

6. QUADRILATERALS

Quadrilateral:

It is a simple, closed figure formed by 4 line segments

→ It has 4 sides, 4 angles and 4 vertices

→ The sum of interior angles in a quadrilateral is 360°

Diagonal:

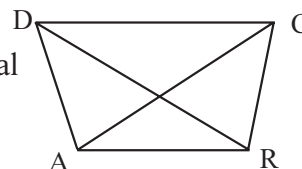
The line joining the opposite vertices in a quadrilateral

Sides : $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{AD}$

Angles : $\angle A$, $\angle B$, $\angle C$, $\angle D$

Vertices : A, B, C, D

Diagonals : $\overline{AC}$ and $\overline{BD}$



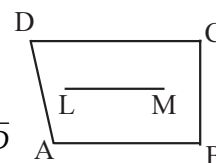
Adjacent sides:-

The sides which have common vertex

a) $\overline{AB}$, $\overline{BC}$

b) $\overline{BC}$, $\overline{CD}$

c) $\overline{CD}$, $\overline{AD}$ and $\overline{AB}$, $\overline{AD}$



Opposite sides :

The sides which do not have common vertex

Ex : AB, CD and BC, AD

→ The angles which have not common sides are

Opposite angles:

$\angle A$, $\angle C$ and $\angle B$, $\angle D$. The angles which have not common side

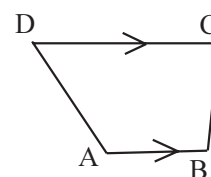
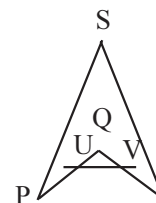
→ The angles which have common side become adjacent angles

i) $\angle A$, $\angle B$

ii) $\angle B$, $\angle C$

iii) $\angle C$, $\angle D$

iv) $\angle A$, $\angle D$

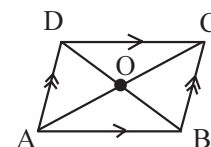


Convex Quadrilateral:

If the line joining any two points in a quadrilateral is within it. Then it becomes a convex quadrilateral

Concave Quadrilateral :

If the line joining any points in a quadrilateral may not be in the region. Then it becomes a concave quadrilateral



Types of Quadrilaterals

I. Trapezium:

If one pair of opposite sides are parallel ($AB \parallel CD$) in a quadrilateral. Then it becomes trapezium

→ In trapezium adjacent angles are complimentary i.e $\angle A + \angle D = 180^\circ$, $\angle B + \angle C = 180^\circ$

→ In quadrilaterals arrow mark indicates they are parallel lines

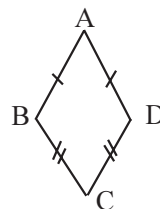
II. Parallelogram :-

If two pair of opposite sides are parallel ($AB \parallel CD, BC \parallel AD$) in a quadrilateral then it becomes Parallelogram

In figure $AB \parallel CD$, $BC \parallel AD$. So ABCD is a Parallelogram

Properties :-

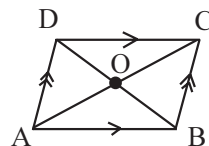
- i) Opposite sides are equal $AB=CD$, $BC=AD$
- ii) Opposite angles are equal $\angle A = \angle C$ and $\angle B = \angle D$
- iii) Adjacent angles are supplementary i.e $\angle A + \angle B = 180^\circ$ and $\angle B + \angle C = 180^\circ$
- iv) Diagonals are bisecting $OA = OC$, $OB = OD$



III. Kite :

A kite is a convex quadrilateral with two pairs of equal sides and one line of symmetry. The diagonals of a kite are at right angles. The longest diagonal bisects the shortest diagonal.

in figure $AB=AC$ and $BD=DC$



IV. Rhombus

If all sides of a quadrilateral are equal then it becomes Rhombus

→ Rhombus is a parallelogram in which adjacent sides are equal $AB=BC=CD=AD$

→ (i) $AB=BC=CD=AD$ all sides are equal

→ (ii) Opposite angles are equal $\angle A = \angle C$, $\angle B = \angle D$

→ (iii) $\angle A + \angle B = 180^\circ$ and $\angle C + \angle D = 180^\circ$ adjacent angles are supplementary

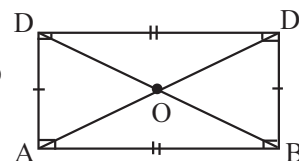
→ (iv) Diagonals are perpendicularly bisect each other

V. Rectangle:

It is a parallelogram in which one angle becomes a right angle

- (i) Opposite sides are equal $AB = CD$, $BC = AD$
- (ii) Each angle becomes a right angle $\angle A = \angle B = \angle C = \angle D = 90^\circ$
- (iii) Diagonals are equal and bisect each other

$$AC = BD \quad \text{and} \quad OA = OC, OB = OD$$

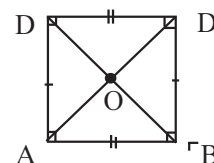


VI. Square :-

A rectangle with equal adjacent sides is called a square and each of its angles is 90°

- (i) All sides and angles are equal $AB = BC = CD = AD$, $\angle A = \angle B = \angle C = \angle D$
- (ii) Diagonals are equal and perpendicularly bisect

$$AC = BD \quad \text{and} \quad OA = OC, OB = OD$$



SOLVED PROBLEMS

1. The ratio of angles in a quadrilateral is $3 : 4 : 5 : 6$ then find each angle

Sol : Ratio of angles of a quadrilateral = $3 : 4 : 5 : 6$

Term of ratio = 'x' then

$$\text{Angles} = 3x, 4x, 5x, 6x$$

we know sum of 4 angles in a quadrilateral is 360°

$$\text{i.e. } 3x + 4x + 5x + 6x = 360^\circ$$

$$18x = 360^\circ$$

$$x = 360^\circ / 18$$

$$x = 20$$

$$1\text{st angle} = 3x = 3 \times 20 = 60^\circ$$

$$2\text{nd angle} = 4x = 4 \times 20 = 80^\circ$$

$$3\text{rd angle} = 5x = 5 \times 20 = 100^\circ$$

$$4\text{th angle} = 6x = 6 \times 20 = 120^\circ$$

2. If two angles in a quadrilateral are 80° , 120° then find other two angles if they are equal

Sol : Given two angles are 80° and 120° other two angles are x, x

Sum of 4 angles in a quadrilateral = 360°

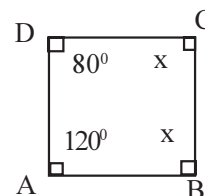
$$80 + 120 + x + x = 360^\circ$$

$$200 + 2x = 360^\circ$$

$$2x = 160$$

$$x = 160 / 2 = 80^\circ$$

$\therefore$ The other two equal angles are 80° and 80°



3. If one angle of a parallelogram is 70° then find other angles

Sol : We know opposite angles in a parallelogram are equal .

so $\angle A = \angle C$ & $\angle B = \angle D$

adjacent angles are complementary , so

$$\angle A + \angle D = 180^\circ$$

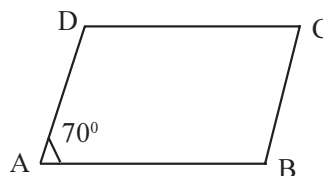
$$70 + \angle D = 180$$

$$\angle D = 180 - 70$$

$$\angle D = 110^\circ$$

$$\therefore \angle A = \angle C = 70^\circ$$

$$\& \angle B = \angle D = 110^\circ$$



4. In parallelogram HELP, O is intersecting point of diagonals OE = 4cm, HL is 5 more than PE then find OH

Sol : In Parallelogram HELP, OE = 4 cm

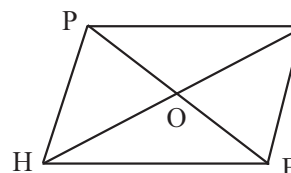
If PE = x then HL = x + 5

we know angles in a parallelogram are bisecting, so

OE = OP = 4cm & PE = OP + OE = 4 + 4 = 8 cm

We know HL = PE + 5 = 8 + 5 = 13 cm

OH is half of HL so OH = HL/2 = 13/2 = 6.5 cm



5. ABCD is a trapezium in which AB // CD , $\angle A = 50^\circ$, $\angle B = 70^\circ$ then find $\angle C$ and $\angle D$

Sol : In a trapezium sum of adjacent angles is 180°

So $\angle A + \angle D = 180^\circ$

$$50 + \angle D = 180$$

$$\angle D = 180 - 50$$

$$\angle D = 130^\circ$$

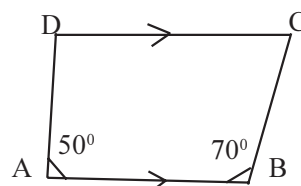
In quadrilateral sum of 4 angles = 360°

$$50 + 70 + \angle C + 130 = 360^\circ$$

$$250 + \angle C = 360^\circ$$

$$\angle C = 360 - 250$$

$$\angle C = 110^\circ$$



6. The ratio of adjacent angles in a parallelogram is 3 : 2. Then find angles

Sol : Ratio of adjacent angles = 3 : 2

If term of ratio 'x' angles are 3x, 2x

we know adjacent angles are supplementary

$$\angle A + \angle B = 180^\circ$$

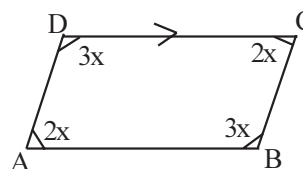
$$2x + 3x = 180$$

$$5x = 180$$

$$x = 180/5 = 36^\circ$$

$$\angle A = \angle C = 2x = 2 \times 36 = 72^\circ$$

$$\angle B = \angle D = 3x = 3 \times 36 = 108^\circ$$



7. If 4 angles of quadrilateral are x° , $(x+10)^\circ$, $(x+20)^\circ$, $(x+30)^\circ$ then find angles

Sol : Given angles are x° , $(x+10)^\circ$, $(x+20)^\circ$, $(x+30)^\circ$

sum of angles = 360°

$$x + x + 10 + x + 20 + x + 30 = 360^\circ$$

$$4x + 60 = 360$$

$$1\text{st angle} = x = 75^\circ$$

$$4x = 360 - 60$$

$$2\text{nd angle} = x + 10 = 75 + 10 = 85^\circ$$

$$4x = 300$$

$$3\text{rd angle} = x + 20 = 75 + 20 = 95^\circ$$

$$x = 75^\circ$$

$$4\text{th angle} = x + 30 = 75 + 30 = 105^\circ$$

8. In rectangle ABCD, $AO = 3x+1$, $BO = 2x+4$ then find x

Sol : Given $AO = 3x+1$, $BO = 2x+4$

We know Diagonals in a rectangle are equal

$$AC = BD$$

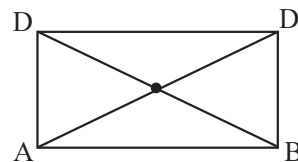
$$\frac{1}{2} AC = \frac{1}{2} BD \quad (\text{Multiply with } \frac{1}{2})$$

$$\text{or } OA = BO$$

$$3x + 1 = 2x + 4$$

$$3x - 2x = 4 - 1$$

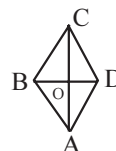
$$x = 3$$



PRACTICE BITS - LEVEL - I

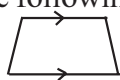
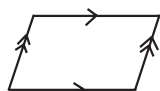
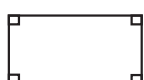
- How can diagonals intersect in a Quadrilateral if it is a convex quadrilateral
a) Internally b) Externally c) a and b d) None of these
- If 3 angles in a quadrilateral are 55° , 65° and 105° then 4th angle is []
a) 55° b) 65° c) 105° d) 135°
- If 4 angles in a quadrilateral are equal then they are []
a) 60° b) 75° c) 90° d) 110°
- The ratio of angles in a quadrilateral is $2 : 3 : 4 : 6$ then angles are []
a) 60° , 80° , 100° , 120° b) 48° , 72° , 96° , 144°
c) 62° , 84° , 96° , 120° d) 54° , 81° , 108° , 162°
- If x° , $(x-10)^\circ$, $(x+30)^\circ$, $2x^\circ$ are angles of a quadrilateral then they are []
a) 60° b) 67° c) 68° d) 69°
- A square is a []
a) Parallelogram b) Trapezium c) Rectangle d) All

7. x° and $(2x+30)^\circ$ are two adjacent angles of a parallelogram then they are
a) $60^\circ, 120^\circ$ b) $45^\circ, 135^\circ$ c) $50^\circ, 130^\circ$ d) $55^\circ, 125^\circ$
8. Diagonals AC, BD intersect at 'O' in a parallelogram. If $AO=5\text{cm}$ then $AC = \dots\dots\dots$ []
a) 5 cm b) 10 cm c) 7.5 cm d) not found
9. In trapezium $AB \parallel DC$, $\angle D = 80^\circ$ then $\angle A = \dots\dots\dots$ []
a) 80° b) 40° c) 120° d) 100°
10. If $\angle A = 50^\circ$ in parallelogram ABCD then $\angle B, \angle C, \angle D$ are []
a) $130^\circ, 50^\circ, 130^\circ$ b) $50^\circ, 130^\circ, 130^\circ$
c) $130^\circ, 130^\circ, 50^\circ$ d) $130^\circ, 50^\circ, 50^\circ$
11. ABCD is a rhombus in which $\angle B = 40^\circ$ then $\angle C = \dots\dots\dots$ []
a) 40° b) 140° c) 80° d) 90°
12. In trapezium ABCD, $AB \parallel DC$, $\angle A = \angle B = 30^\circ$ then $\angle C, \angle D$ are
a) $150^\circ, 150^\circ$ b) $150^\circ, 30^\circ$ c) $30^\circ, 150^\circ$ d) $30^\circ, 30^\circ$
13. The ratio of adjacent angles in a parallelogram is 3 : 2, the angles are []
a) $135^\circ, 90^\circ$ b) $60^\circ, 40^\circ$ c) $108^\circ, 72^\circ$ d) $100^\circ, 80^\circ$
14. The adjacent sides in a parallelogram are 14cm, 12cm then perimeter is []
a) 26 cm b) 84 cm c) 168 cm d) 52 cm
15. Sum of angles in a trapezium is []
a) 360° b) 270° c) 180° d) 720°
16. The perimeter of a rhombus if the side is 5 cm []
a) 25 cm b) 10 cm c) 20 cm d) 30 cm
17. Which of the following is not a property of rhombus []
a) Opposite sides are parallel b) Opposite sides are equal
c) Diagonals are equal d) Diagonals are bisecting
18. If diagonals of ABCD, AC and BD are bisect at 'O' and $OC = 2.5\text{ cm}$, $OB = 1.6\text{ cm}$ then $BD =$ []
a) 5 cm b) 3.2 cm
c) 1.6 cm d) 4.1 cm



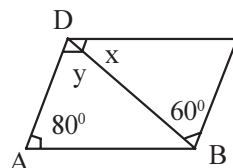
20. If one angle of a parallelogram is 100° then adjacent angle is []
 a) 100° b) 90° c) 80° d) 60°
21. AC is the diagonals of ABCD then $\angle BAC = \dots\dots$ []
 a) 90° b) 45° c) 60° d) 80°
22. If all angles of a quadrilateral are equal then each one is []
 a) 180° b) 90° c) 120° d) 360°

24. Match the following

- i)  [] a) Square
- ii)  [] b) Parallelogram
- iii)  [] c) Trapezium
- iv)  [] d) Rectangle

- a) a, c, d, b b) c, b, a, d c) a, c, b,d d) c, a, b,d

24. If ABCD is a parallelogram then x, y are []
 a) 20° , 60° b) 40° , 60°
 c) 30° , 70° d) None of the above



25. Match the following

- i) If perimeter of a square is 80cm its side is [] a) 72
 ii) Diagonals of a rectangle are [] b) Equal
 iii) No.of angles in a Quadrilateral [] c) 20
 iv) Perimeter of a square is [] d)
 a) a, c, d,b b) c, a, b,d c) a, d, b,c d) c, d, a,b

26. Match the following

- i) Each angle of a rectangle is [] a) Equal
 ii) Opposite angles of a parallelogram is [] b) 360°
 iii) Sum of angles in a quadrilateral [] c) 90°
 iv) Perimeter of a square [] d) 4a
 a) a, c, d,b b) c, a,,b,d d) a, d, b,c d) c, d, a,b

27. Match the correct combinations

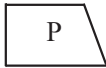
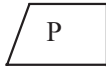
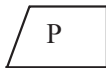
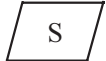
- | | | |
|--|---------------|---------------|
| i) $\overline{AB} = \overline{BC} = \overline{CD} = \overline{AD}$ | [] | a) Rectangle |
| ii) $\overline{AB} \parallel \overline{CD}$ | [] | b) Rhombus |
| iii) $\overline{AB} = \overline{CD}, \overline{BC} = \overline{AD} \& \overline{AC} = \overline{BD}$ | [] | c) Trapezium |
| iv) $\overline{AB} = \overline{BC}, \overline{CD} = \overline{AD} \& \overline{AC} = \overline{BD}$ | [] | d) Square |
| a) a, c, d, b | b) c, a, b, d | c) a, d, b, c |
| d) c, d, a, b | | |
28. If $\angle A + \angle C = 200^\circ$ in a quadrilateral then $\angle B + \angle D = \dots\dots\dots$ []
- a) 200° b) 160° c) 180° d) 360°
29. If ABCD is a parallelogram then $\angle A + \angle D = \dots\dots\dots$ []
- a) 90° b) 180° c) 360° d) 270°
30. Sum of exterior angles in a quadrilateral in right angles is []
- a) 1 b) 2 c) 3 d) 4
31. The quadrilateral with diagonals equal and bisect perpendicularly is []
- a) Parallelogram b) Rhombus
- c) Square d) Rectangle
32. In ABCD quadrilateral $\angle D = 120^\circ$ and $\angle A = \angle B = \angle C$ then $\angle A = ..$
- a) 80° b) 100° c) 50° d) 40°
33. If two angles of a quadrilateral are 75° and 75° , 3rd angle is 100° then 4th angle is
- a) 100° b) 75° c) 110° d) 105°
34. In rhombus ABCD, $\angle CBA = 40^\circ$ then angles are []
- a) $40^\circ, 40^\circ, 140^\circ$ b) $140^\circ, 140^\circ, 40^\circ$ c) $140^\circ, 40^\circ, 140^\circ$ d) $140^\circ, 40^\circ, 40^\circ$
35. The adjacent angles of a rectangle are $x^\circ, (2x+30)^\circ$ then x is []
- a) 130° b) 50° c) 40° d) 100°
36. In BASE rectangle $OB=5x+1$, $OE = 2x + 4$ find x []
- a) 1 b) 3 c) 4 d) 2
37. If two adjacent sides are equal then it is []
- a) Rectangle b) Trapezium c) Rhombus d) Kite
38. In a parallelogram if one angle 90° , the adjacent sides are equal then it is a
- a) Rectangle b) Rhombus c) Trapezium d) Square
39. In trapezium ABCD, $AB \parallel DC$, $\angle D = x$, $\angle A = \dots\dots\dots$ []
- a) $180 - x$ b) $180 + x$ c) $90 - x$ d) $90 + 2x$

40. In a parallelogram the diagonal divides it into triangles []
 a) Corresponding b) Congruent c) Similar d) Equilateral
41. In Parallelogram ABCD, the diagonals intersect at 'O' AD = 5cm, then AC = cm []
 a) 12 cm b) 5 cm c) 6 cm d) 10 cm
42. In rhombus, the diagonals intersect at 'O' then $\angle AOB = \dots\dots\dots$ []
 a) 70° b) 100° c) 90° d) 180°
43. If ABCD is a parallelogram $\angle A - \angle C = \dots\dots\dots$ []
 a) 90° b) 0° c) 180° d) 360°
44. In rectangle AC = 10cm then BD = cm []
 a) 10 cm b) 5 cm c) 20 cm d) 8 cm
45. If AC is a diagonal of square ABCD, $\angle BAC = \dots\dots\dots$ []
 a) 90° b) 45° c) 180° d) 30°

LEVEL - II

1. If two angles are right angles in a quadrilateral the other two angles are in 1 : 2 ratio. What are they []
 a) $50^\circ, 100^\circ$ b) $60^\circ, 120^\circ$ c) $45^\circ, 90^\circ$ d) $55^\circ, 110^\circ$
2. If two angles of a quadrilateral are supplementary the other two are in 4 : 5 ratio then they are? []
 a) $90^\circ, 150^\circ$ b) $70^\circ, 150^\circ$ c) $110^\circ, 150^\circ$ d) $120^\circ, 150^\circ$
3. What is the value of 'x' in figure []
 a) 20° b) 30° c) 15° d) 40°
4. If one angle of a parallelogram is 90° , then other angles are []
 a) $90^\circ, 90^\circ, 90^\circ$ b) $70^\circ, 120^\circ, 80^\circ$ c) $80^\circ, 80^\circ, 110^\circ$ d) $90^\circ, 90^\circ, 180^\circ$
5. What are angles of $\angle C, \angle D$ in parallelogram []
 a) $120^\circ, 60^\circ$ b) $120^\circ, 120^\circ$ c) $60^\circ, 120^\circ$ d) $60^\circ, 60^\circ$
6. If PQRS is a parallelogram x is []
 a) 40° b) 30° c) 20° d) 15°
7. If $\angle A = 50^\circ$ in a parallelogram ABCD, then $\angle ADC$ is []
 a) 100° b) 120° c) 125° d) 130°
8. In parallelogram ABCD, $\angle ADC$ []
 a) 55° b) 110° c) 70° d) 100°

9. What is $x + y$ in parallelogram PQRS []
 a) 106° b) 53° c) 74° d) 180°
10. In rectangle PQRS, $PR + QS = \dots\dots\dots$ []
 a) 13 cm b) 17 cm c) 12 cm d) 26 cm
11. In parallelogram MNOP, $x + y = \dots\dots\dots$ []
 a) 140° b) 105° c) 100° d) 120°
12. Sum of lengths of diagonals in PQRS rhombus []
 a) 110 cm b) 62 cm c) 60 cm d) 100 cm
13. What is perimeter of a rhombus []
 a) 14 cm b) 16 cm c) 20 cm d) 25 cm
14. Ratio of angles in Quadrilateral 3 : 5 : 9 : 13 then they are []
 a) 156° b) 100° c) 120° d) 110°
15. One angle in quadrilateral is 100° , other angles are in 1 : 5 : 7 ratio then angles
 a) 100, 20, 140 b) 100, 100, 100 []
 c) 140, 100, 20 d) 20, 100, 140
16. In figure $AD = CD$, $AB = BC$ then $\angle A$, $\angle C$ are []
 a) 60° , 60° b) 130° , 130° c) 60° , 130° d) 100° , 160°
17. In rhombus ABCD, $\angle B + \angle C = \dots\dots\dots$ []
 a) 90° b) 150° c) 120° d) 180°
18. In rectangle ABCD, $\angle BAC = 57^\circ$, $\angle DBC = \dots\dots\dots$ []
 a) 33° b) 40° c) 57° d) 110°
19. The perimeter of Parallelogram is 128m then $x = \dots$ []
 a) 100 m b) 16 m c) 8 m d) 12 m
20. In Parallelogram ABCD, $\angle B + \angle D = \dots\dots\dots$ []
 a) 180° b) 120° c) 300° d) 200°
21. What are x, y in parallelogram ABCD []
 a) 6, 7 b) 5, 7 c) 7, 8 d) 6, 5
22. Perimeter of Parallelogram is 14.6 cm, long length is 4.8 cm then what is small side []
 a) 2.3 cm b) 2.5 cm c) 3.3 cm d) 3.5 cm
23. In which of the following diagonals bisect perpendicularly []
 a) Square b) Kite c) Trapezium d) Quadrilateral

24. Which of the following has all equal angles []
 a) Rectangle b) Kite c) Trapezium d) Rhombus
25. In which of the following diagonals bisect perpendicularly []
 a) Parallelogram b) Kite c) Trapezium d) Rectangle
26. Which of the following satisfies given conditions []
 → All sides are equal
 → All angles are right angles
 → Opposite sides are parallel
 a) Parallelogram b) Trapezium c) Square d) Rhombus
27. Quadrilateral with two pair of adjacent sides are equal []
 a)  b)  c)  d) 
28. Which of the following has 1 pair of parallel sides []
 a)  b)  c)  d) 
29. “(i) All sides equal (ii) All angles right angles
 (iii) Opposite sides are parallel “ which of the following satisfies []
 a)  b)  c)  d) 
30. Which of the following is rule for trapezium []
 a) One pair of opposite sides are parallel
 b) Diagonals bisect each other
 c) Diagonals bisect perpendicularly
 d) Diagonals are equal
31. Which of the following is rule of parallelogram []
 a) Opposite side are parallel
 b) Diagonals bisect perpendicularly
 c) Diagonals are perpendicular
 d) All angles are equal
32. No. of maximum obtuse angles in a quadrilateral []
 a) 1 b) 2 c) 3 d) 4

33. The adjacent sides of parallelogram is $(5x-5)^0$, $(10x+35)^0$ then ratio is []
 a) 1 : 3 b) 2 : 3 c) 1 : 4 d) 1 ; 2

34. Sum of adjacent angles in a parallelogram is []
 a) 120^0 b) 180^0 c) 360^0 d) 90^0

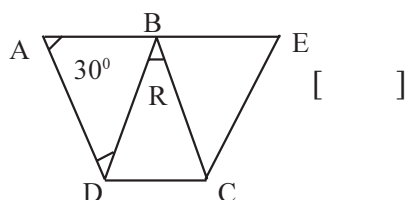
35. The ratio of adjacent angles of parallelogram is 2 : 3 then they are []
 a) 72^0 , 108^0 b) 36^0 , 54^0 c) 80^0 , 120^0 d) 96^0 , 144^0

36. In the figure ABCD, BDCE have same base

DC and they are parallelograms with

$BC \perp BD$ then $\angle BEC = \dots\dots\dots$

- a) 60^0 b) 30^0
 c) 150^0 d) 120^0

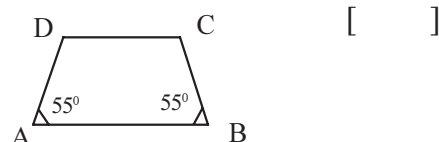


37. If adjacent sides of a parallelogram are equal then it is []
 a) Rectangle b) Trapezium c) Rhombus d) Quadrilateral

38. Which of the following internal angles of Quadrilateral []
 a) 140^0 , 20^0 , 160^0 b) 270^0 , 150^0 , 30^0 , 20^0
 c) 40^0 , 70^0 , 90^0 , 60^0 d) 110^0 , 40^0 , 30^0 , 180^0

39. In Trapezium ABCD, $\angle D = \dots\dots\dots$

- a) 55^0 b) 115^0
 c) 175^0 d) 125^0



40. Three acture angle of quadrilateral are 80^0 , then 4th angle is []
 a) 150^0 b) 120^0 c) 105^0 d) 140^0

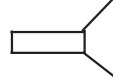
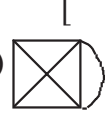
41. The adjacent angles of parallelogram are in 1 : 5 ratio then they are []
 a) 30^0 , 150^0 , 30^0 , 150^0 b) 85^0 , 95^0 , 85^0 , 95^0
 c) 45^0 , 135^0 , 45^0 , 135^0 d) 30^0 , 180^0 , 30^0 , 180^0

42. In a parallelogram $QR = 6$ cm, $PQ = 4$ cm, $\angle PQR = 90^0$ then it is []
 a) Square b) Rectangle c) Rhombus d) Trapezium

43. The angels in Quadrilateral are in ratio 1 : 3 : 7: 9 then it is []
 a) Parallelogram b) Rhombus c) Trapezium d) None of these

44. If diagonals bisect the angels of a quadrilateral then it is []
 a) Kite b) Parallelogram c) Rhombus d) Rectangle

45. In trapezium PQRS, $\angle P = 130^0$, $\angle Q = 110^0$ then $\angle R = \dots\dots\dots$ []
 a) 70^0 b) 50^0 c) 65^0 d) 55^0

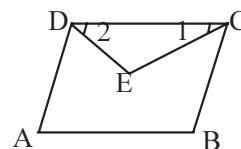
46. Number of independent measurements required for construct a Quadrilateral
 a) 4 b) 3 c) 2 d) 5 []
47. Number of measurement required to draw rectangle is []
 a) 4 b) 3 c) 2 d) 1
48. What is the value of $y-x$ is BEST rhombus []
 a) 40° b) 50°
 c) 20° d) 10°
49. Which of the following may be polygon []
 a)  b)  c)  d) 
50. The diagonal of PQRS intersects at 'o' then $\angle POQ =$ []
 a) right angle b) straight angle
 c) reflex angle d) complete angle
51. To construct a quadrilateral we need 3 sides and angles []
 a) one b) two c) three d) all
52. How many sides to be equal when a parallelogram becomes rhombus []
 a) one b) two c) three d) four
53. If diagonals of a quadrilateral bisects each other then it is []
 a) parallelogram b) square c) rhombus d) trapezium
54. A rectangle with adjacent sides are equal then []
 a) parallelogram b) rhombus c) trapezium d) square
55. The diagonals of a rectangle become []
 a) bisects each other b) bisects perpendicularly
 c) equal bisects d) equal, bisects perpendicularly
56. If one diagonal of a quadrilateral become bisect then it is a []
 a) trapezium b) rhombus c) kite d) square
57. If the interior and exterior angles of a polygon become equal then it is a
 a) triangle b) quadrilateral c) pentagon d) hexagon
58. What is condition to a 4 sided figure become a quadrilateral []
 a) simple figure b) closed figure c) 1&2 d) none of these
59. If 4 sides of a quadrilateral become equal then it is a []
 a) trapezium b) rectangle c) square d) rhombus

LEVEL - III

-

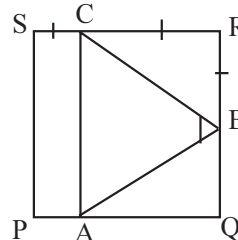
10. In quadrilateral ABCD angle bisectors of $\angle C$ and $\angle D$ are intersecting at E. Then which of the following is correct.

- i) $\angle A + \angle B = \angle CED$ ii) $\angle A + \angle B = 2\angle CED$
iii) $\angle A + \angle B = 3\angle CED$ iv) None of these



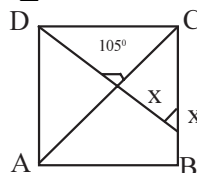
11. In the adjacent figure PQRS is square, $\angle ABC = 90^\circ$, $AQ = BR = SC$ then which of the following are correct []

- 1) $QB = RC$ 2) $AB = BC$
3) $\angle BAC = 45^\circ$ 4) $AC = PS$
a) 1 and 4 b) 1, 2 and 3
c) 2, 3 and 4 d) All



12. In ABCD quadrilateral Di intersect BC at $\angle COD = 105^\circ$, $\angle OXC = x^\circ$ then x is []

- a) 40° b) 60°
c) 80° d) 85°



13. The angular bisectors of $\angle A$, $\angle B$ of a parallelogram ABCD intersect at P $\angle APB$ []

- a) 90° b) 60° c) 120° d) None of these

14. In a square ABCD, P is point on BC, Q is point on AB. $AP = DQ$ and AP intersect DQ at R then $\angle DRP = \dots\dots\dots$ []

- a) 60° b) 120° c) 90° d) Not found

15. Which of the following is in a rhombus ABCD []

- a) $AC^2 + BD^2 = 4 AB^2$ b) $AC^2 + BD^2 = AB^2$
c) $AC^2 + BD^2 = 2 AB^2$ d) $2 (AC^2 + BD^2) = 3 AB^2$

16. In trapezium ABCD, $BC \parallel AD$, $AO = 3x - 1$, $OC = 5x - 3$, $BO = 2x + 1$, $OD = 6x - 5$ then $x = \dots\dots\dots$ []

- a) 1 b) 2 c) 3 d) 4

17. In parallelogram ABCD, EF are centroids of $\angle ABD$, $\angle BCD$ then EF =

- a) AE b) BE c) CE d) DE

18. In Rhombus ABCD. $AB^2 + BC^2 + CD^2 + AD^2 = \dots\dots\dots$ []

- a) $AD^2 + BC^2$ b) $AO^2 + OC^2$ c) $AC^2 + BD^2$ d) $AO^2 + OB^2$

QUADRILATERALS - KEY

LEVEL - 1

1	A
2	D
3	C
4	B
5	C
6	D
7	C
8	B
9	D
10	A
11	B
12	A
13	C
14	D
15	A
16	C
17	C
18	B
19	C
20	C
21	B
22	B
23	D
24	B
25	A
26	B
27	C
28	B
29	B
30	D
31	C
32	A
33	C
34	C
35	B
36	A
37	C
38	D
39	A
40	B
41	D
42	C
43	B
44	A
45	B

LEVEL - 2

1	A
2	C
3	C
4	D
5	B
6	D
7	D
8	D
9	B
10	A
11	C
12	A
13	B
14	D
15	B
16	C
17	A
18	A
19	B
20	C
21	D
22	B
23	A
24	C
25	A
26	B
27	C
28	A
29	B
30	D
31	A
32	D
33	B
34	C
35	A
36	D
37	C
38	A
39	B
40	C

41	D
42	B
43	A
44	C
45	A
46	B
47	C
48	A
49	B
50	D
51	A
52	D
53	B
54	C
55	A
56	D
57	C
58	A
59	B

LEVEL - 3

1	D
2	A
3	C
4	C
5	B
6	C
7	B
8	C
9	C
10	B
11	D
12	B
13	A
14	C
15	A
16	B
17	D
18	C