MALAPPURAM

208 A

SSLC PRE MODEL EVALUATION JANUARY 2023

MATHEMATICS

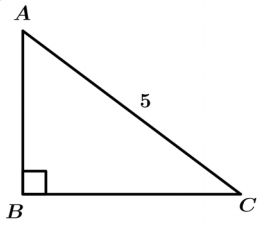
(English)

Time : 1½ Hrs **Score : 40**

Answer any 3 questions from 1 to 4 . Each question carries 2 scores . $(3 \times 2 = 6)$

1. What is the surface area of a hemisphere of radius 3 centimetres ?

2. In triangle ABC , $\angle B = 90^0$, AC = 5 centimetres , $\sin A = \frac{4}{5}$



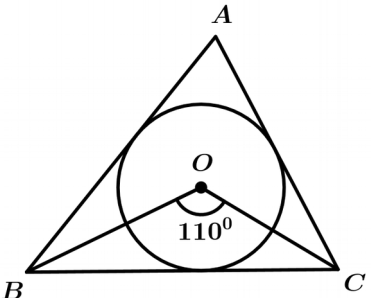
   (a) What is the length of AB ?

   (b) Find $\tan A$.

3. (a) What is the x coordinate of any point on a line parallel to the y axis passing through (1 , 2) ?

   (b) What is the y coordinate of any point on a line perpendicular to the y axis passing through (1 , 2) ?

4. In the picture , the circle centred at O touches the sides of the triangle . $\angle BOC = 110^0$.



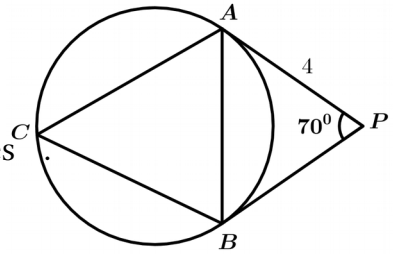
   (a) What is $\angle OBC + \angle OCB$?

   (b) What is the measure of $\angle A$?

Answer any 4 questions from 5 to 10 .Each question carries 3 scores .
$(4 \times 3 = 12)$

5. Draw a circle of radius 4 centimetres and mark a point on it . Draw a tangent to the circle through that point .

6. In the picture , tangents through the points A and B of the circle meet at P . $\angle APB = 70^0$, PA = 4 centimetres .



   (a) What is the length of PB ?

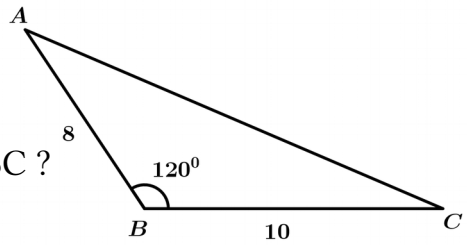
   (b) What are the measures of $\angle ABP$ and $\angle ACB$?

7. A cone of base radius 5 centimetres and slant height 13 centimetres is made by rolling up a sector .

(a) What is the radius of the sector ?

(b) What is the area of the sector ? .

8. In triangle ABC , AB = 8 centimetres , BC= 10 centimetres , $\angle B = 120^0$.



(a) What is the perpendicular distance from A to BC ?

(b) Calculate the area of the triangle .

9. All the edges of a square pyramid are of the same length and its base perimeter is 40 centimetres .

(a) What is the base edge of the pyramid ?

(b) What is the slant height of the pyramid ?

10. The coordinates of a point on a circle centred at origin are (5 , 12) .

(a) What is the radius of the circle ?

(b) Write the coordinates of the point at which this circle cuts the x axis .

Answer any 3 questions from 11 to 16 . Each question carries 4 scores. $(3 \times 4 = 12)$

11. Draw a circle of radius 3 centimetres and mark a point P , 7 centimetres away from the centre of the circle . Draw tangents from P to the circle .

12. A man standing at the edge of a canal sees the top of a tree at an elevation of 80^0 Stepping 10 metres back , he sees it an elevation of 40^0 .

(a) Draw a rough figure using the given details .

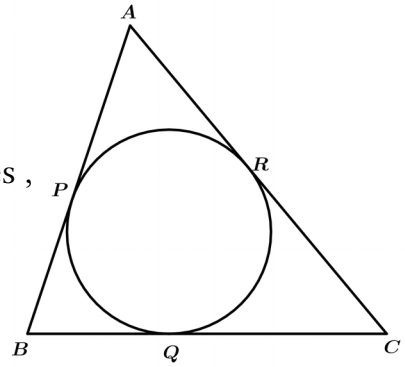
(b) Calculate the height of the tree and the width of the canal ?

[$\sin 40^0 = 0.64$, $\cos 40^0 = 0.76$, $\tan 40^0 = 0.84$

$\sin 80^0 = 0.98$, $\cos 80^0 = 0.17$, $\tan 80^0 = 5.6$]

13. Draw the x and y axes and mark the points A (-3 , 0) , B (4 , 0) and C (0 , 4) Find the area of the triangle ABC .

14. In the figure the circle touches the sides of the triangle at P , Q and R . AB = 10 centimetres ,BC = 8 centimetres , AC = 12 centimetres .



(a) If PB = x centimetres , what will be the length of QB ?

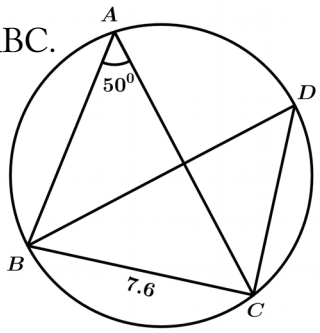
(b) Compute the lengths of the tangents PA , QB and CR .

15. From a solid sphere of radius 15 centimetres , a cone of height 27 centimetres is carved out . .

(a) What is the base radius of the cone ?

(b) Calculate the volume of the cone .

16. In the picture , BD is the circumdiameter of the triangle ABC.



BC = 7.6 centimetres , $\angle A = 50^0$

(a) What are the measures of $\angle$ BDC and , $\angle$ BCD ?

(b) What is the diameter of the circle ?

[$\sin 50^0 = 0.76$, $\cos 50^0 = 0.64$, $\tan 50^0 = 1.19$]

Answer any 2 questions from 17 to 21 . Each question carries 4 scores.

$(2 \times 5 = 10)$

17. Draw a triangle of sides 4 , 5 , 6 centimetres and draw a circle touching all the sides of this triangle .

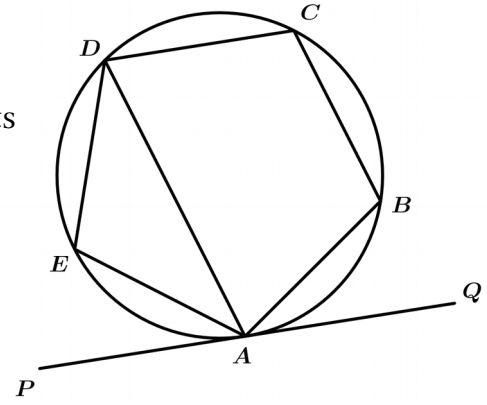
18. The base perimeters of two square pyramids are in the ratio 1 : 2 and their heights are in the ratio 3 : 4 .

(a) What is the ratio of their base edges ?

(b) Compute the ratio of their volumes

(c) If the volume of the first pyramid is 150 cubic centimetres , what will be the volume of the second pyramid ?

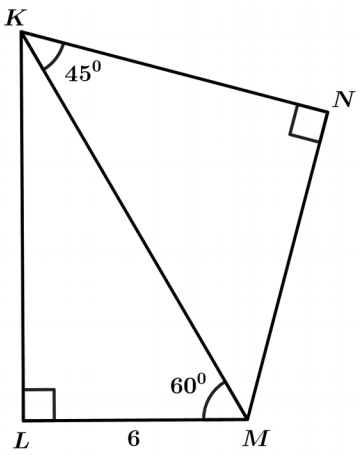
19. In the picture , A , B , C , D and E are the points on the circle . ABCDE is a regular pentagon . The circle touches the line PQ at A .



(a) What is the sum of the angles of a pentagon ?

(b) Compute the measures of $\angle$ E , $\angle$ADE , $\angle$ PAE and $\angle$ BAQ .

20.



In the picture , LM = 6 centimetres , ∠ L = ∠ N = 90^0

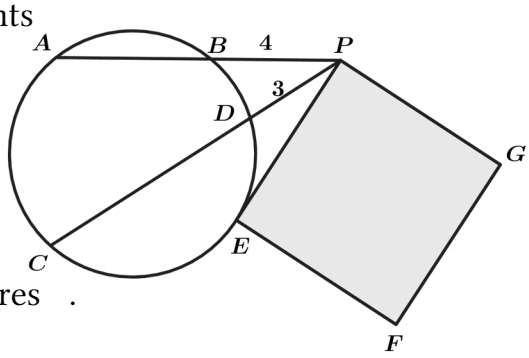
∠ KML = 60^0 , ∠ MKN = 45^0 .

(a) What are the measures of ∠ LKM and ∠ KMN ?

(b) What are the legths of the lines KM and KN ?

(c) Calculate the area of the triangle KMN .

21. In the picture , A, B , C , D and E are the points on the circle . The chords AB and CD are extended to meet at P . PE is a tangent .



PB = 4 centimetres , PD = 3 centimetres .

Area of the square EFGP is 36 square centimetres .

(a) What is the length of the tangent PE ?

(b) What is the length of the line PC ?

(c) What is the length of the chord AB ?