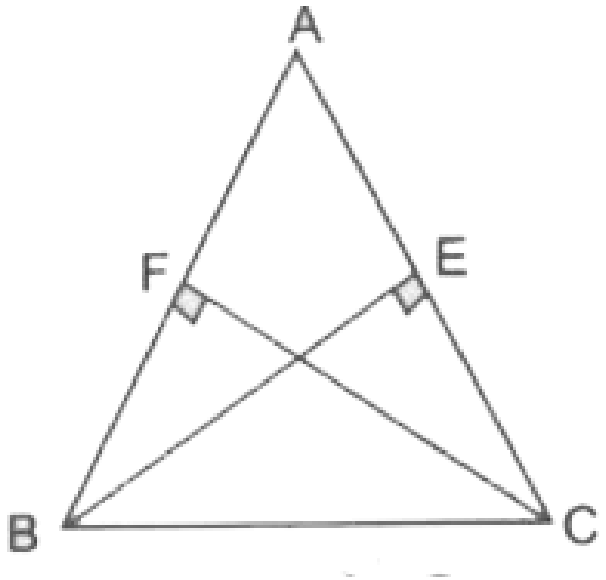
**4.** BE and CF are two altitudes of a triangle ABC. Using RHS congruence rule, prove that

the triangle ABC is isosceles.

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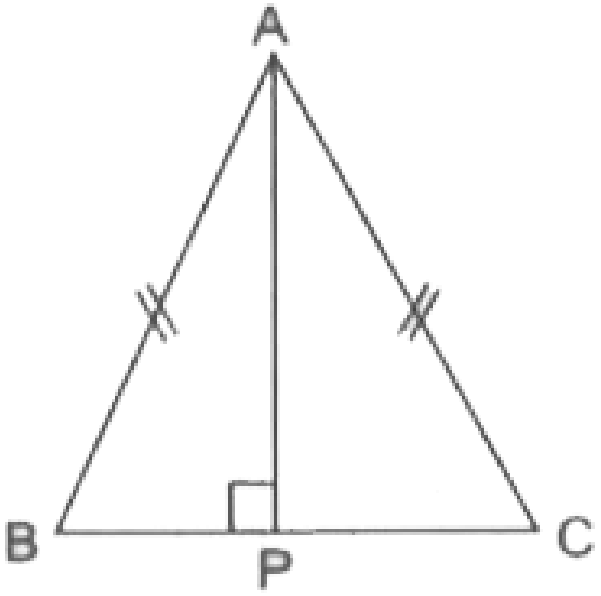
**5.** ABC is an isosceles triangle with AB = AC.

Draw $AP \perp BC$ to show that:

$\angle B = \angle C$.

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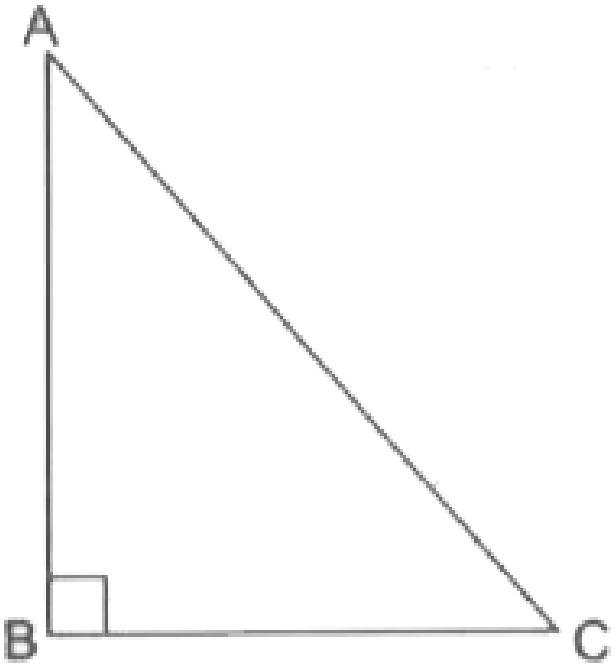
Exercise 5 4

**1.** Show that in a right angled triangle, the hypotenuse is the longest side.

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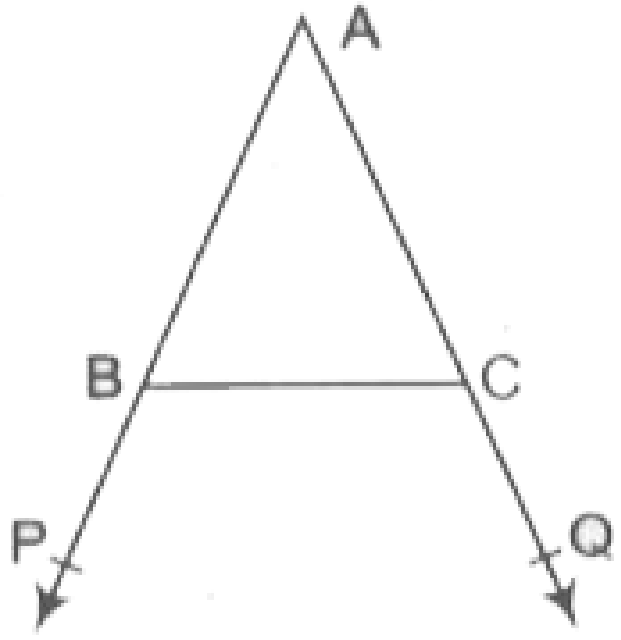
**2.** In the given figure sides AB and AC of $\triangle ABC$, are extended to point P and Q respectively. Also $\angle PBC < \angle QCB$. Show that $AC > AB$.

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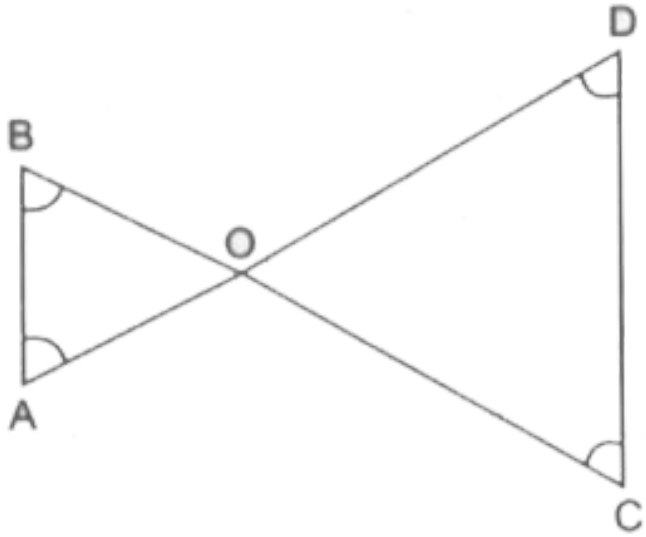
**3.** In the given figure, $\angle B < \angle A$ and $\angle C < \angle D$. Show that $AD < BC$.

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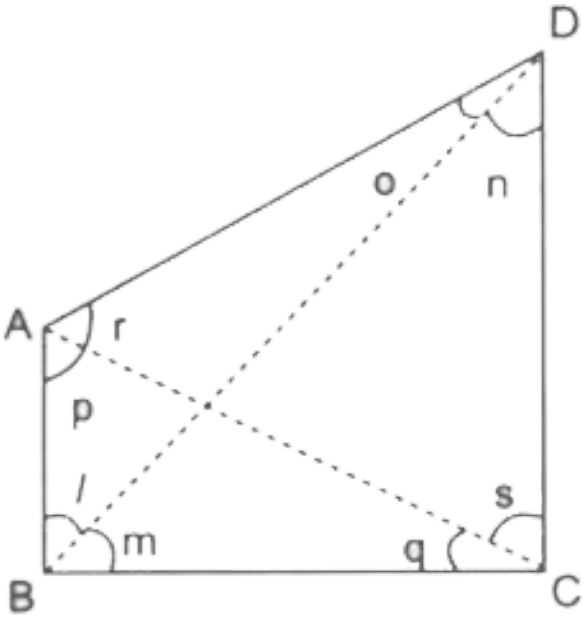
**4.** AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD. Show that $\angle A < \angle C$ and $\angle B > \angle D$.

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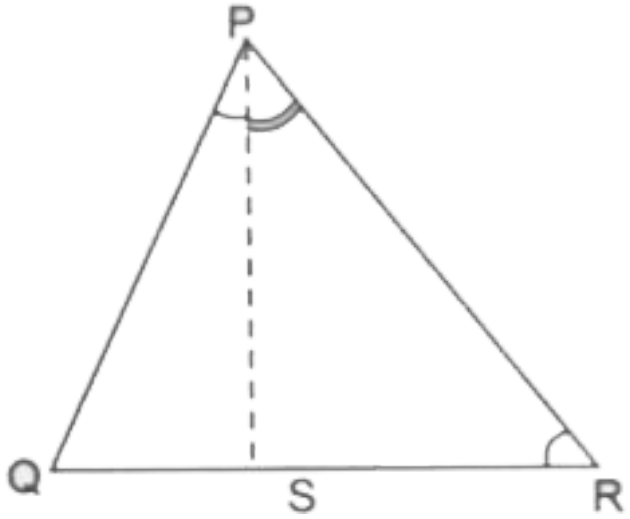
**5.** In the given figure, $PR > PQ$ and PS bisect $\angle QPR$. Prove that:

$\angle PSR > \angle PSQ$

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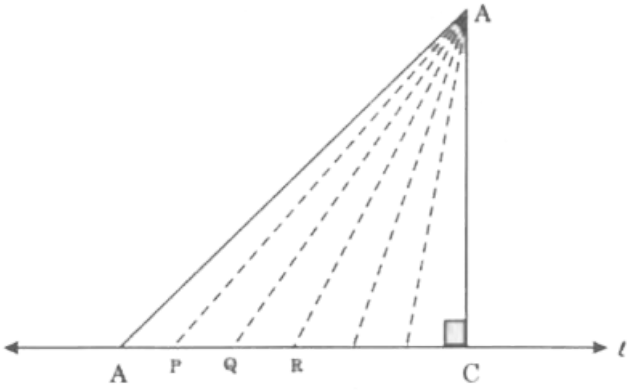
**6.** Show that of all line segments drawn from a given point not on it, the perpendicular line segment is the shortest.

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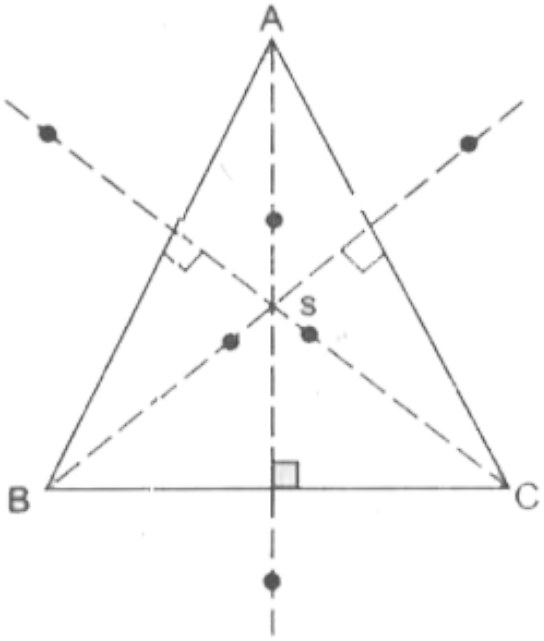
Exercise 5 5 Optional

**1.** ABC is a triangle . Locate a point in the interior of $\triangle ABC$ which is equidistant from all the vertices of $\triangle ABC$.

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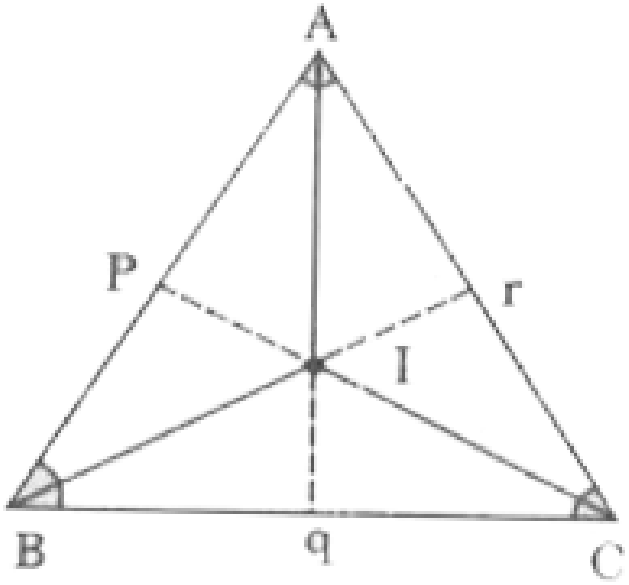
**2.** In a triangle, locate a point in its interior of which is equidistant from all the sides of triangle.

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**3.** In a huge park, people are concentrated at three points.

A: where there are different slides and swings for children.

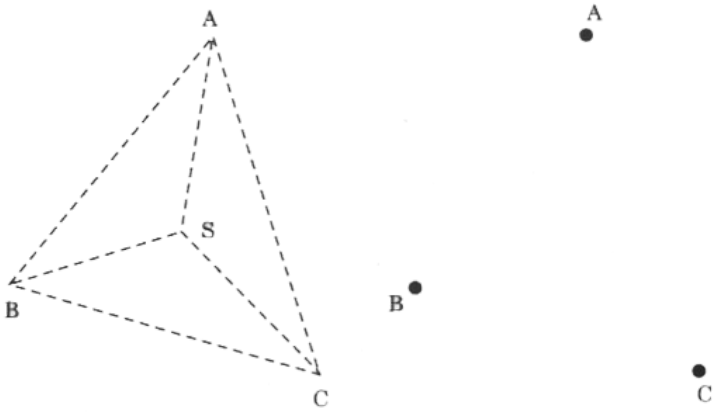
B: Near which a man-made lake is situated.

C: which is near to a larger parking and exit.

Where should an ice-cream parlour be set up so that maximum number of persons can approach it?

(Hint: The parlour should be equidistant from

A,B and C.)

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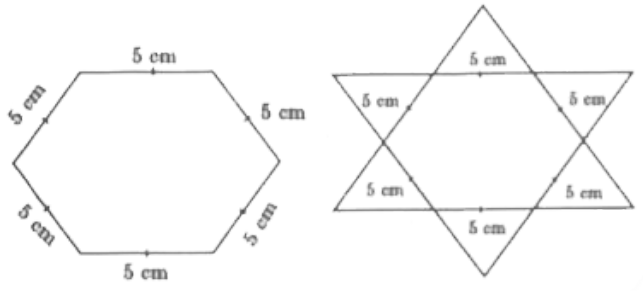
**4.** Complete the hexagonal and star shaped Rangolies, By filling them with as many equilateral triangles of side 1 cm as you can. Count the number of triangles in each case.

Which has more triangles.

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