MATHS

BOOKS - PSEB

QUADRILATERALS

Exercise

1. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

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2. If the diagonals of a parallelogram are perpendicular, then it is a rhombus.

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3. If diagonals of a quadrilateral bisect each other at right angles, then it is a :

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4. Which of the following statements are True or False :

If the diaonals of a quadilateral are equal and bisect each other at right angles then the quadrilateral is a square.

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5. Which of the following statements are True or False :

If the diaonals of a quadilateral are equal and

bisect each other at right angles then the quadrilateral is a square.

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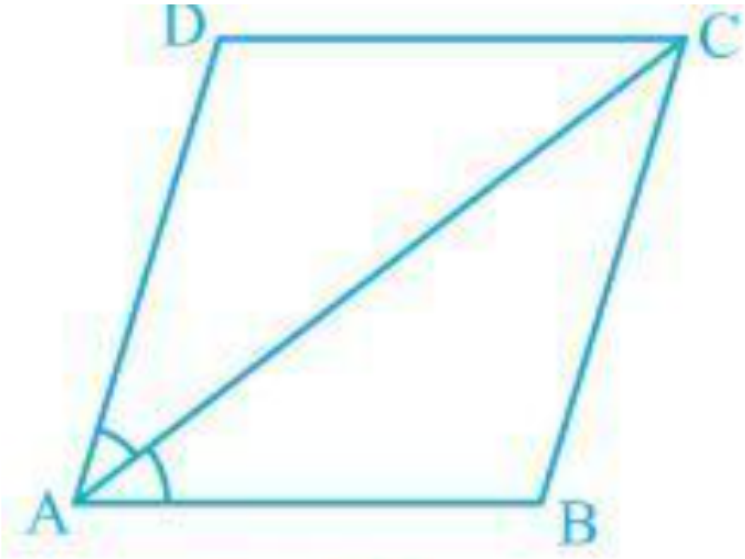
6. Diagonal AC of a parallelogram ABCD bisects $\angle A$ (see Fig. 8.19). Show that (i) it bisects $\angle C$

also, (ii) ABCD is a rhombus.



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7. ABCD is a rhombus. Show that the diagonal AC bisects $\angle A$ as well as $\angle C$ and diagonal BD bisects $\angle B$ as well as $\angle D$.

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8. ABCD is a rectangle in which diagonal AC bisects $\angle A$ aswellas/_C . $Showt\widehat{D}iagonalBDbi\sec ts \perp h$/_B aswellas/_D`.

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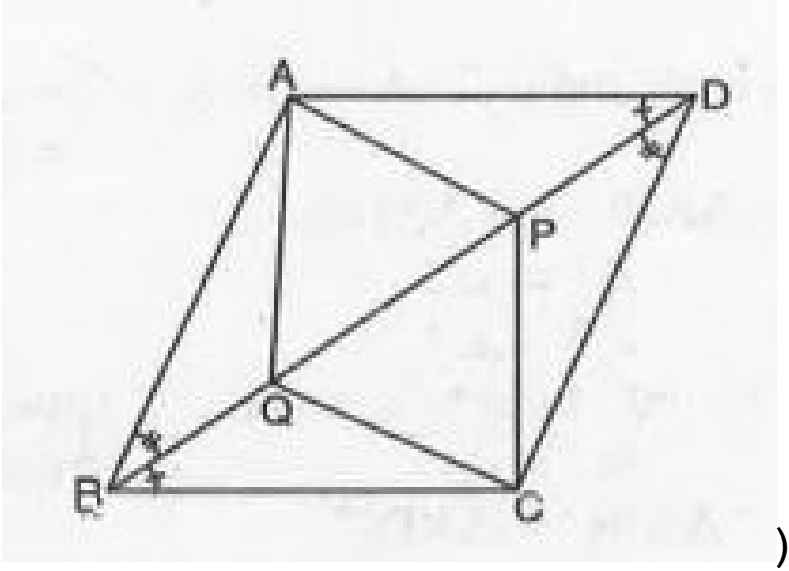
9. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ

(see Fig.



) Show that $AQ = CP$.

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10. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ

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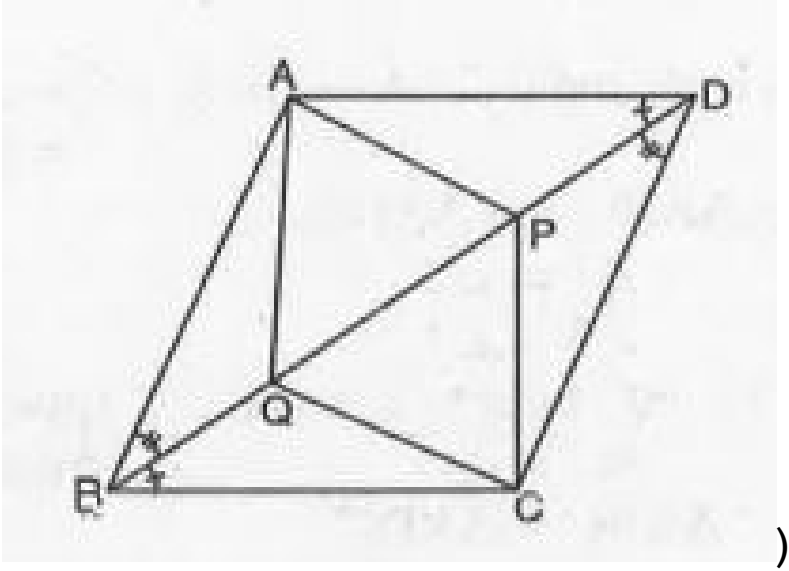

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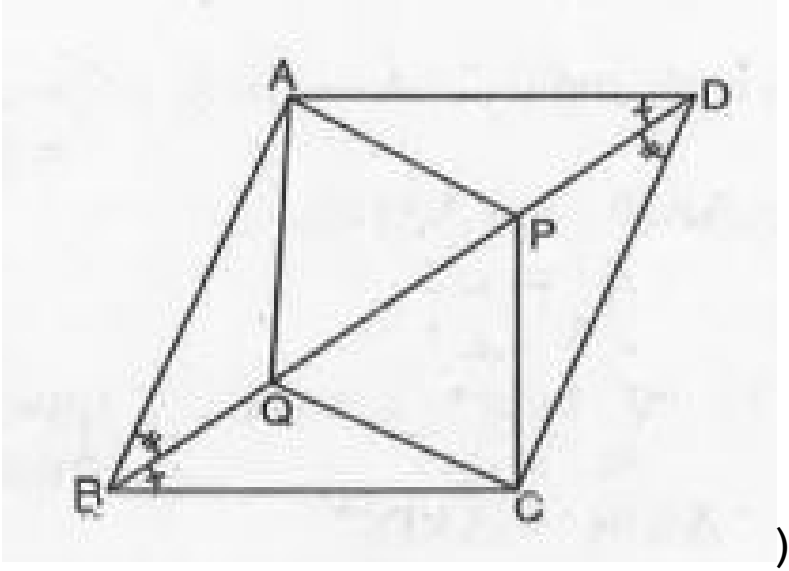

) Show that $AQ = CP$.

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12. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ

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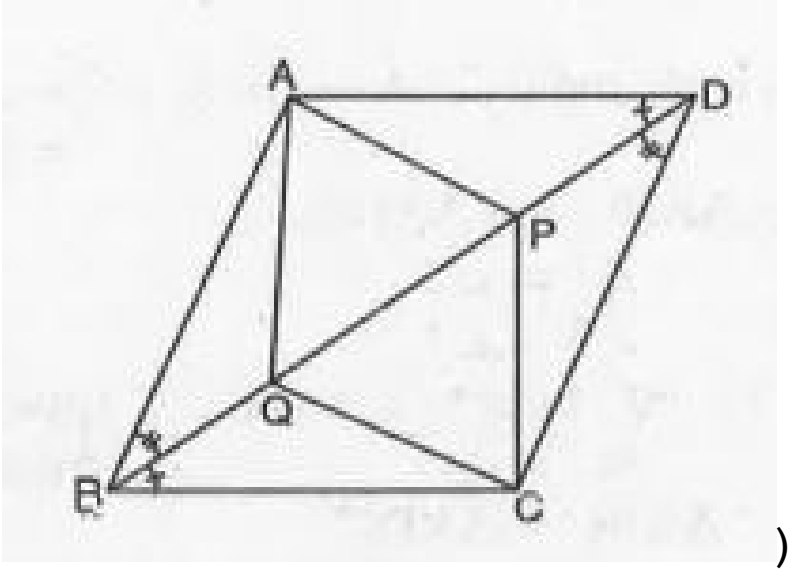

) Show that $AQ = CP$.

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13. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ

(see Fig.

) Show that APCQ is a parallelogram.

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14. ABCD is a parallelogram and AP and CQ are the perpendiculars from vertices A and C on its diagonal BD (See fig.) Show that $\Delta APB \cong \Delta CQD$.

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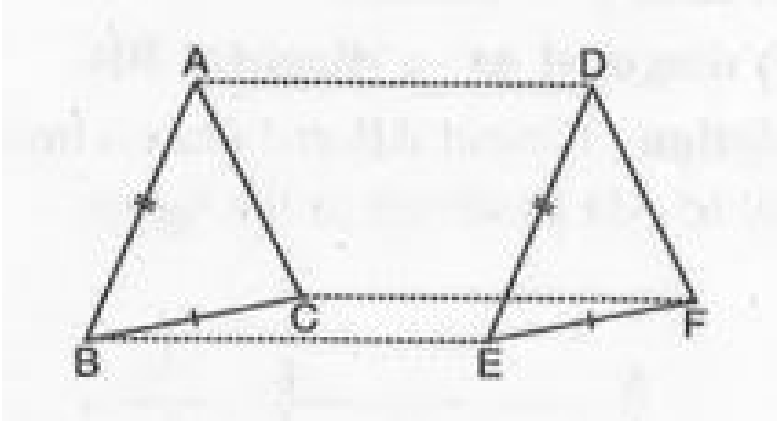
15. In ΔABC and ΔDEF, AB = DE, $AB \parallel DE$, BC = EF and $BC \parallel EF$. Vertices A, B and C are joined to vertices D, E and F respectively (See fig.)



Show that quadrilateral ABED is a parallelogram.

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16. In ΔABC and ΔDEF, AB = DE, $AB \| DE$, $BC = EF$ and $BC \| EF$. Vertices A, B and C are joined to vertices D, E and F respectively (See fig.)

 Show that quadrilateral BEFC is a parallelogram.

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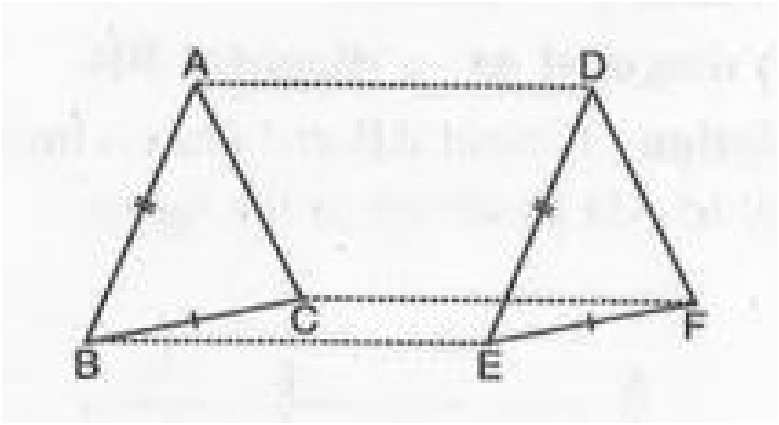
17. In ΔABC and ΔDEF, AB = DE, $AB \| DE$, BC = EF and $BC \| EF$. Vertices

A, B and C are joined to vertices D, E and F respectively (See fig.)



Show that $AD \parallel CF$ and AD=CF.

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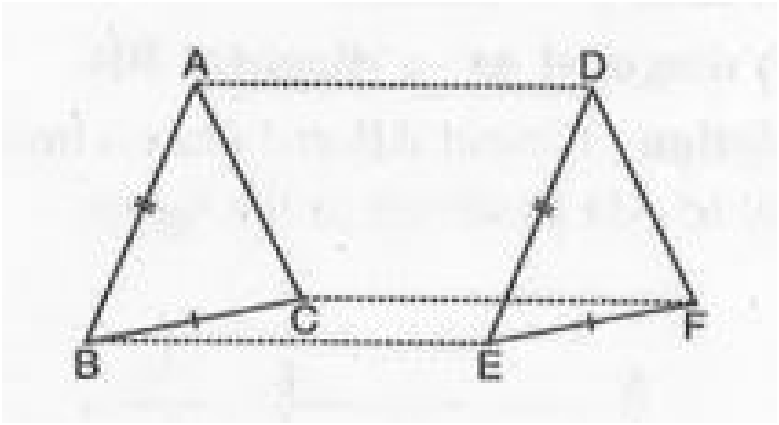
18. In ΔABC and ΔDEF, AB = DE, $AB \parallel DE$, BC = EF and $BC \parallel EF$. Vertices

A, B and C are joined to vertices D, E and F respectively (See fig.)



Show that quadrilateral ACFD is a parallelogram.

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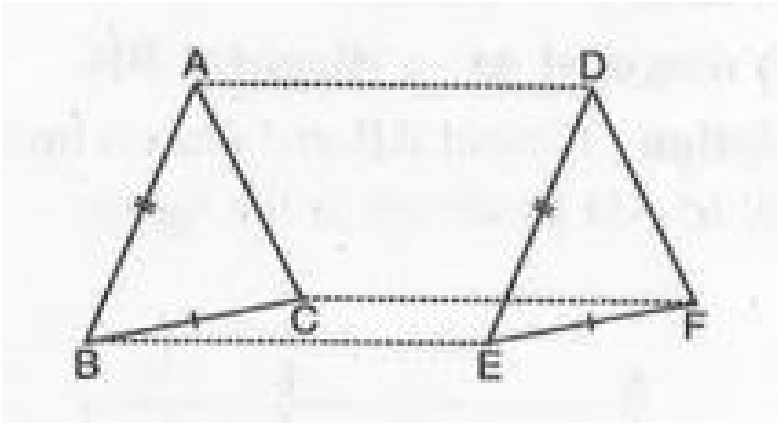
19. In ΔABC and ΔDEF, AB = DE, $AB \parallel DE$, BC = EF and $BC \parallel EF$. Vertices

A, B and C are joined to vertices D, E and F respectively (See fig.)



Show that AC=DF.

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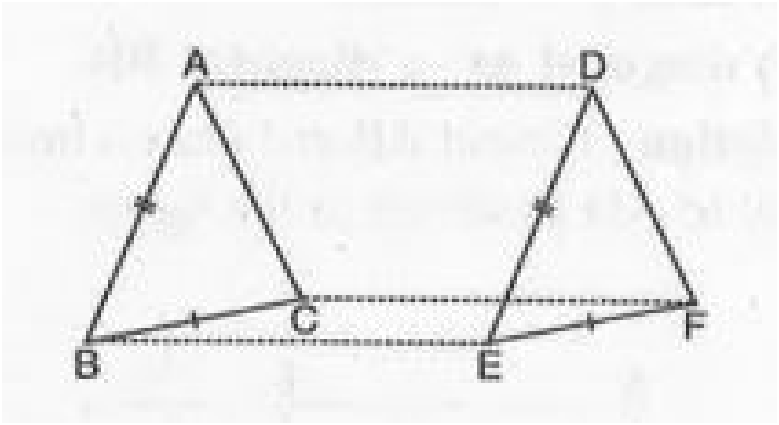
20. In ΔABC and ΔDEF, AB = DE, $AB \parallel DE$, BC = EF and $BC \parallel EF$. Vertices

A, B and C are joined to vertices D, E and F respectively (See fig.)



Show that $\Delta ABC \cong \Delta DEF$.

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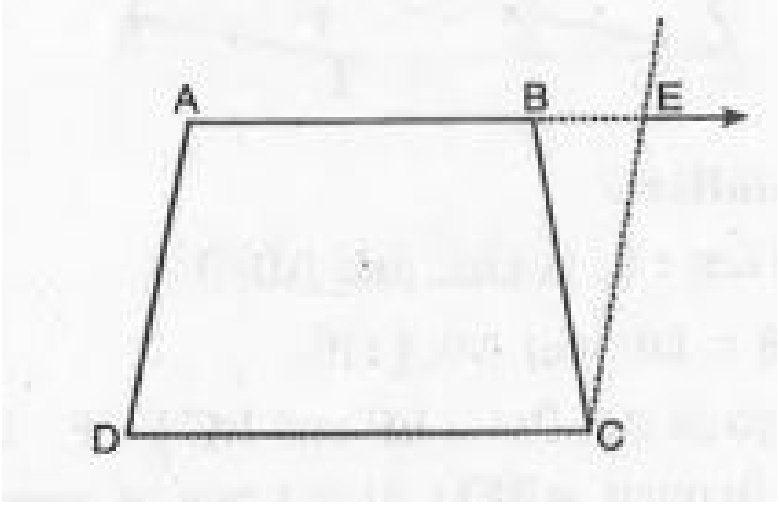
21. ABCD is a trapezium in which $AB \| CD$ and AD = BC (See Fig.)



Show that $\angle A = \angle B$.

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22. ABCD is a trapezium in which $AB \| CD$ and AD = BC (See Fig.)

Show that $\angle C = \angle D$.

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23. ABCD is a trapezium in which $AB \| CD$ and AD = BC (See Fig.)

 Show that $\Delta ABC \cong \Delta BAD$.

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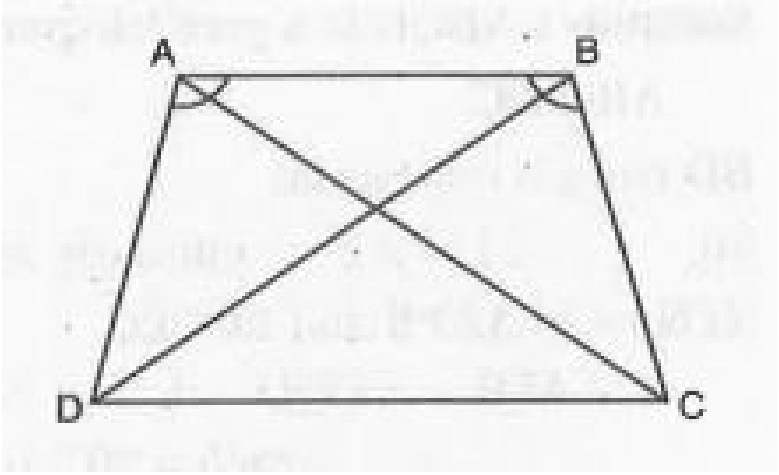
24. ABCD is a trapezium in which $AB \| CD$ and AD = BC (See Fig.)



Show that diagonal AC = diagonal BD.

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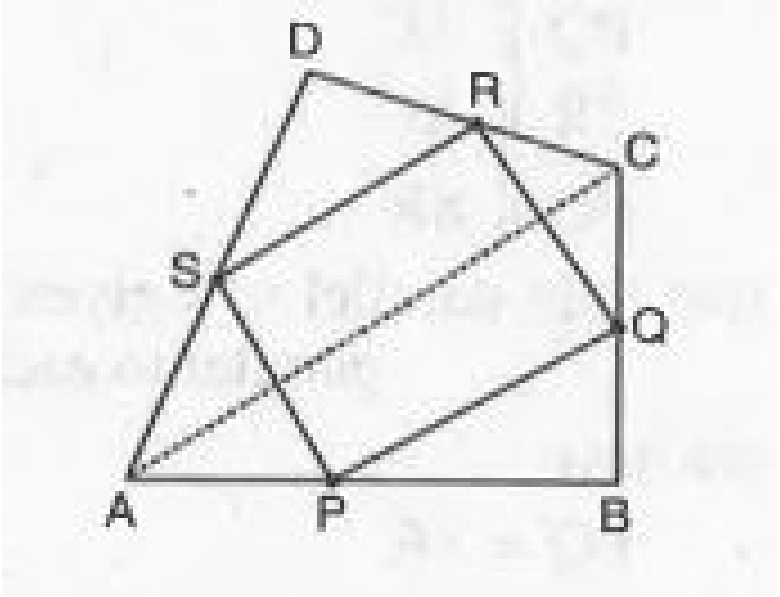
25. ABCD is a quadrilateral in which P, Q, R and S are the mid-points of sides AB, BC, CD and DA respectively (See Fig.



AC is a diagonal Show that $SRIIAC$ and $SR = \frac{1}{2}AC.$

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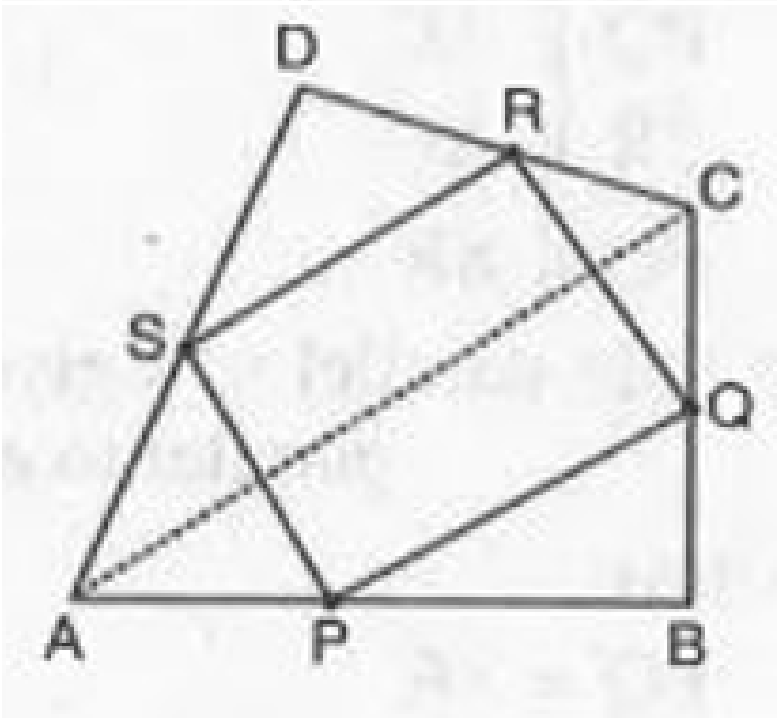
26. ABCD is a quadrilateral in which P, Q, R and S are the mid-points of sides AB, BC, CD and DA

respectively (See Fig.)



AC is a diagonal Show that PQ = SR.

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27. ABCD is a quadrilateral in which P, Q, R and S are the mid-points of sides AB, BC, CD and DA respectively (See Fig.)

 AC is a diagonal Show that PQRS is a parallelogram.

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28. ABCD is a rhombus and P, Q, R, S are the mid-points of AB, BC, CD and DA respectively. Prove that quadrilateral PQRS is a rectangle.

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29. ABCD is a rectangle and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.

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30. ABCD is a trapezium, in which $ABIIDC$, BD is a diagonal and E is the mid-point of AD. A line is drawn through E, parallel to AB

intersecting BC at F (See Fig.)

 Show that F is the mid-point of BC.

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31. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively (See Fig)

 . Show that the line segments AF and EC trisect the diagonal BD.

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32. Show that the line segments joining the mid-points of opposite sides of a quadrilateral bisect each other.

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33. ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Show that D is the mid-point of AC.

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34. ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Show that $MD \perp AC$.

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35. ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Show that CM = MA = $\frac{1}{2}AB$.

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Example

1. Show that each angle of a rectangle is a right angle.

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2. The diagonals of a rhombus are perpendicular to each other .

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3. ABC is an isosceles triangle in which AB = AC. AD bisects exterior angle PAC and CD || AB (see Fig. 8.14). Show that (i) $\angle DAC = \angle BCA$ and

(ii) ABCD is a parallelogram.

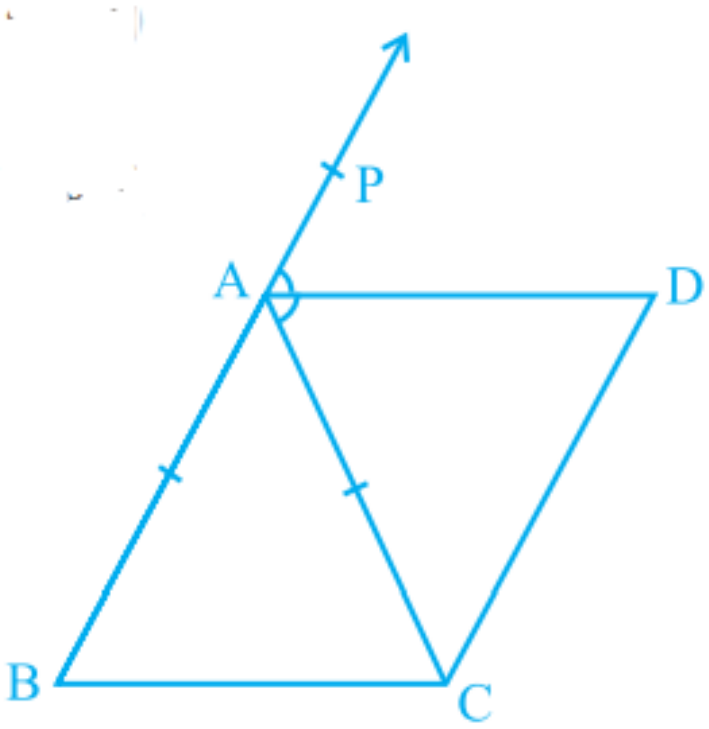

Fig. 8.14

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4. Two parallel lines l and m are intersected by a transversal p (see Fig. 8.15). Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.

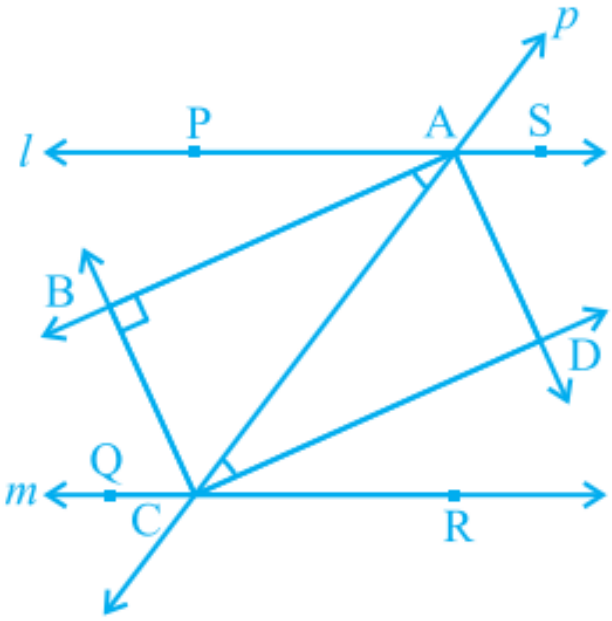

Fig. 8.15

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5. The bisectors of angles of a parallelogram from a :

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6. ABCD is a parallelogram in which P and Q are mid-points of opposite sides AB and CD (see Fig. 8.18). If AQ intersects DP at S and BQ intersects CP at R, show that: APCQ is a

parallelogram.

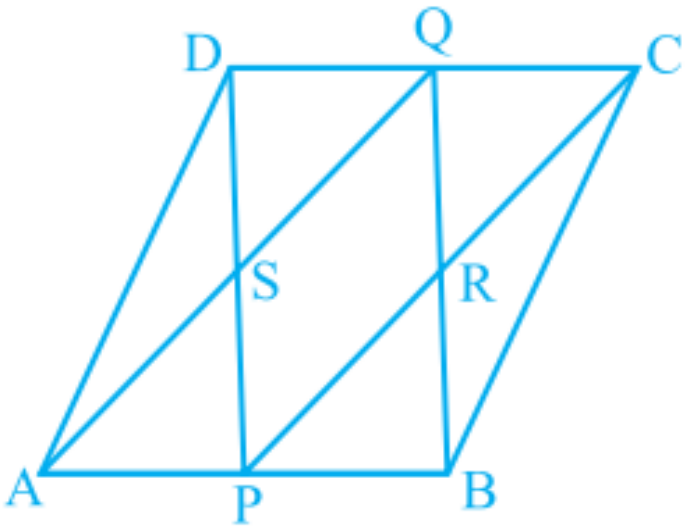

Fig. 8.18

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7. ABCD is a parallelogram in which P and Q are mid-points of opposite sides AB and CD (see

Fig. 8.18). If AQ intersects DP at S and BQ intersects CP at R, show that: APCQ is a parallelogram.

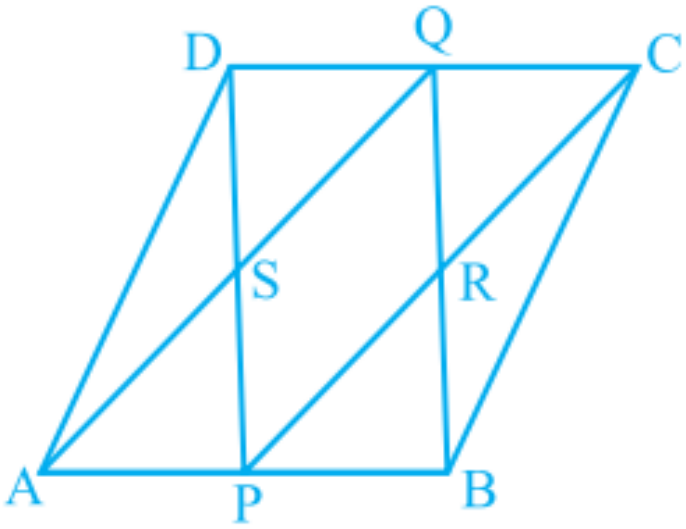

Fig. 8.18

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8. ABCD is a parallelogram in which P and Q are mid-points of opposite sides AB and CD (see Fig. 8.18). If AQ intersects DP at S and BQ intersects CP at R, show that: DQBP is a parallelogram.

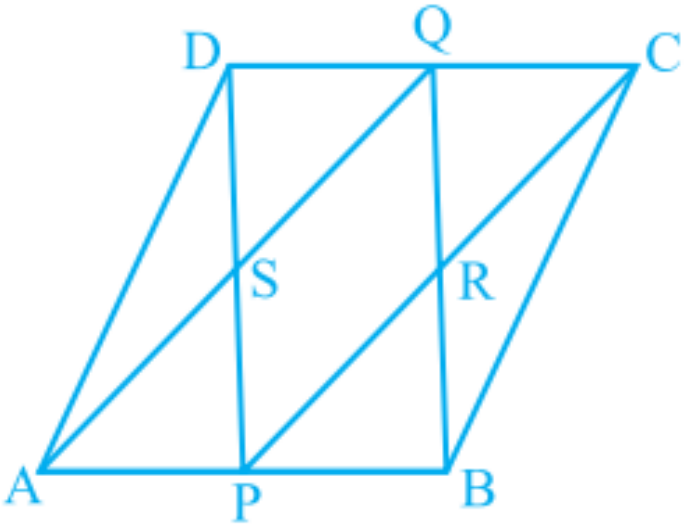

Fig. 8.18

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9. In ΔABC, D, E and F are respectively the mid-points of sides AB, BC and CA . Show that `Delta ABC is divided into four congruent triangles by joining D, E and F.

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10. l, m and n are three parallel lines intersected by transversals p and q such that l, m and n cut off equal intercepts AB and BC on

p (see Fig. 8.28). Show that l, m and n cut off equal intercepts DE and EF on q also.

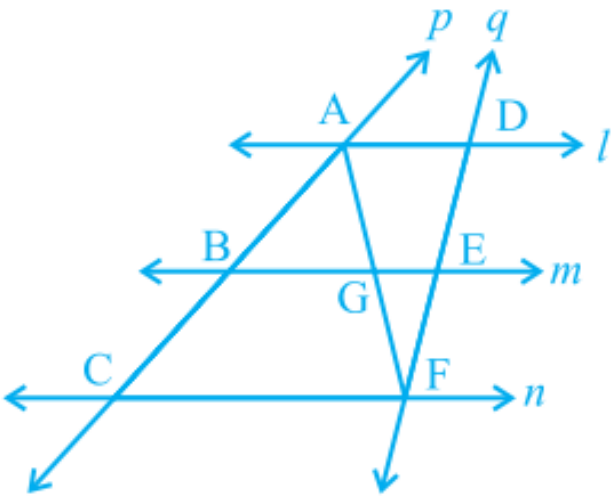

Fig. 8.28

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