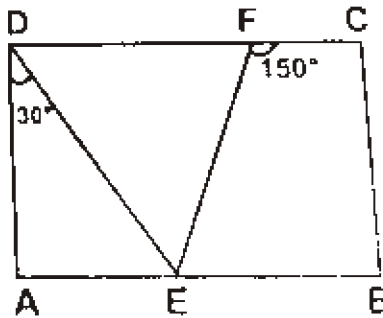


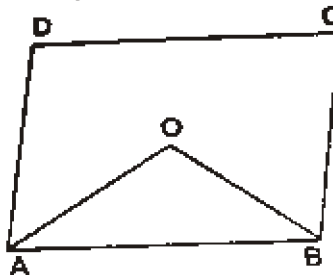
Very Very Shot answer type question (1 Marks)

1. If three angles of a quadrilateral are 75° , 90° , and 75° then find the fourth angle.
2. ABCD is a rhombus such that $\angle ACB = 40^\circ$, then find $\angle ABD$.
3. Name the closed figure formed by the bisector of the angles of a parallelogram.
4. Name the figure obtained by joining the midpoints of the sides of the quadrilateral taken in order.
5. The diagonals AC and BD of a parallelogram ABCD intersect each other at point "O" If $\angle DAC = 32^\circ$ And $\angle AOB = 70^\circ$ then find $\angle DBC$.
6. The angles of a quadrilateral are in the ratio 3: 4: 5:6. Find the respective angles of this quadrilateral.
7. Line segment joining the midpoints of two sides of a triangle is parallel to the third side and is of it.
8. If two consecutive sides of a rhombus are represented by $3x - 6$ and $x + 14$ then find the perimeter of the rhombus.

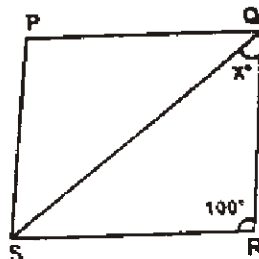
9. Points A, B, C and D are midpoints of the sides of square PQRS. If the area of PQRS is 36 sq. cm, then find the area of ABCD.
10. The perimeter of a rhombus is 60cm. If the length of its longer diagonal measures 24cm, find the length of the shorter diagonal.
11. In the given figure ABCD is a rectangle. if $m \angle ADE = 30^\circ$ and $m \angle CFE = 150^\circ$. What will be the $m \angle DEF$?



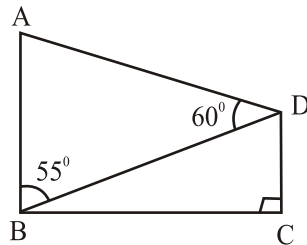
12. Opposite angles of a parallelogram are
13. Given four points A, B, C, D such that three points A, B and C are collinear. Name the closed figure obtained by joining these points in order.
14. What is the sum of consecutive angles of parallelogram?
15. In parallelogram ABCD, bisectors of angles A and B intersect each other at "O". Find the value of angle AOB.



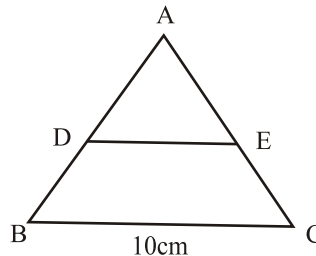
16. If an angle of a parallelogram is two-third of its adjacent angle then find the smallest angle of the parallelogram.
17. Diagonals of a rectangle..... each other and are.....
18. In the given figure PQRS is a rhombus. Find the value of x.



19. If in a rectangle ABCD, diagonal AC bisect $\angle A$ as well as $\angle C$ then ABCD is a
20. Two adjacent angles in a parallelogram are in the ratio 2:4. Find the values of these two angles.
21. Diagonals of a parallelogram each other.
22. In a rhombus ABCD, if $\angle A = 60^\circ$ find $\angle B$, $\angle C$ & $\angle D$.
23. The angles of a quadrilateral are in the ratio 1:2:4:5. Find the measure of each angle.
24. If in a rhombus LMNP, $\angle LNM = 40^\circ$ then what is the measure of $\angle LPM$?
25. In a parallelogram if all the four angles are in the ratio 1:1:1:1 then, what type of parallelogram is this?
26. In the figure, $AB \parallel CD$, what will be the measure of $\angle ADC$?

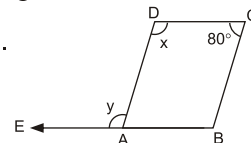


27. In the figure, if D & E are respectively the mid points of AB & AC, what will be the length of ED?

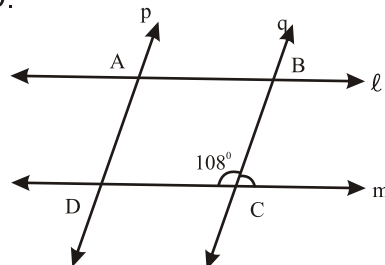


28. PQRS is a rhombus with $\angle QPS = 50^\circ$. Find $\angle RQS$.

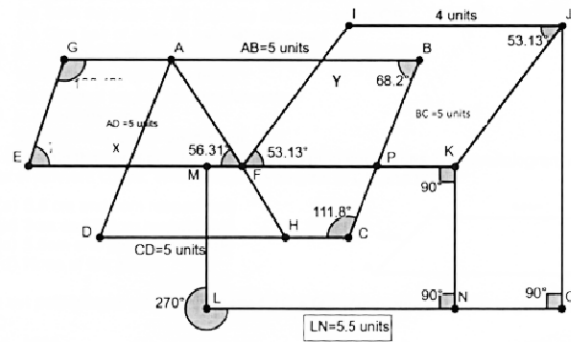
29. In the figure, ABCD is a parallelogram find value of $(x + y)$.



30. In the figure line $\ell \parallel m$ and $p \parallel q$, $\angle BCD = 108^\circ$ find all four angles of quadrilateral ABCD.



31. If two adjacent angles of a parallelogram ABCD are in the ratio 5:4, find all the angles of the parallelogram.
32. Rohita wants to print her dress with a pattern shown in the figure-



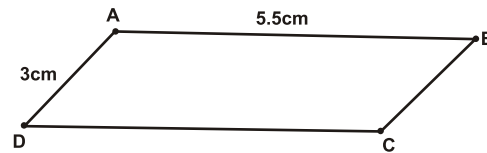
- (i) Rohita wants to order a block of shape ABCD. What shape should Rohita mention to the carpenter for a wooden block for printing ABCD -
 - (a) Parallelogram
 - (b) Square
 - (c) Rectangle
 - (d) Rhombus
- (ii) What shape should Rohita mention to the carpenter for a wooden block for printing LMKN -
 - (a) Parallelogram
 - (b) Square
 - (c) Rectangle
 - (d) Trapezium
- (iii) She wants to colour two pairs of parallel lines with same shade. Which of the following pairs should she choose-
 - (a) $GE \parallel AF$ & $LN \parallel KN$
 - (b) $IJ \parallel KF$ & $BP \parallel IF$
 - (c) $AB \parallel CD$ & $KN \parallel JO$
 - (d) $ML \parallel FN$ & $HC \parallel CP$
- (iv) She wants to colour a trapezium in blue shade. Which of the following should she select —
 - (a) JKNO
 - (b) AXF
 - (c) AFMX
 - (d) AFYI
- (v) Rohita needs to know the measure of $\angle AFY$ to construct $\triangle AFY$. What should be $\angle AFY$ -
 - (a) 70.56°
 - (b) 70°
 - (c) 80°
 - (d) 170°

33. Class IXC wants to decorate the display board of their class. They are using following concepts for cutting paper shapes for decoration-

1. A quadrilateral is called a parallelogram if
 - (a) Both the pairs of its opposite sides are parallel OR
 - (b) Both the pairs of its opposite sides are equal OR
 - (c) One pair of sides is parallel and equal
2. In a parallelogram
 - (a) Opposite angles are equal
 - (b) adjacent angles are supplementary
3. In a parallelogram
 - (a) diagonals bisect each other

(i) To decorate the border of the board they want to cut shapes like parallelogram ABCD, using sheets of different colors. What should be lengths of CD and BC -

- (a) 5.5 cm and 5cm respectively
- (b) 3cm and 5.5cm respectively
- (c) 5.5cm and 3cm respectively
- (d) None of the above

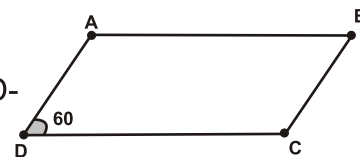


(ii) To cut parallelogram ABCD they fixed $\angle D = 60^\circ$. What should be $\angle B$ to get parallelogram ABCD-

- (a) 120°
- (b) 60°
- (c) 180°
- (d) 30°

(iii) What should be $\angle A$ to get parallelogram ABCD-

- (a) 120°
- (b) 60°
- (c) 180°
- (d) 30°

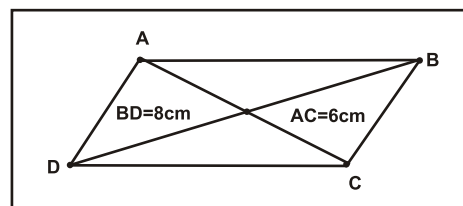


(iv) Some of the parallelograms were cut to get triangles such as AEB, AED CED & BEC to design flowers at the corner of the board. If BD is kept 8cm long and AC is 6cm then what should be length AE?

- (a) 6cm
- (b) 3cm
- (c) 4cm
- (d) 8cm

(v) What should be length DE?

- (a) 6cm
- (b) 3cm
- (c) 4cm
- (d) 8cm

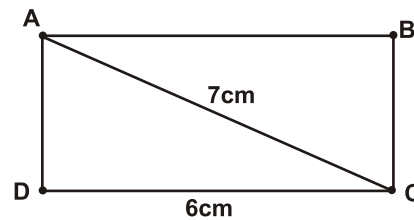


34. 1. A Parallelogram is called a Rectangle if one of its angles is 90° . It makes all the angles of the rectangle 90° . Its diagonals of the rectangle become equal and bisect each other.
2. A Parallelogram is called a square if one of its angles is 90° and one pair of adjacent sides are equal. It makes all the angles of the square as 90° and all the sides equal. The diagonals of a square become equal and bisect each other at 90° .

Sahil is using above learnings to design a wall-hanging. He is using wires to structure a frame and then is going to wrap up wool around the wires.

- (i) The first frame he structured from wires is rectangle ABCD, as shown in figure. If the diagonal wire is 7cm and side CD is 6cm then what should be length of BC to get required rectangle-

- (a) 13 cm
(b) $\sqrt{13}$ cm
(c) 10 cm
(d) $\sqrt{10}$ CM



- (ii) What should be length of wire BD?

- (a) 6cm
(b) 7cm
(c) 13cm
(d) $\sqrt{13}$ cm

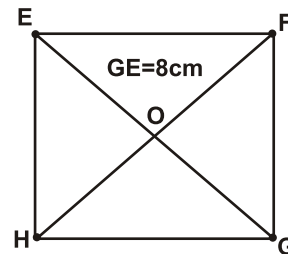
- (iii) The second frame is square EFGH, as shown in figure. He has a left out piece of wire having length 8cm. He wants to take this piece as diagonal of EFGH. What should be the length of wire HF?

- (a) 8cm
(b) 6cm
(c) 10cm
(d) 4cm
- (iv) What should be the length of wire EF?

- (a) 64cm
(b) 16cm
(c) $4\sqrt{2}$ cm
(d) $2\sqrt{4}$ cm

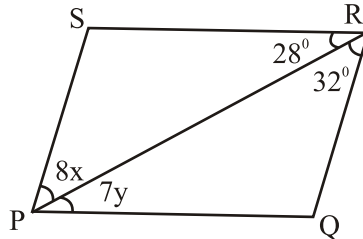
- (v) What should be the length of wire OF?

- (a) 3cm
(b) 4cm
(c) $4\sqrt{2}$ cm
(d) 8cm

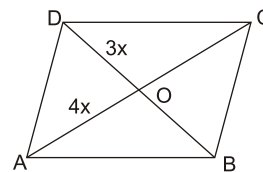


Very short answer type question (3 Marks)

35. Prove that the sum of all the four angles of a quadrilateral is 360° :
36. Show that opposite angles of a parallelogram are equal.
37. In a parallelogram ABCD $\angle B = 110^\circ$ determine the measure of $\angle A$ and $\angle D$.
38. In the figure if PQRS is a parallelogram, then find the value of x & y .

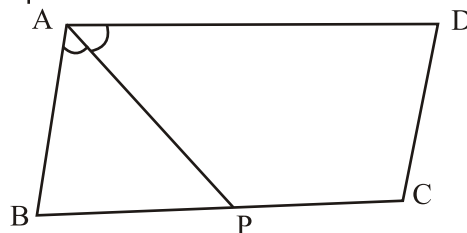


39. The diagonals of a parallelogram ABCD intersect at O. A line through O intersects AB at X & DC at Y. Prove that $OX = OY$.
40. In a parallelogram ABCD diagonals AC and BD intersect at O and $AC = 7.4$ cm. and $BD = 6.2$ cm. Find the length of AO and BO.
41. Two opposite angles of a parallelogram are $(5x-3)$ and $(4x+12)$. Find the measure of each angle of the parallelogram.
42. Diagonals of a quadrilateral ABCD bisect each other if $\angle A = 35^\circ$ determine $\angle B$.
43. The perimeter of a parallelogram is 30cm. If longer side is 9.5 cm then find the length of shorter side.
44. In a parallelogram ABCD diagonals AC and BD intersect at O and $AC = 12.6$ cm and $BD = 9.4$ cm. Find the measures of OC and OD.
45. ABCD is a rhombus in which $DO = 3x$ & $AO = 4x$, find perimeter of quadrilateral ABCD.
46. The angles of a quadrilateral are $(x+20)$, $(x-20)$, $(2x+5)$, $(2x-5)$. Find the value of x .

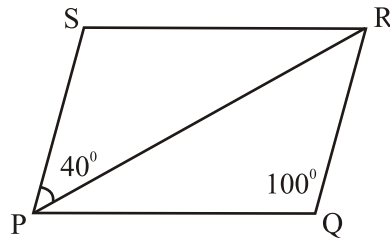


Short answer type questions (3 Marks)

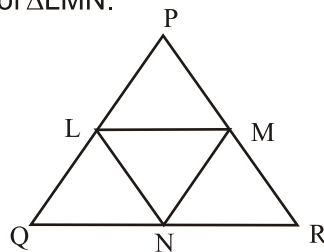
47. In the figure P is the mid point of side BC of a parallelogram ABCD such that $\angle BAP = \angle DAP$ prove that $AD = 2CD$.



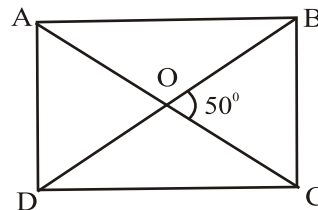
48. In the adjoining figure if PQRS is a parallelogram where $\angle PQR = 100^\circ$ and $\angle SPR = 40^\circ$. Find $\angle PRQ$ and $\angle SRQ$.



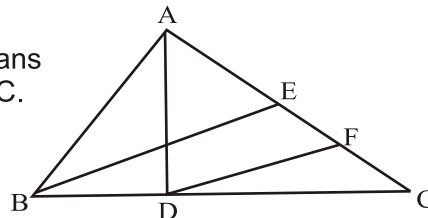
49. Prove that the line segment joining the mid points of two sides of a triangle is parallel to the third side.
50. In the given figure L, M, and N are mid point of the sides PQ, PR and QR respectively of $\triangle PQR$. If $PQ = 4.4\text{cm}$, $QR = 5.6\text{ cm}$ and $PR = 4.8\text{cm}$ then find the perimeter of $\triangle LMN$.



51. A quadrilateral is a parallelogram if one pair of opposite sides are equal and parallel. Prove it.
52. If the diagonals of a quadrilateral bisect each other then quadrilateral is a parallelogram. Prove it.
53. In a parallelogram PQRS, M and N are points on PQ and RS such that $PM = RN$. Prove that $MS \parallel NQ$.
54. In a parallelogram ABCD, AP and CQ are drawn perpendiculars from vertices A and C on diagonal BD. Prove that $\triangle APB \cong \triangle CQD$.
55. The diagonals of a rectangle ABCD meet at O. If $\angle BOC = 50^\circ$ then find $\angle ODA$.

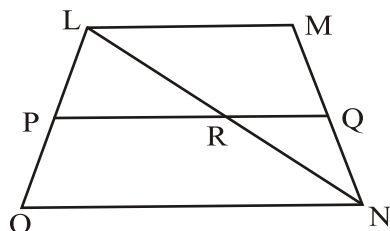


56. In the given figure AD and BE are the medians of $\triangle ABC$ and $BE \parallel DF$ prove that $CF = \frac{1}{4}AC$.



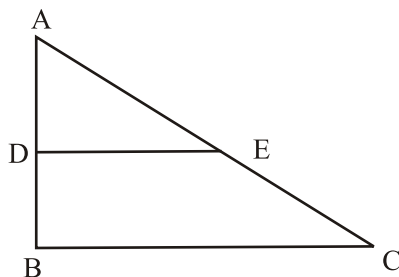
Long Answer type Questions (5 Marks)

57. In the figure LMNO, is a trapezium in which LM is parallel to side ON and P is the mid point of side LO. If Q is a point on the side MN such that segment PQ is parallel to side ON Prove that Q is the mid point of MN and $PQ = \frac{1}{2} (LM + ON)$.



58. In the figure, $\triangle ABC$ is right angled at B. If $AB = 9$ cm $AC = 15$ cm. and D and E are the mid points of AB & AC respectively calculate.

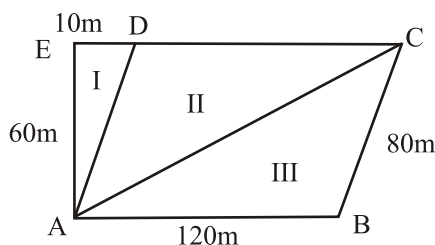
- The length of BC
- The area of trapezium BCED



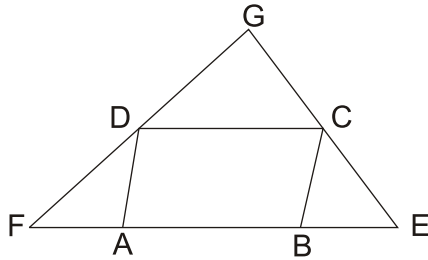
59. A farmer has divided his field into three parts as in the figure. Ist part is used to take care of his cattles. While II and III are used to grow two different crops.

Answer the following :—

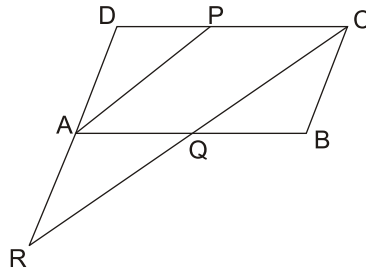
- How much area has been used to take care for cattles ?
- Are the two areas part II and part III equal? Justify.
- What is the total area of the field ?



60. ABCD is a parallelogram. Side AB is produced on both sides to E & F as in figure such that $BE = BC$ & $AF = AD$. Show that EC & FD when produced meets at right angle.



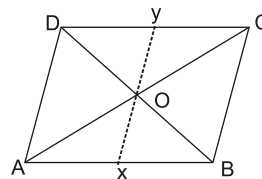
61. P is mid point of side CD of a parallelogram ABCD. A line through C parallel to PA intersects AB at Q & DA produced at R. Prove that $DA = AR$ & $CQ = QR$.



CHAPTER-8
QUADRILATERALS
ANSWERS AND HINTS

1. 120°
2. 50°
3. Rectangle
4. Parallelogram
5. 38°
6. $60^\circ, 80^\circ, 100^\circ, 120^\circ$
7. Half
8. 96
9. 18
10. 18
11. 90°
12. Equal
13. A Triangle
14. 180°
15. 90°
16. 72°
17. Bisect, Equal
18. 40°
19. Rhombus
20. $60^\circ, 120^\circ$
21. bisect
22. $120^\circ, 60^\circ, 120^\circ$
23. $30^\circ, 60^\circ, 120^\circ, 150^\circ$
24. 100°
25. Rectangle
26. 115°
27. 5 cm
28. 65°
29. 200°
30. $108^\circ, 72^\circ, 108^\circ, 72^\circ$
31. $100^\circ, 80^\circ, 100^\circ, 80^\circ$

32. (i) (b) (ii) (c)
 (iii) (c) (iv) (a)
 (v) 70.56°
33. (i) (c) (ii) (b)
 (iii) (a) (iv) (b)
 (v) (c)
34. (i) (b) (ii) (b)
 (iii) (a) (iv) (c)
 (v) (b)
37. $70^\circ 110^\circ$
38. $x=y=4$
- 39.



in $\triangle AOX$ & $\triangle COY$
 $OA=OC$
 $\angle AOX = \angle COY$ (vertically opposite)
 $\angle OAX = \angle OCY$ (Alternate Interior angles)
 $\triangle AOX \cong \triangle COY$ [ASA]
 $OX=OY$ [CPCT]
 40. 3.7cm, 3.1cm
 41. $72^\circ, 108^\circ, 72^\circ, 108^\circ$
 42. 145°
 43. 43.55 cm
 44. 6.3cm 4.7cm
 45. Hint : In rt $\triangle OAD$
 $AD^2 = (3x)^2 + (4x)^2$
 $AD^2 = 9x^2 + 16x^2$
 $AD = 5x$
 Perimeter = $20x$ units

46. $x=60$.

47. Hint

$$\angle 1 = \angle 2$$

$$\angle 2 = \angle 3 \text{ [Alt.int.angles]}$$

$$\angle 1 = \angle 3$$

in $\triangle ABP$

$$\angle 1 = \angle 3$$

$$BP = AP \text{ [why?]}$$

48. $40^\circ, 80^\circ$

50. 7.4cm

55. 65°

56. Hint-In $\triangle ABC$

$$EC = \frac{1}{2} AC \text{ [BE is median]}$$

In $\triangle BEC$

$$CF = \frac{1}{2} EC$$

58. 12cm, 40.5cm^2

59. Hint-

(iii) Area of Trapezium ABCE =

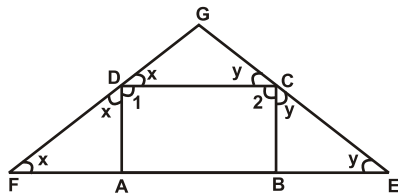
$$\frac{1}{2} [130+120] \times 60$$

Ans (i) 300m^2

(ii) Yes

(iii) 7500m^2

60. In parallelogram ABCD



$$\angle 1 + \angle 2 = 180^\circ \text{ --- (1)}$$

$$x + x + \angle 1 = 180^\circ \text{ [Why?]}$$

$$x = 90 - \frac{1}{2} (\angle 1) \text{ --- (2)}$$

$$\text{Similarly } y = 90 - \frac{1}{2} (\angle 2) \text{ --- (3)}$$

In $\triangle DGC$

$$\angle DGC + x + y = 180^\circ$$

61. APCQ is a parallelogram

Q is mid point of AB

in $\triangle AQR$ & $\triangle BQC$

$$\angle AQR = \angle BQC$$

$$\angle QAR = \angle QBC$$

$$AQ = BQ$$

$$\triangle AQR \cong \triangle BQC$$

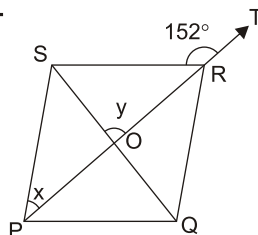
PRACTICE TEST

Quadrilaterals

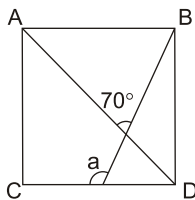
Time : 1 Hr.

M.M. 25

1. If the diagonals of a quadrilateral ABCD bisect each other & $\angle A = 45^\circ$, What is $m\angle B$? (1)
2. The angles of a Quadrilateral ABCD are in the ratio 2 : 3 : 5 : 8. Find the measure of smallest angle. (1)
3. Two opposite angles of a Parallelogram are $(5x-3)^\circ$ and $(4x+12)^\circ$. Find the measure of each angle of the parallelogram. (1)
4. In a $\triangle PQR$, median PS is produced to a point T such that $PS = ST$. Prove that PQTR is a parallelogram. (2)
5. In the Fig. PQRS is a rhombus in which the diagonal PR is produced to T. If $\angle SRT = 152^\circ$, find x & y . (2)



6. In a parallelogram ABCD, AP and CQ are drawn perpendicular from vertices A and C on diagonal BD. Prove that $\triangle APB \cong \triangle CQD$ (2)
7. ABCD is a square. A line BM intersects CD at M and the diagonal AC at O such that $\angle AOB = 70^\circ$, find a (3)



8. AD is median of $\triangle ABC$ & E is the mid point of AD. BE is produced to meet AC in F. Prove that $AF = \frac{1}{3}AC$. (3)
9. Show that the bisectors of angles of a parallelogram form a rectangle. (5)
10. Show that the quadrilateral formed by joining the mid point of the sides of a square is also a square. (5)