

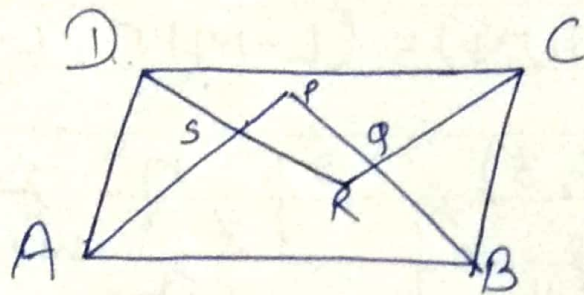
02/09/XX

Class-IX (MATHS)

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Topic  $\Rightarrow$  Quadrilateral:

1) Show that the bisectors of angles of a parallelogram form a rectangle.

Ans  $\rightarrow$ 

$\therefore$  DS bisect  $\angle D$  and AS bisect  $\angle A$

$$\begin{aligned} \therefore \angle DAS + \angle ADS &= \frac{1}{2} \angle A + \frac{1}{2} \angle D \\ &= \frac{1}{2} (\angle A + \angle D) \end{aligned}$$

$$= \frac{1}{2} \times 180 = 90^\circ$$

$$\angle DAS + \angle ADS + \angle DSA = 180^\circ$$

$$90 + \angle DSA = 180^\circ$$

$$\angle DSA = 90^\circ$$

$$\therefore \angle PSR = 90^\circ \text{ (V.O.A.)}$$

(Angle sum prop of  $\Delta$ )

Similarly

$$\angle APB = 90^\circ, \quad \angle SPQ = 90^\circ$$

$$\angle PQR = 90^\circ, \quad \angle SRQ = 90^\circ$$

So, PQRS is a quad in which all angles are right angles.

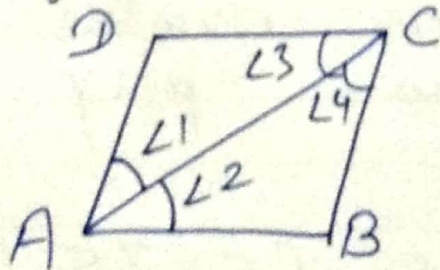
$\therefore$  PQRS is a  $11^{\text{gm}}$ .

(2) ABCD is a rhombus. Show that diagonal AC bisect  $\angle A$  as well as  $\angle C$ . Show that

(i) ABCD is a Square

(ii) Diagonal BD bisect  $\angle B$  as well as  $\angle D$ .

Ans



$\therefore$  ABCD is a rhombus, so its all sides are equal.

$$AB = BC = CD = AD.$$

also ABCD is a  $11^{\text{gm}}$ .

$$\therefore AD = DC$$

$$\angle 1 = \angle 3$$

$$\text{and } \angle 3 = \angle 2 \quad \left\{ \begin{array}{l} \text{Alt}^{\text{int}} \angle s \end{array} \right.$$

$$\therefore \angle 1 = \angle 2$$

$\therefore$  AC bisect  $\angle A$

So, AC bisect  $\angle C$ .