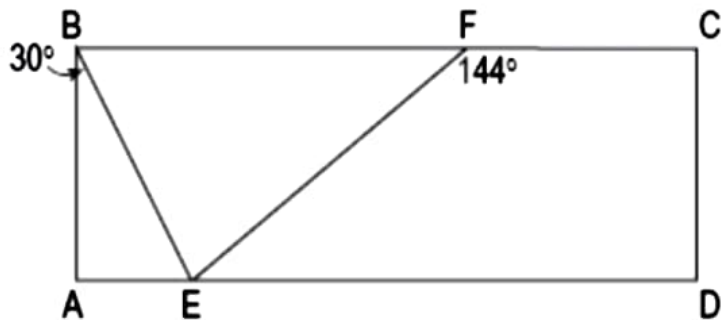
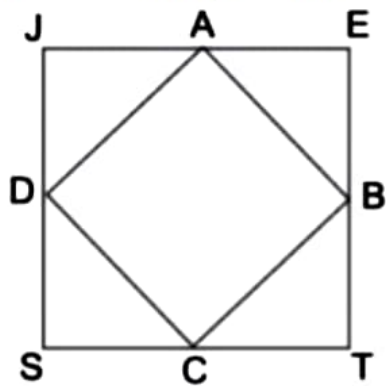


QUADRILATERALS

- The bisectors of angles of a parallelogram form a :
(a) trapezium (b) rectangle (c) rhombus (d) kite
- The angles of a quadrilaterals are in the ratio 3 : 4 : 5 : 6. The respective angles of the quadrilaterals are
(a) 60° , 80° , 100° , 120° (b) 120° , 100° , 80° , 60°
(c) 120° , 60° , 80° , 100° (d) 80° , 100° , 120° , 60° .
- If diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a:
(a) parallelogram (b) square (c) rhombus (d) trapezium
- If in rectangle ABCD, diagonal AC bisects $\angle A$ as well $\angle C$, then ABCD is a:
(a) parallelogram (b) square (c) rhombus (d) trapezium
- The line segment joining the midpoints of two sides of a triangle is parallel to the third side and _____ of it.
(a) half (b) one third (c) one fourth (d) equal
- Line segment joining the mid points of the opposite sides of a quadrilateral _____ each other.
(a) trisect (b) bisect (c) coincide (d) none of these.
- Three angles of a quadrilateral are 75° , 90° and 75° . The fourth angle is
(a) 90° (b) 95° (c) 105° (d) 120°
- A diagonal of a rectangle is inclined to one side of the rectangle at 25° . The acute angle between the diagonals is
(a) 55° (b) 50° (c) 40° (d) 25°
- ABCD is a rhombus such that $\angle ACB = 40^{\circ}$, then $\angle ADB =$
(a) 45° (b) 50° (c) 40° (d) 60°
- The quadrilateral formed by joining the midpoints of the sides of a quadrilateral PQRS, taken in order, is a rectangle, if
(a) PQRS is a rectangle (b) PQRS is an parallelogram
(c) diagonals of PQRS are perpendicular (d) diagonals of PQRS are equal.
- The quadrilateral formed by joining the midpoints of the sides of a quadrilateral PQRS, taken in order, is a rhombus, if
(a) PQRS is a rhombus (b) PQRS is an parallelogram
(c) diagonals of PQRS are perpendicular (d) diagonals of PQRS are equal.
- If angles A, B, C and D of the quadrilateral ABCD, taken in order are in the ratio 3:7:6:4, then ABCD is a
(a) parallelogram (b) kite (c) rhombus (d) trapezium

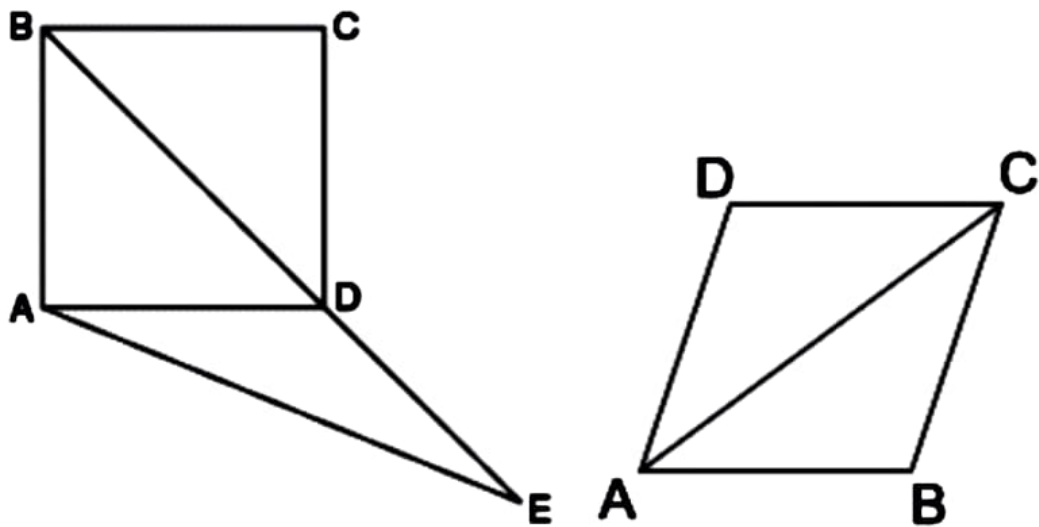
QUADRILATERALS

1. If two consecutive sides of a rhombus are represented by $3x - 6$ and $x + 14$, then the perimeter of the rhombus is
(a) 10 (b) 24 (c) 70 (d) 96
2. Points A , B , C , and D are midpoints of the sides of square $JETS$. If the area of $JETS$ is 36, the area of $ABCD$ is
(a) $9\sqrt{2}$ (b) $18\sqrt{2}$ (c) 9 (d) 18



3. In the accompanying above diagram of rectangle $ABCD$, $m\angle ABE = 30$ and $m\angle CFE = 144$. Find $m\angle BEF$.
(a) 36° (b) 60° (c) 84° (d) 90°
4. A quadrilateral must be a parallelogram if one pair of opposite sides is
(a) congruent, only. (b) parallel and the other pair of opposite sides is congruent.
(c) congruent and parallel. (d) parallel only
5. The perimeter of a rhombus is 60. If the length of its longer diagonal measures 24, the length of the shorter diagonal is
(a) 20 (b) 18 (c) 15 (d) 9
6. Find the perimeter of a rhombus whose diagonals measure 12 and 16.
(a) 10 (b) 20 (c) 40 (d) 80
7. Which statement is true about all parallelograms?
(a) The diagonals are congruent.
(b) The area is the product of two adjacent sides.
(c) The opposite angles are congruent.
(d) The diagonals are perpendicular to each other.
8. Which property is true for all trapezoids?
(a) Only two opposite sides are parallel.
(b) Consecutive angles are supplementary.
(c) The base angles are congruent.
(d) All angles are equal.

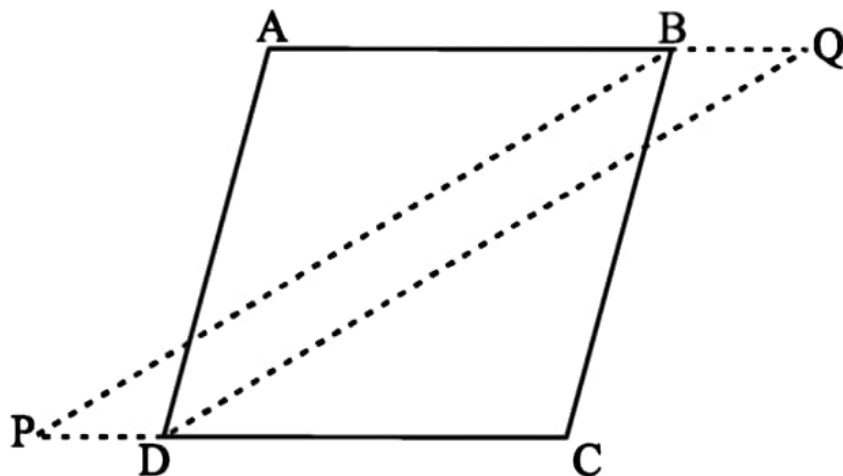
9. In the diagram at the right, $ABCD$ is a square, diagonal BD is extended through D to E . $AD = DE$ and AE is drawn as given in figure. What is $m\angle DAE$?
 (a) 22.5 (b) 45.0 (c) 112.5 (d) 135.0



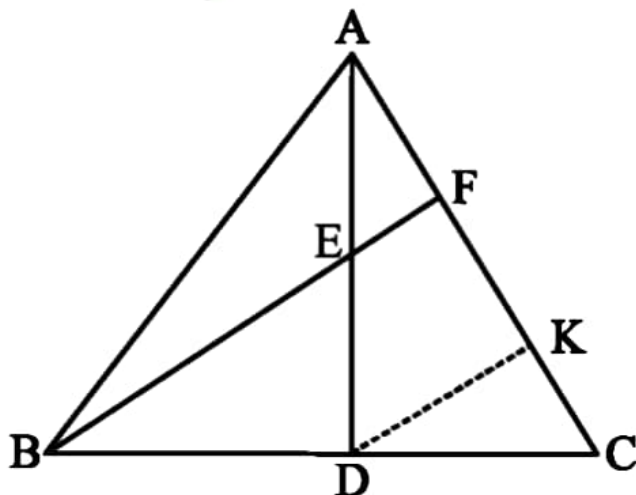
10. In the above right sided diagram of rhombus $ABCD$, $m\angle CAB = 35^\circ$. Find $m\angle CDA$.
 (a) 35° (b) 70° (c) 110° (d) 140°
11. In rectangle $DATE$, diagonals DT and AE intersect at S . If $AE = 40$ and $ST = x + 5$, find the value of x .
 (a) 10 (b) 18 (c) 15 (d) 20
12. A parallelogram must be a rectangle if its diagonals
 (a) bisect each other.
 (b) bisect the angles to which they are drawn.
 (c) are perpendicular to each other.
 (d) are congruent.

QUADRILATERALS

1. In the below figure, bisectors of $\angle B$ and $\angle D$ of quadrilateral ABCD meet CD and AB, produced at P and Q respectively. Prove that $\angle P + \angle Q = \frac{1}{2} (\angle ABC + \angle ADC)$

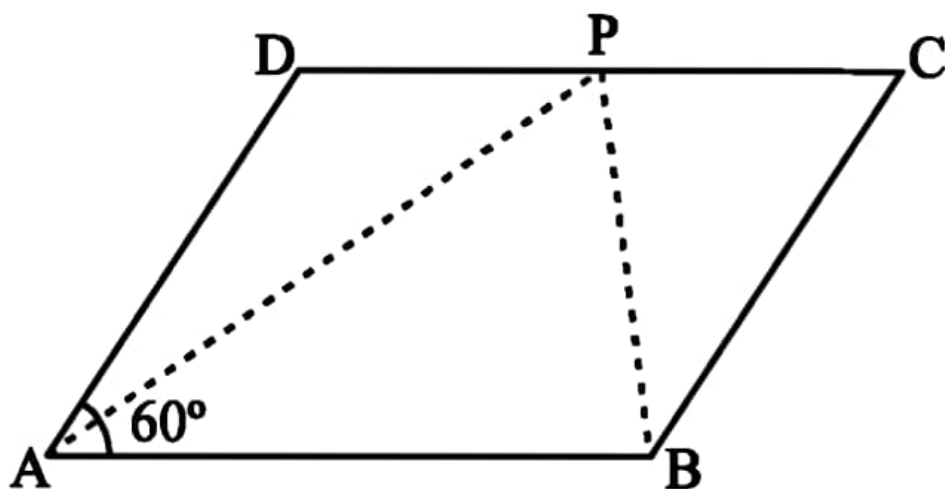


2. In $\triangle ABC$, AD is the median through A and E is the midpoint of AD. BE produced meets AC in F such that $BF \parallel DK$. Prove that $AF = \frac{1}{3} AC$

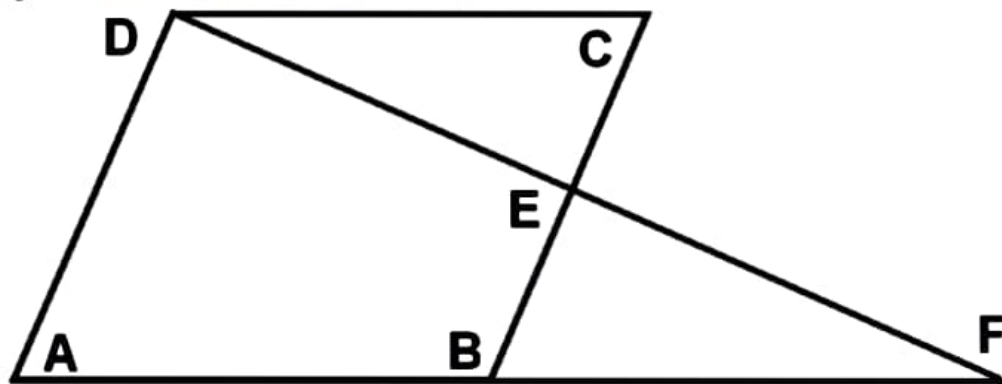


3. In a parallelogram, the bisectors of any two consecutive angles intersect at right angle. Prove it.
4. In a quadrilateral ABCD, AO and BO are the bisectors of $\angle A$ and $\angle B$ respectively. Prove that $\angle AOB = \frac{1}{2} (\angle C + \angle D)$
5. ABCD is a square E, F, G, H are points on AB, BC, CD and DA respectively such that $AE = BF = CG = DH$. Prove that EFGH is a square.
6. ABCD is a parallelogram. If its diagonals are equal, then find the value of $\angle ABC$.

7. In the below figure, ABCD is a parallelogram and $\angle DAB = 60^\circ$. If the bisector AP and BP of angles A and B respectively meet P on CD. Prove that P is the midpoint of CD.



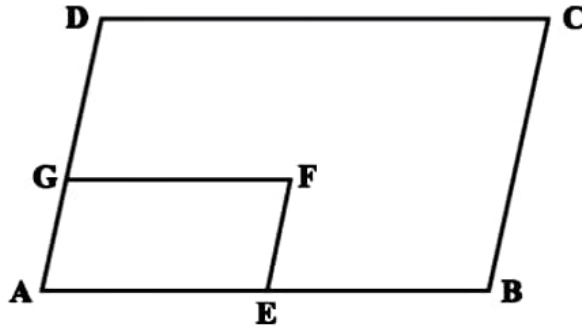
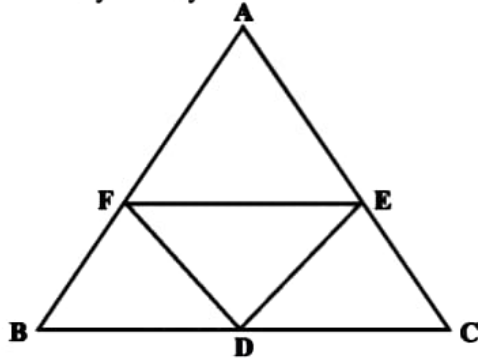
8. In the below given figure, ABCD is a parallelogram and E is the midpoint of side BC, DE and AB when produced meet at F. Prove that $AF = 2AB$.



9. $\triangle ABC$ is right angle at B and P is the midpoint of AC and Q is any point on AB. Prove that (i) $PQ \perp AB$ (ii) Q is the midpoint of AB (iii) $PA = \frac{1}{2} AC$
10. The diagonals of a parallelogram ABCD intersect at O. A line through O intersects AB at X and DC at Y. Prove that $OX = OY$.
11. ABCD is a parallelogram. AB is produced to E so that $BE = AB$. Prove that ED bisects BC.
12. If ABCD is a quadrilateral in which $AB \parallel CD$ and $AD = BC$, prove that $\angle A = \angle B$.
13. Diagonals AC and BD of a parallelogram ABCD intersect each other at O. If $OA = 3$ cm and $OD = 2$ cm, determine the lengths of AC and BD.
14. In quadrilateral ABCD, $\angle A + \angle D = 180^\circ$. What special name can be given to this quadrilateral?
15. All the angles of a quadrilateral are equal. What special name is given to this quadrilateral?
16. In $\triangle ABC$, $AB = 5$ cm, $BC = 8$ cm and $CA = 7$ cm. If D and E are respectively the mid-points of AB and BC, determine the length of DE.
17. Diagonals of a quadrilateral ABCD bisect each other. If $\angle A = 35^\circ$, determine $\angle B$.

18. Opposite angles of a quadrilateral ABCD are equal. If $AB = 4$ cm, determine CD.

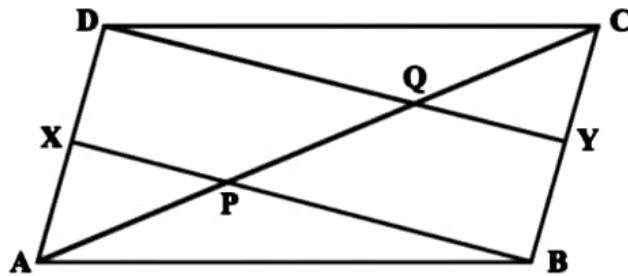
19. In the below figure, it is given that BDEF and FDCE are parallelograms. Can you say that $BD = CD$? Why or why not?



20. In the above right sided figure, ABCD and AEFB are two parallelograms. If $\angle C = 55^\circ$, determine $\angle F$.

21. Angles of a quadrilateral are in the ratio $3 : 4 : 4 : 7$. Find all the angles of the quadrilateral.

22. In the below figure, X and Y are respectively the mid-points of the opposite sides AD and BC of a parallelogram ABCD. Also, BX and DY intersect AC at P and Q, respectively. Show that $AP = PQ = QC$.



23. One angle of a quadrilateral is of 108° and the remaining three angles are equal. Find each of the three equal angles.

24. ABCD is a trapezium in which $AB \parallel DC$ and $\angle A = \angle B = 45^\circ$. Find angles C and D of the trapezium.

25. The angle between two altitudes of a parallelogram through the vertex of an obtuse angle of the parallelogram is 60° . Find the angles of the parallelogram.

26. ABCD is a rhombus in which altitude from D to side AB bisects AB. Find the angles of the rhombus.

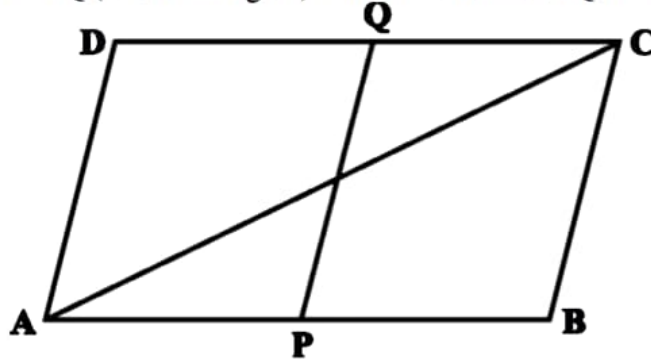
27. E and F are points on diagonal AC of a parallelogram ABCD such that $AE = CF$. Show that BFDE is a parallelogram.

28. ABCD is a parallelogram and $\angle DAB = 60^\circ$. If the bisectors AP and BP of angles A and B respectively, meet at P on CD, prove that P is the midpoint of CD.

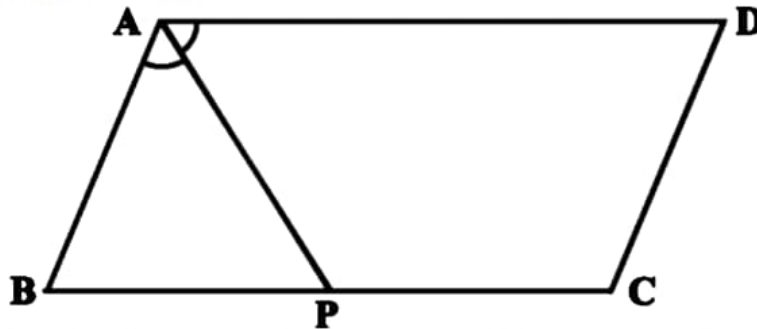
29. ABCD is a parallelogram. AM and BN are respectively, the perpendiculars from A and B to DC and CD produced. Prove that $AM = BN$.

30. ABCD is a parallelogram. L and M are points on AB and DC respectively and $AL = CM$. Prove that LM and BD bisect each other.

31. Points P and Q have been taken on opposite sides AB and CD, respectively of a parallelogram ABCD such that $AP = CQ$ (see below figure). Show that AC and PQ bisect each other.



32. In the below figure, P is the mid-point of side BC of a parallelogram ABCD such that $\angle BAP = \angle DAP$. Prove that $AD = 2CD$.



33. D, E and F are the mid-points of the sides BC, CA and AB, respectively of an equilateral triangle ABC. Show that $\triangle DEF$ is also an equilateral triangle.

34. E is the mid-point of the side AD of the trapezium ABCD with $AB \parallel DC$. A line through E drawn parallel to AB intersect BC at F. Show that F is the mid-point of BC.

35. PQ and RS are two equal and parallel line-segments. Any point M not lying on PQ or RS is joined to Q and S and lines through P parallel to QM and through R parallel to SM meet at N. Prove that line segments MN and PQ are equal and parallel to each other.