

MATHEMATICS

Chapter 4: Practical Geometry



Important Questions

Multiple Choice Questions-

Question 1. Sum of all interior angles of a polygon with (n) sides is given by

- (a) $(n - 2) \times 180^\circ$
- (b) $n - 2 \times 180^\circ$
- (c) $(n + 2) \times 180^\circ$
- (d) $(n + 2) \times 180^\circ$

Question 2. Polygons that have no portions of their diagonals in their exteriors are called

- (a) triangles
- (b) convex
- (c) concave
- (d) squares

Question 3. What is the number of sides in Hexagon ?

- (a) 4
- (b) 7
- (c) 6
- (d) 5

Question 4. A parallelogram must be a rectangle if its diagonals

- (a) bisect the angles to which they are drawn
- (b) are perpendicular to each other
- (c) bisect each other
- (d) are congruent

Question 5. Diagonals of a rectangle:

- (a) equal to each other
- (b) not equal
- (c) one is double of the other
- (d) none of these

Question 6. A simple closed curve made up of only _____ is called a polygon

- (a) lines
- (b) curves
- (c) closed curves

(d) line segments

Question 7. To construct a quadrilateral uniquely, it is necessary to know at least _____ of its parts.

- (a) 5
- (b) 4
- (c) 3
- (d) 2

Question 8. All the angles of a regular polygon are of _____.

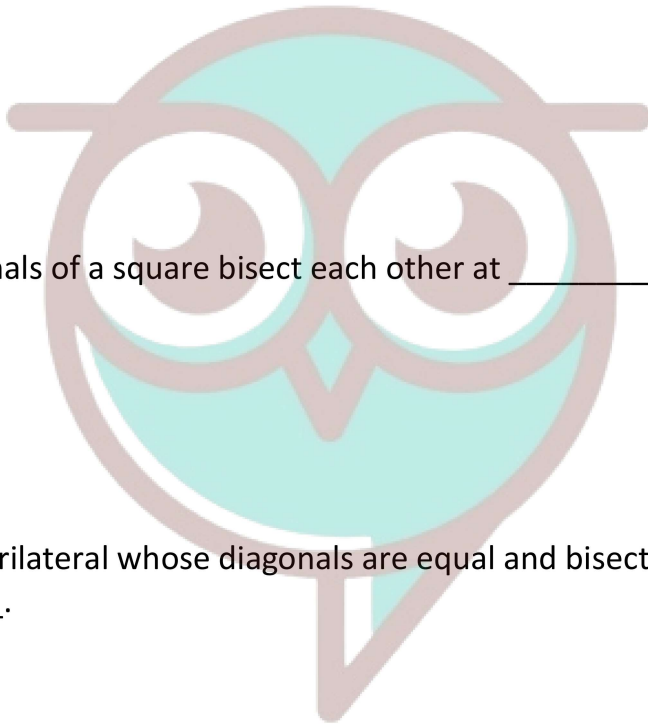
- (a) 90°
- (b) 60°
- (c) equal length
- (d) equal measure

Question 9. The diagonals of a square bisect each other at _____ angle.

- (a) acute
- (b) right
- (c) obtuse
- (d) reflex

Question 10. The quadrilateral whose diagonals are equal and bisect each other at right angle is _____.

- (a) Triangle
- (b) Square
- (c) Rhombus
- (d) None of these



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Very Short Questions:

Short Questions :

Long Questions :

1. Construct a quadrilateral PQRS, given that QR = 4.5 cm, PS = 5.5 cm, RS = 5 cm and the diagonal PR = 5.5 cm and diagonal SQ = 7 cm.
2. Construct a quadrilateral ABCD in which AB = 4 cm, BC = 3.5 cm, CD = 5 cm, AD = 5.5 cm and $\angle B = 75^\circ$.
3. Construct a square whose side is 5 cm.
4. Construct a rhombus ABCD in which AB = 5.8 cm and AC = 7.5 cm.
5. Construct a rhombus whose diagonals are 6 cm and 8 cm.

6. Construct a rectangle whose diagonal is 5 cm and the angle between the diagonal is 50° .
7. Construct a quadrilateral ABCD in which $BC = 4$ cm, $\angle B = 60^\circ$, $\angle C = 135^\circ$, $AB = 5$ cm and $\angle A = 90^\circ$.
8. Construct a parallelogram ABCD in which $AB = 5.5$ cm, $AC = 7$ cm and $BD = 8$ cm.
9. Construct a rhombus PAIR, given that $PA = 6$ cm and angle $\angle A = 110^\circ$.

Answer Key-

Multiple Choice questions-

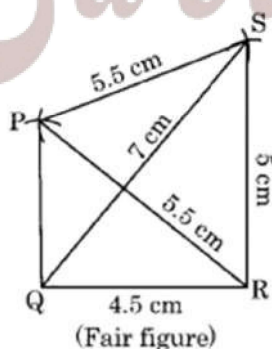
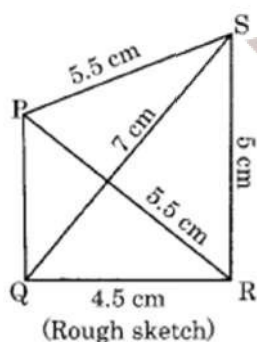
1. (a) $(n - 2) \times 180^\circ$
2. (b) convex
3. (c) 6
4. (d) are congruent
5. (a) equal to each other
6. (d) line segments
7. (a) 5
8. (d) equal measure
9. (b) right
10. (b) Square

Very Short Answer :

Short Answer :

Long Answer :

1.



Construction:

Step I: Draw $QR = 4.5$ cm.

Step II: Draw an arc with centre R and radius 5 cm.

Step III: Draw another arc with centre Q and radius 7 cm to meet the previous arc at S.

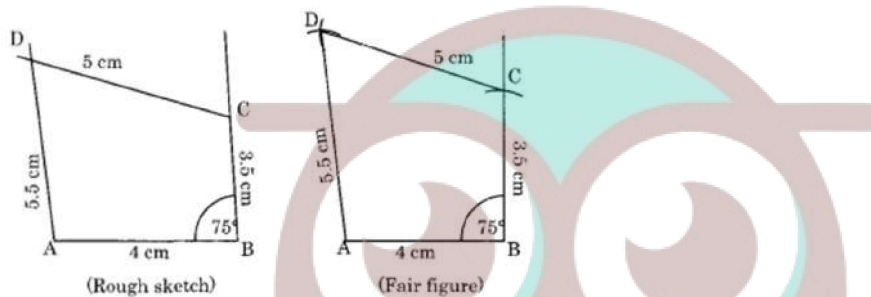
Step IV: Join RS and QS.

Step V: Draw two arcs with centre S and R and radius 5.5 cm each to meet each other at P.

Step VI: Join RP, SP and PQ.

Thus PQRS is the required quadrilateral.

2.



Construction:

Step I: Draw $AB = 4$ cm.

Step II: Draw an angle of 75° at B and cut $BC = 3.5$ cm.

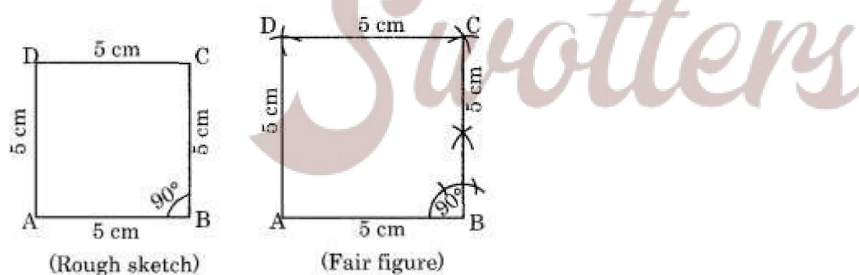
Step III: Draw an arc with centre C and radius 5 cm.

Step IV: Draw another arc with centre A and radius 5.5 cm to meet the previous arc at D.

Step V: Join CD and AD.

Thus ABCD is the required quadrilateral.

3.



Construction:

Step I: Draw $AB = 5$ cm.

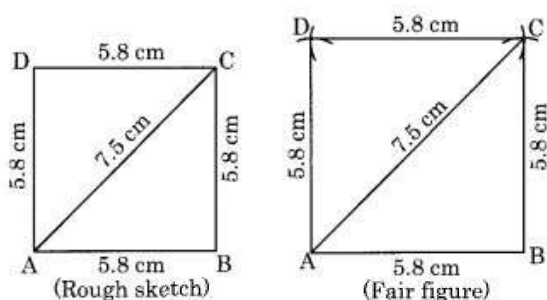
Step II: Draw an angle of 90° at B and cut $BC = 5$ cm.

Step III: Draw two arcs with centre A and C and same radii of 5 cm which meet each other at D.

Step IV: Join AD and CD.

Thus, ABCD is the required square.

4.



Construction:

Step I: Draw $AB = 5.8$ cm.

Step II: Draw an arc with centre B and radius 5.8 cm.

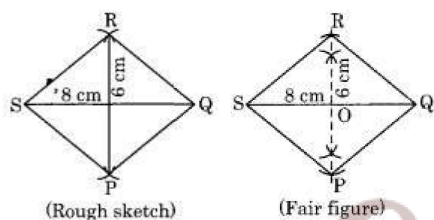
Step III: Draw another arc with centre A and radius 7.5 cm to meet the previous arc at C.

Step IV: Draw two arcs with centres A and C and of the same radius 5.8 cm to meet each other at D.

Step V: Join BC, AC, CD and AD.

Thus ABCD is the required rhombus.

5.



Construction:

Step I: Draw $SQ = 8$ cm.

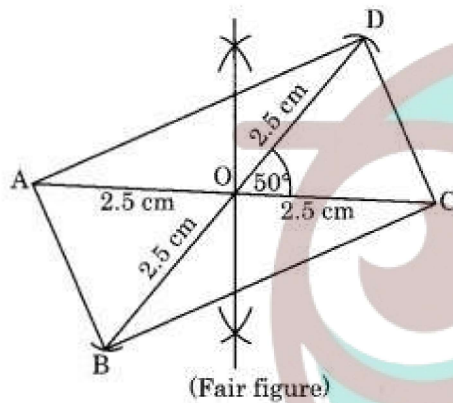
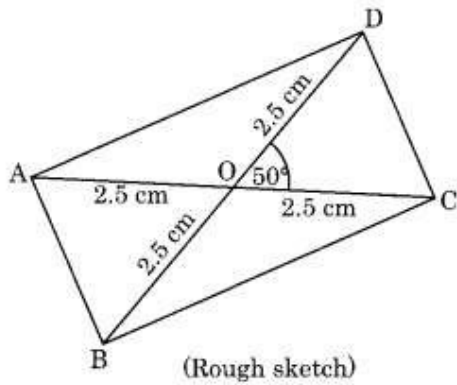
Step II: Draw a right bisector of SQ at O.

Step III: Draw two arcs with centre O and radius 3 cm each to cut the right bisector at P and R.

Step IV: Join PQ, QR, RS and SP.

Thus PQRS is the required rhombus.

6.



Construction:

Step I: Draw $AC = 5$ cm.

Step II: Draw the right bisector of AC at O .

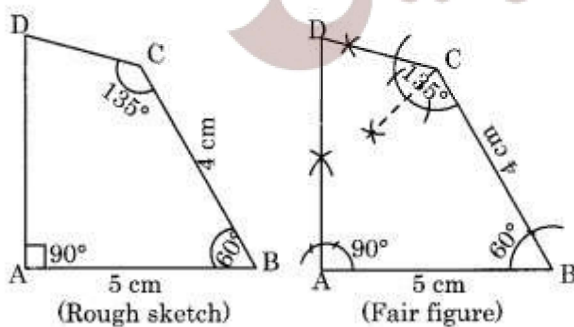
Step III: Draw an angle of 50° at O and produce both sides.

Step IV: Draw two arcs with centre O and of the same radius 2.5 cm to cut at B and D .

Step V: Join AB, BC, CD and DA .

Thus, $ABCD$ is the required rectangle.

7.



Construction:

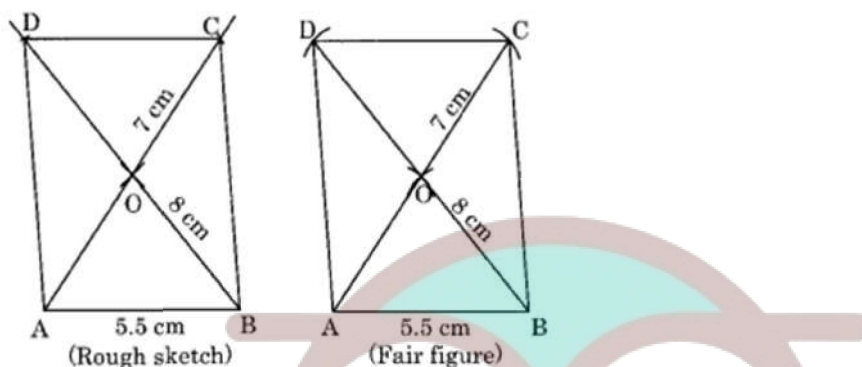
Step I: Draw $AB = 5$ cm.

Step II: Draw the angle of 60° at B and cut $BC = 4$ cm.

Step III: Draw an angle of 135° at C and angle of 90° at A which meet each other at D.

Thus, ABCD is the required quadrilateral.

8.



Construction:

Step I: Draw $AB = 5.5$ cm.

Step II: Draw an arc with centre B and radius $\frac{8}{2}$ cm = 4 cm.

Step III: Draw another arc with centre A and radius $\frac{7}{2}$ cm = 3.5 cm which cuts the previous arc at O.

Step IV: Join AO and produce to C such that $AO = OC$.

Step V: Join BO and produce to D such that $BO = OD$.

Step VI: Join BC, CD and AD.

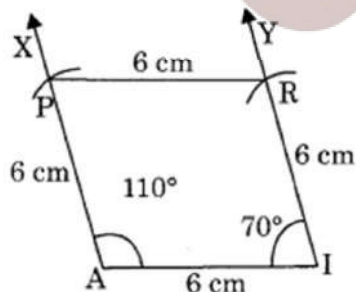
Thus ABCD is the required parallelogram.

9.

Since in a rhombus, all sides are equal, so $PA = AI = IR = RP = 6$ cm

Also, rhombus is a parallelogram

so, adjacent angle, $\angle I = 180^\circ - 110^\circ = 70^\circ$



Steps of construction

Step I. Draw $AI = 6$ cm

Step II. Draw ray \overline{AX} such that $\angle IAX = 110^\circ$ and draw \overline{IY} such that $\angle AIY = 70^\circ$.

Step III. With A and I as centres and radius 6 cm draw arcs intersecting AX and IY at P and R respectively.

Step IV. Join PR.

Thus, PAIR is the required rhombus.



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