PVG's

Muktangan English School & Jr. College, Pune - 9

Unit Test - II (2024-25)

STD IX

Subject : Mathematics (Part II) Marks - 20

Date : 31.01.2025 Time : 9.30 am to 10.45 am

Q1. A) Attempt the following by choosing the correct alternatives given and write the correct alternative alphabet [eg. 1 - (A)]. (2)

1. The point of concurrence of all angle bisector of a triangle is called as the _____.

   A) centroid B) circumcentre C) incentre D) orthocentre

2. If the side of a square is 6 cm, then the length of its diagonal will be _____.

   A) 8 cm B) 12 cm C) 36 cm D) $6\sqrt{2}$ cm

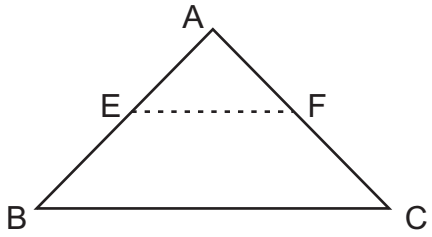
B) Answer the following subquestions. (2)

1. $\square$ WXYZ is a parallelogram. If $m\angle XYZ = 135^0$ then find $m\angle XWZ$ stating reason.

2. Radius of a circle with centre 'O' is 4 cm. If l (OP) = 4.2 cm, then where does point P lie?

Q2. A) Attempt any one of the following activity. (2)

1. If point E and F are mid points of seg. AB and AC of Δ ABC repectively, then find the length of BC where EF = 5.6 cm.



Solution :

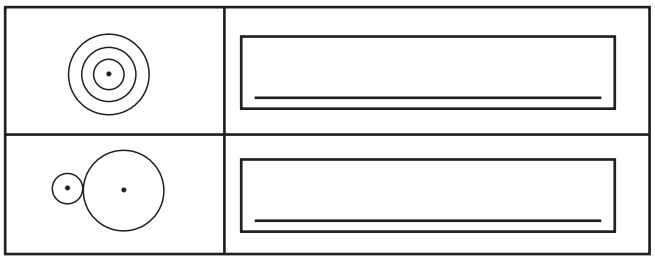
In Δ ABC, point E and F are midpoints of seg. AB and AC respectively.

$\therefore$ EF = $\frac{1}{2}$ x $\square$ ——— (Reason : $\square$)

5.6 = $\frac{1}{2}$ x $\square$

After solving, we get BC = $\square$ cm.

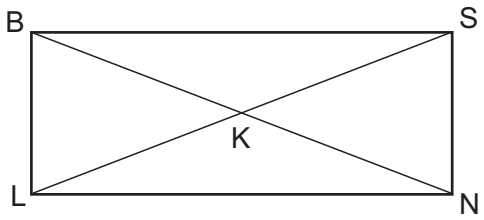
2. Name the type of following circles and write the answers in given boxes.



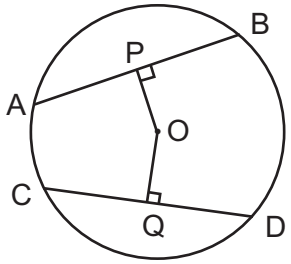
B) Attempt any two of the following subquestions. (4)

1. If opposite angles of a rhombus are $(2x)^0$ and $(3x - 40)^0$ then, find the value of x.

2. In the adjoining figure, diagonals LS and BN of rectangle BSNL intersect each other at point K. If KL = 7 cm, find LS and BN.

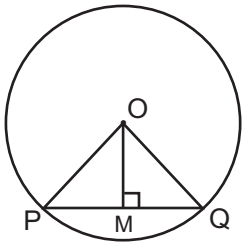


3. In the figure, 'O' is the centre of the circle and AB = CD. If OP =4 cm, find the length of seg. OQ.



Q3. A) Complete any one of the following activity. (3)

1. In the given figure, radius of the circle is 5 cm. Find the distance of the chord from the centre of circle if l (PQ) = 8 cm.



→ **Solution :**

We know, that a perpendicular drawn from the centre of circle on its chord, [ ] the chord.

$\therefore$ PM = MQ = [ ] cm. ($\because$ PQ = 8 cm)

radius of the circle, OP = 5cm —— (given)

In right angled Δ OMQ, $\angle$ OMQ = 90^0

$OM^2 + MQ^2$ = [ ] —— (By Pythagoras theorem)

$OM^2 + 4^2$ = [ ]

On solving, OM = [ ]

Hence, distance of the chord from the centre of the circle is [ ] cm.

2. Measures of angles of □ ABCD are in the ratio 4 : 5 : 7 : 8. Show that □ ABCD is a trapezium.

→ **Solution :**

Let the measures of ∠ A, ∠ B, ∠ C and ∠ D are $4x^0$, $5x^0$, $7x^0$ and $8x^0$ respectively.

Sum of all angles of a quadrilateral is [ ] .

$\therefore 4x^0 + 5x^0 + 7x^0 + 8x^0$ = [ ]

$24x$ = [ ]

$\therefore x$ = [ ]

Substituting the values of x, we get

$\angle A = 60^0$, $\angle B = 75^0$, $\angle C = 105^0$ and $\angle D$ = [ ]

Now, $\angle B + \angle C = 180^0$

$\therefore$ side CD || side BA ——— (1)

but, $\angle B + \angle A$ = [ ] $\neq 180^0$

$\therefore$ Side BC and side AD are [ ] ——— (2)

$\therefore$ □ ABCD is a trapezium. ——— [from (1) and (2)]

B) Attempt any one of the following questions. (3)

1. Prove that : 'A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and congruent.
2. Seg. PM and seg. PN are congruent chords of a circle with centre C. Show that the ray PC is the bisector of ∠ NPM.

Q4. Attempt any one of the following questions. (4)

1. Construct Δ PQR such that, $\angle P = 70^0$, $\angle R = 50^0$, QR = 7.3 cm. Also construct its circumcircle.
2. In the adjoining figure, if seg. AB || Seg.PQ, seg. AB ≅ seg. PQ, seg. AC || Seg. PR, seg. AC ≅ seg. PR then show that,

   i) seg. BC || seg. QR ii) seg. BC ≅ seg. QR

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