A

E-1003

SAMAGRA SHIKSHA KERALA
SUMMATIVE ASSESSMENT- II 2025 - 2026
MATHEMATICS

Class: X

Time: $2\frac{1}{2}$ Hrs.

Total Score : 80

Instructions:

- Use the first 15 minutes to read the questions and think about the answers.
- There are 27 questions, split into 5 parts A, B, C, D. E.
- Answer all questions; but in questions of the type "A or B", you need answer only one of those.
- You can answer the questions in any order, writing the correct question number.
- Trigonometric table are given at the end and can be used whenever necessary.
- Answers must be explained whenever necessary.
- No need to simplify irrationals like $\sqrt{2}$, $\sqrt{3}$, π etc using approximations unless you are asked to do so.

Section A

This section has 8 questions of 1 score each. Select the correct answer from those given below.

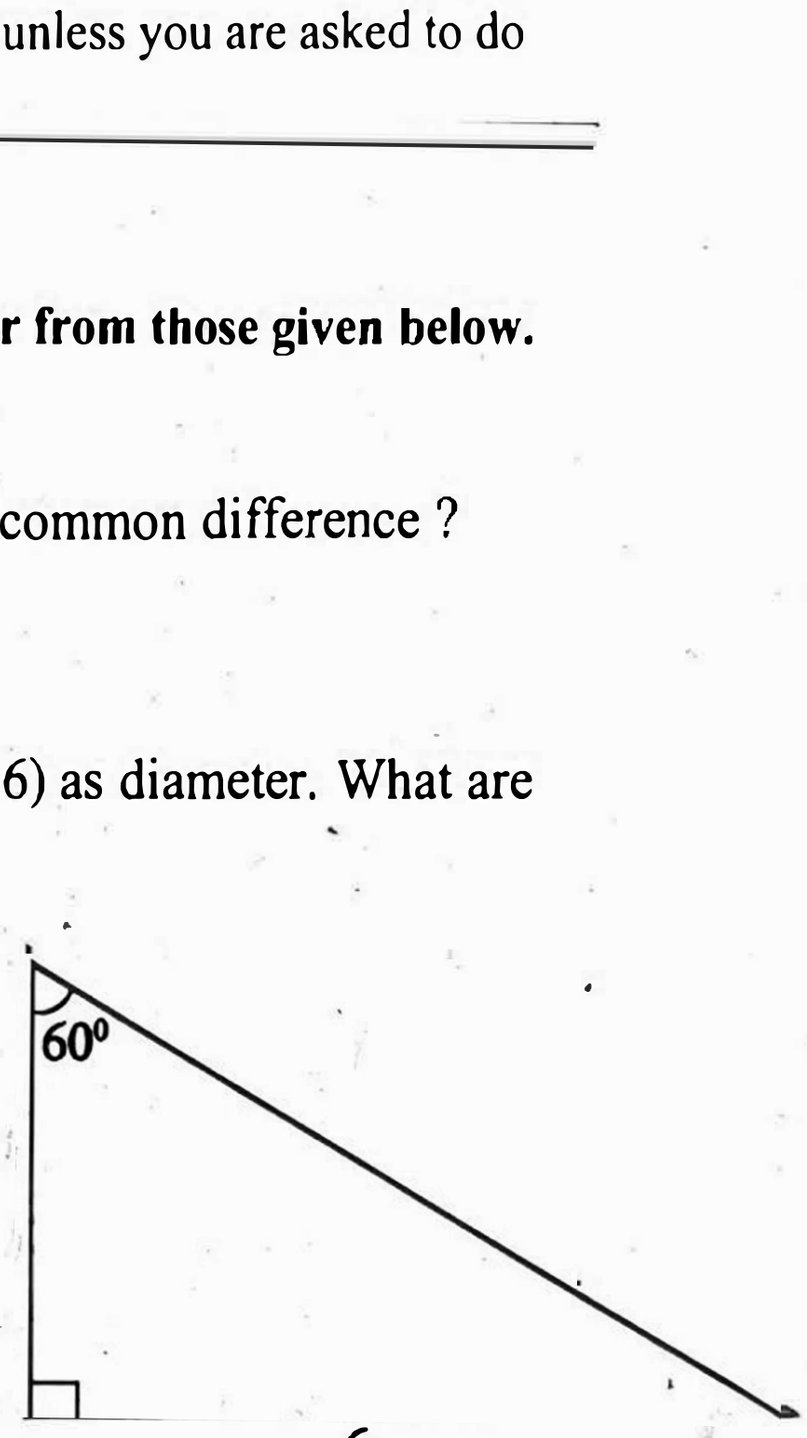
1. Algebraic form of an arithmetic sequence is 3-5n. What is the common difference ?

   A. –3 B. 3 C. 5 D. –5

2. A circle is drawn with the line joining the points (3, 8) and (5, 6) as diameter. What are the coordinates of the centre of the circle?

   A. (0,0) B. (2,2) C. (4,7) D. (7,4)

3. What is the length of the shortest side in the given right triangle?



   A. 3 B. $2\sqrt{3}$ C. 12 D. $6\sqrt{3}$

4. In the picture, O is the centre of the circle. PA, PB are tangents to the circle.

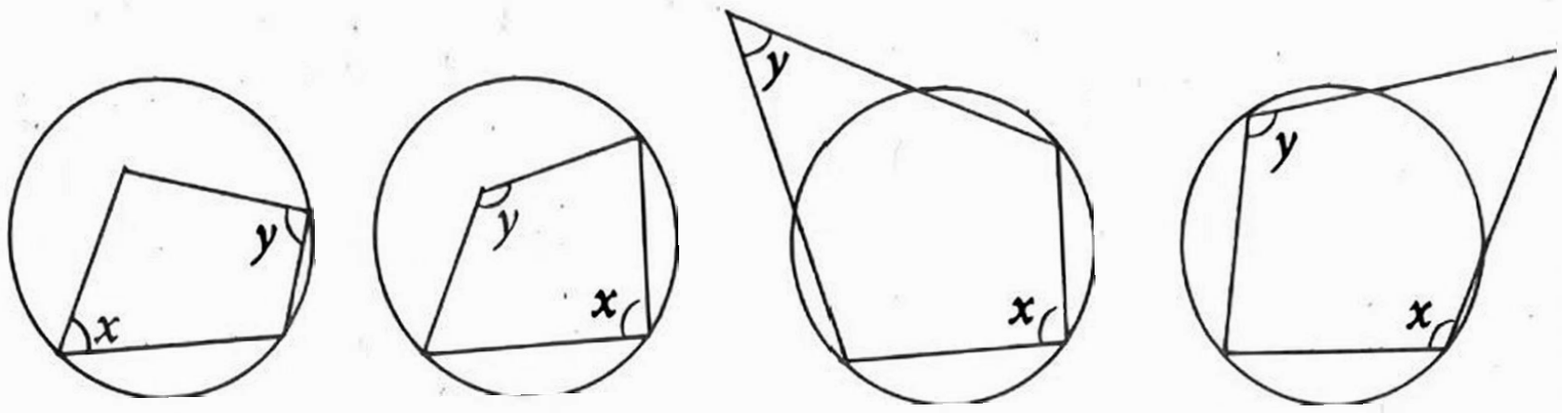
   $\angle AOB = 110^0$, $\angle APB =$ _____

   A. 110^0 B. 55^0 C. 70^0 D. 35^0

5. $x^2 + kx - 12 = (x+6)(x-2)$. What is k ?

A. 8 B. −4 C. 12 D. 4

6. Which of the following pictures are satisfying $x + y > 180^0$.



(i) **(ii)** **(iii)** **(iv)**

A. (i) and (ii)
B. (i) and (iii)
C. (ii) and (iv)
D. (ii) and (iii)

7. Read the given statements.

Statement I : The line joining the points (3,4), (3,8) is parallel to y axis.

Statement II : If two points have the same x coordinates then the line joining them is parallel to the y axis.

Choose the correct answer from the following.

A) Statement I is true and statement II is false.
B) Statement I is false and statement II is true.
C) Both the statements are true, Statement II is the reason of Statement I.
D) Both the statements are true, Statement II is not the reason of Statement I.

8. Read the given statements.

Statement I : When two chords of a circle intersect within the circle, the product of the parts of one chord is equal to the product of the parts of the other.

Statement II: If two triangles have the same angles, then their sides are scaled by the same factor.

Choose the correct answer from the following.

A) Statement I is true and statement II is false.
B) Statement I is false and statement II is true.
C) Both the statements are true, Statement II is the reason of Statement I.
D) Both the statements are true, Statement II is not the reason of Statement I.

Section B

9. A box contains 12 white beads and 8 black beads. If a bead is taken from the box without looking,
   (i) What is the probability of it being a white bead ?
   (ii) How many white beads should be added to the box, to make the probability of getting a black bead is $\frac{1}{3}$?

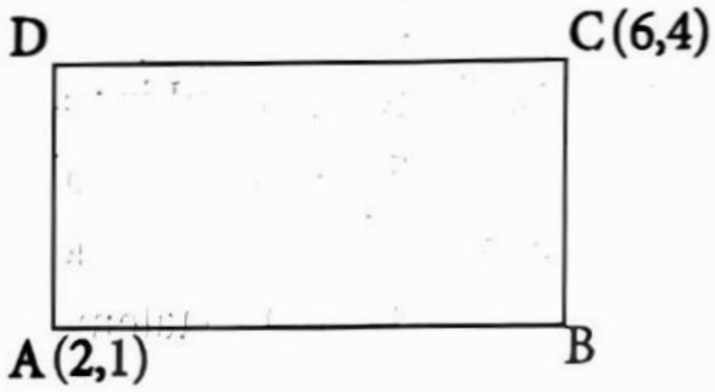
(Score 3)

10. The 8^{th} term of an arithmetic sequence is 23 and its 11^{th} term is 27.
   (i) What is the 5^{th} term?
   (ii) What is the 17^{th} term?
   (iii) Calculate the sum of first 24 terms.

(Score 4)

Section C

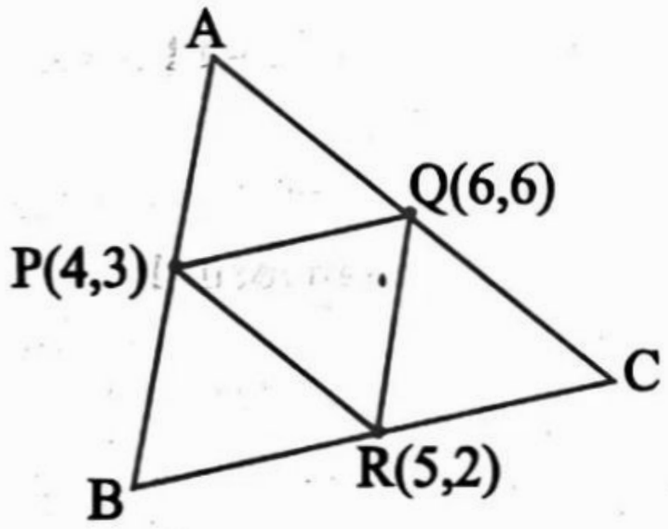
11. In the figure, the sides of the rectangle are parallel to the axes. The coordinates of two vertices of the rectangle are given.
   (i) What are the coordinates of the other two vertices?
   (ii) Find the length of the diagonals of the rectangle.



(Score 3)

12. In the figure, sides of the larger triangle are parallel to the sides of the smaller triangle.

   Calculate the coordinates of the vertices of larger triangle.



(Score 3)

13. A. Circle is drawn with centre as origin and radius 5 centimeters.

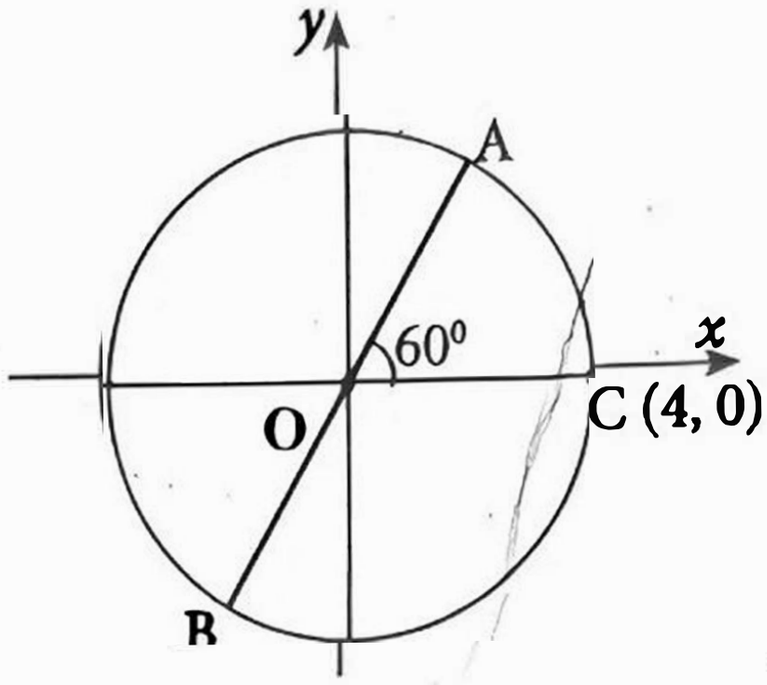
(i) Find the coordinates of the points where the circle intersects the $x-$axis.

(ii) Is (3,2) a point on the circle ? Why?

(iii) Write the coordinates of another point on the circle which is not on the axes.

OR

B. In the figure, A, B are points on the circle centered at origin. The coordinates of the point C is (4,0), $\angle AOC = 60^0$.



(i) Write the coordinates of the points A,B.

(ii) What is the length of the line AB ?

(Score 4)

14. (i) Draw coordinate axes and mark the points A(5, 3), B(0, 3), C(−2, −1), D (3, −1).

(ii) Calculate the area of the quadrilateral ABCD.

(Score 5)

Section D

15. (i) 1+2+3+ ... +30 = _____

(ii) The algebraic form of an arithmetic sequence is $2n+1$.

Calculate the sum of first 30 terms of this sequence.

(Score 3)

16. A . Consider the arithmetic sequence 6,10,14, . . .

(i) Write the algebraic form of this sequence.

(ii) How many terms of this sequence starting from the first, must be added to get 880 as the sum.

OR

B. Sum of two numbers is 30 and their product is 216.

(i) Form a second-degree equation with the given statements.

(ii) Find the numbers.

(Score 4)

17. (i) Write the polynomial $x^2 - 9x - 36$ as the product of two first degree factors.

(ii) To get $x^2 - 9x = 36$, what number is taken as x ?

(Score 4)

18. The difference of two perpendicular sides of a right triangle is 7centimeters and the area is 60 square centimeters.

(i) Form a second-degree equation based on the given statements

(ii) Find the sides of the right triangle.

(Score 5)

Section E

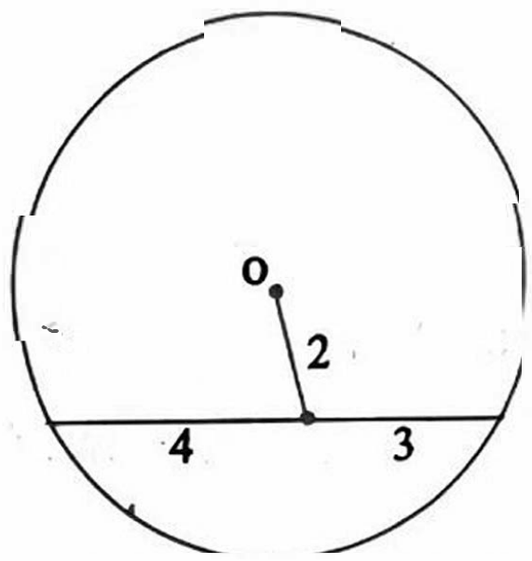
19. A. Prove that the length of two tangents to a circle, from a point outside the circle are equal.

OR

B. Prove that the radius of the incircle of any equilateral triangle is half the radius of its circumcircle.

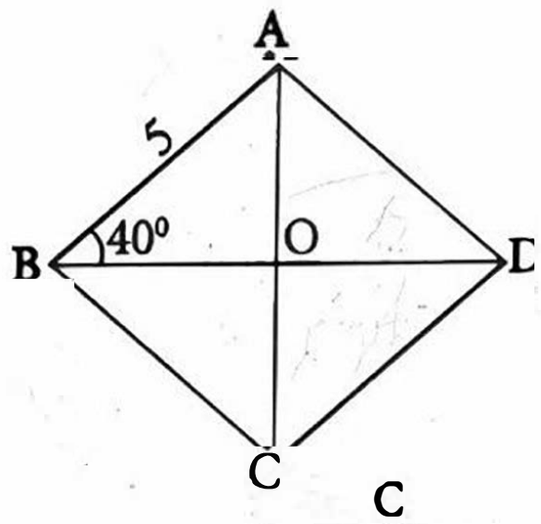
(Score 3)

20. In the figure, O is the centre of the circle.
A line from the centre of circle cuts a chord into two parts.
Find the radius of circle.



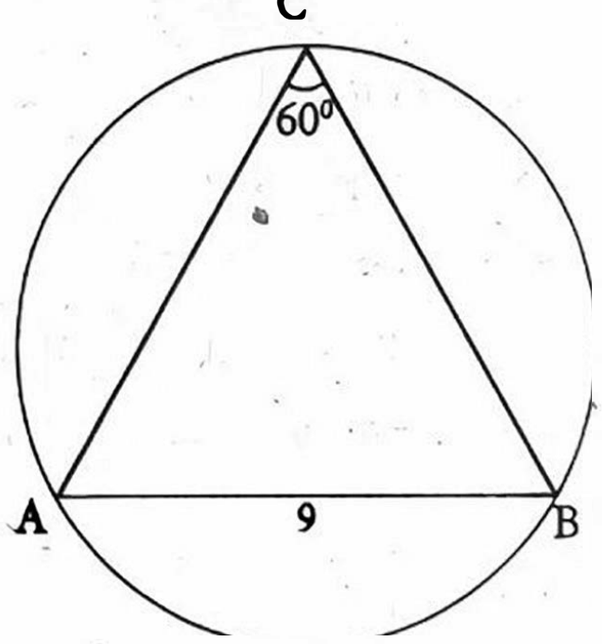
(Score 3)

21. A. In the figure, ABCD is a rhombus
AB = 5 centimetres, $\angle ABO = 40^0$
(i) Find the lengths of OA, OB
(ii) Calculate the lengths of diagonals of the rhombus



OR

B. In the figure, circumcircle is drawn to the triangle ABC.
AB= 9 centimetres, $\angle ACB = 60^0$.
Find the radius of the circle.

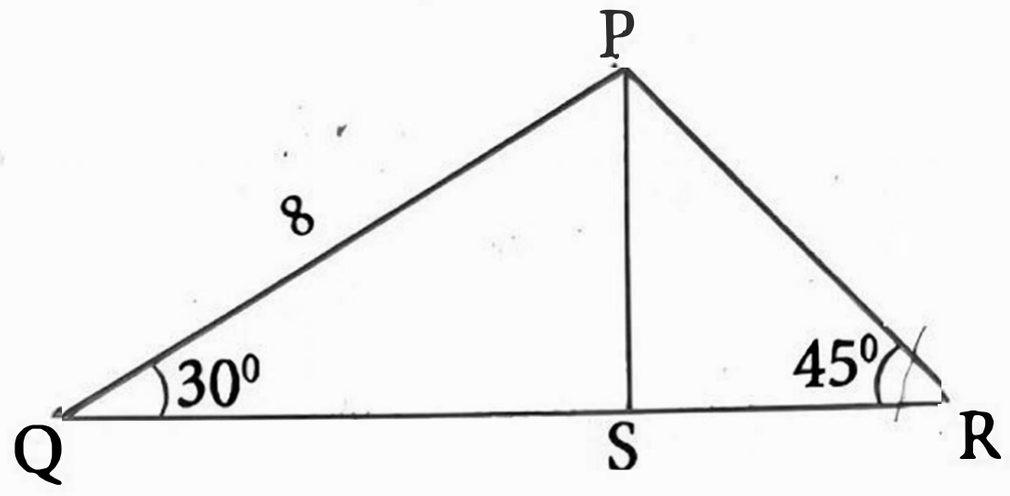


(Score 3)

22. In the picture, PS is perpendicular to QR.

PQ = 8 centimetres,

$\angle Q = 30^0$, $\angle R = 45^0$.



(i) PS = ----------

(ii) Calculate the area of triangle PQR.

(Score 3)

23. A. A child 1.6 metres tall, standing in the school ground sees the top of the flag post at an angle of elevation 35^0. Stepping 10 metres forward towards the flag post, sees it at an angle of elevation 60^0.

(i) Draw a rough figure based on the given data.

(ii) Calculate the height of the flag post.

OR

B. Two children of same height are standing on either side of an electric post. First child sees the top of the electric post at an angle of elevation 40^0 and the second sees at 50^0. Distance between the children is 10 metres and the height of children are 1.5 metres.

(i) Draw a rough figure based on the given details.

(ii) Calculate the height of the electric post.

(Score 5)

24. A. In the figure, the sides of the right triangle ABC touches the incircle at the points P,Q,R.

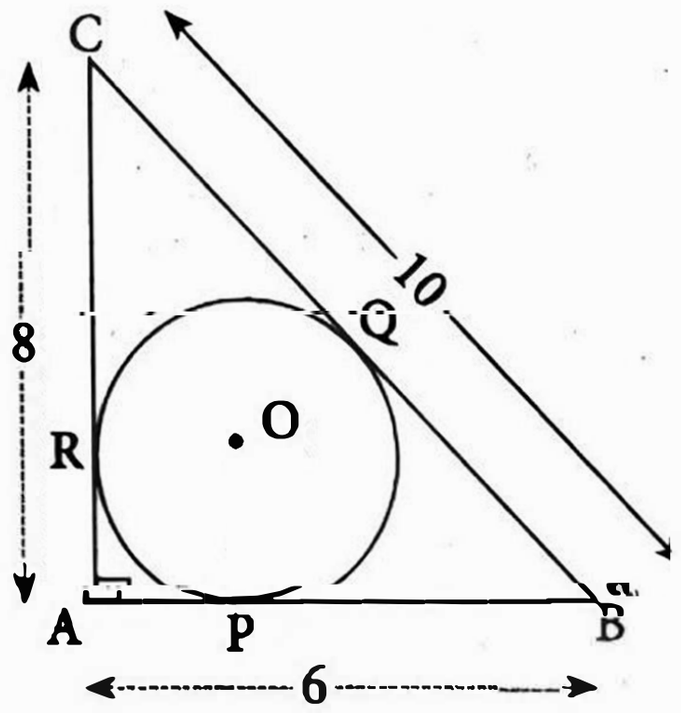
O is the centre of the circle.

AB = 6 centimetres, BC = 10 centimetres,

AC = 8 centimetres

(i) Calculate the length of each tangents from each vertex to the point of contact.

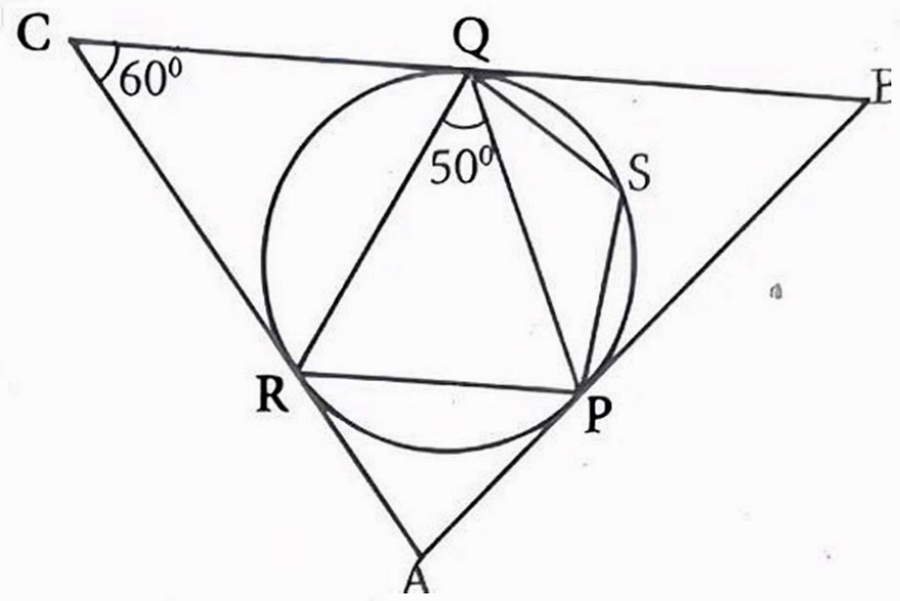
(ii) Prove that the quadrilateral APOR is a square .



OR

B. In the figure , sides of triangle ABC are tangents to the circumcircle of the triangle PQR :

$\angle QCR = 60^0, \angle PQR = 50^0, PS = QS$



(i) $\angle RPQ =$ .....

(ii) $\angle RAP =$ .....

(iii) Find all the angles of quadrilateral PSQR.

(Score 5)

25. Draw a circle of radius 2.5 centimeters. Draw tangents to the circle from a point 7 centimetres away from the centre.

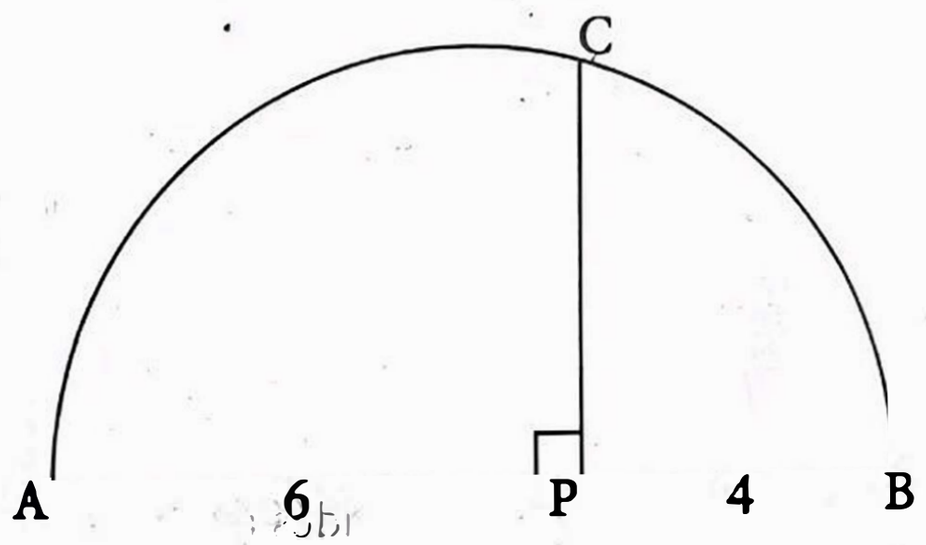
(Score 3)

26. Draw the triangle with sides 4.5 centimetres, 6 centimetres and 7 centimetres and draw its incircle.

(Score 4)

27. (i) In the figure, AB is the diameter of the circle. AP= 6 centimetres, PB =4 centimetres.

Find the length of PC ?



(ii) Draw a rectangle of sides 5 centimetres, 4 centimetres and draw a square of the same area.

(Score 5)