Cbsemath.com *in the service of student community*

The No. 1 CBSE Mathematics website in the world

MM 80   **Full Syllabus Paper/Mock Test**   **Time 3h**

GENERAL INSTRUCTIONS:-

1. All questions are compulsory.
2. The question paper consists of thirty questions divided into 4 sections A, B, C and D. Section A comprises of 10 questions of 01 mark each. Section B comprises of 05 questions of 02 marks each, Section C comprises of 10 questions of 03 marks each and Section D comprises of 05 questions of 06 marks each.
3. There is no overall choice. However, internal choice has been provided in one question of Sec: B, three questions of Sec: C and two questions of Sec: D. You have to attempt only one of the alternatives in all such questions.
4. In question on construction, drawing should be neat and exactly as per the given measurements.
5. Use of calculators is not permitted.

Section A 1 mark each

1. Find the HCF of 128 and 200 using fundamental theorem of Arithmetic.

2. Express $\cot 85^0 + \cos 75^0$ in terms of trigonometric ratios of angle between 0 and 45^0

3. In fig O is the centre of a circle. The length of the arc APB is $\dfrac{2}{15}$ of the circumference of the circle. Find the central angle x.
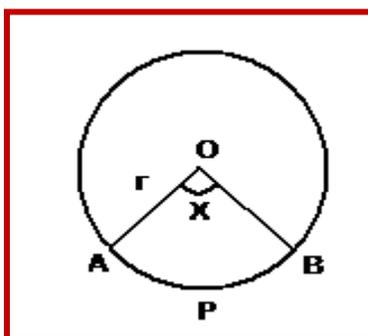

4. The probability that "Bathinda Lions" win the IPL tournament is 0.68. Find the probability of not winning the game by "Bathinda Lions".

5. If the mean of 10 observations is 28. One observation of value 19 is removed, what is the new mean?

6. If the decimal expansion of a rational number is 20.725, what are the prime factors of the denominator of the number?

7. ABC is an isosceles triangle right angled at C prove that $AB^2 = 2AC^2$

8. If (-1) is zero of the polynomial $x^3 - 2k$. Find k.

9. Find the number of terms in the following A.P. 7, 20, 33,…, 657

10. In fig. $\triangle \mathbf{ODC} \sim \triangle \mathbf{OBA}$, **If** $\angle \mathbf{OBA} = 55 \,\&\, \angle \mathbf{OCD} = 70^{\mathbf{o}}$ **Find** $\angle \mathbf{DOB}$
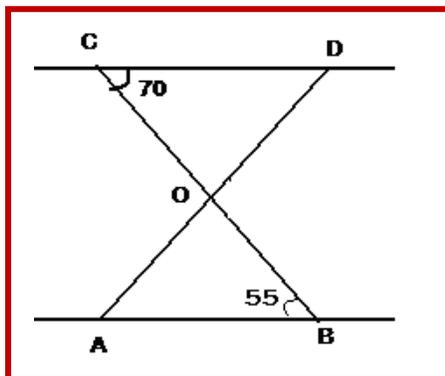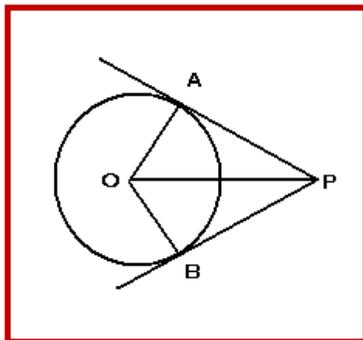

Section B 2 marks each

11. From 52 playing cards, Jack, queen and king of club are removed. From the remaining cards, one card is drawn at random. What is the probability of getting (a) Queen (b) a club (c) a black king.

12. In what ratio does the line 4x + y = 11 divide the line Segment joining the points (1, 3) and (2, 7).

(OR)

Find the value of k for which the points (-3, 12), (7, 6) and (k, 9) are collinear.

13. In fig OP is equal to diameter of the circle, prove that ΔABP is an equilateral triangle.

14. If the product of zeroes of a polynomial $ax^2 - 29x + 10$ is 1, find the value of a.

15. Evaluate the following: $\tan7°\tan23°\ \tan60°\ \tan67°\tan83° + \cot54°\cot36° + \sin20°\sec70° - 2$

Section C 3 marks each

16. Prove that $\dfrac{\tan A + Sec A - 1}{\tan A - Sec A + 1} = \dfrac{1 + \sin A}{Cos A}$

(OR)

Prove that $(\sin A + Co\sec A)^2 + (\cos A + Sec A)^2 = 7 + \tan^2 A + Cot^2 A$

17. Solve for x $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}, \ (x \neq -4, 7)$

18. Use Euclid's division lemma to show that the cube of any positive integer is of The form 9x or 9x + 1 or 9x + 8 where x is any integer.

19. If the sum of first 7 terms of an A.P. is 49 and that of 17 terms is 289. Find the sum of first n terms.

20. Prove that $2 + \sqrt{11}$ is Irrational.

21. Prove that the ratio of the corresponding altitudes of two similar triangles is equal to the ratio of their corresponding sides.

(OR)

In an equilateral triangle prove that three times the square on one side is equal to four times the square of its altitude.

22. Draw a ΔABC with side BC=6cm, AB=5cm and $\angle$ABC=60^0 Construct a Δ AB'C' similar to ΔABC such that sides of ΔAB'C' are ¾ of the corresponding sides of ΔABC.

23 The area of an equilateral ΔABC is 17320.5cm^2. With each vertex of the Δ as centre, a circle is drawn with radius equal to half the length of the circle of the side of the Δ. Find the area of the Δ not covered by circles. (Use ⊓=3.14 and √3=1.73205)
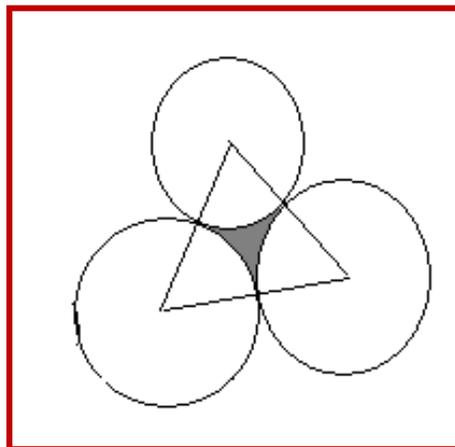
Or

In fig, O is the centre of a circle with radius 14cm. AOB and COD are two perpendicular diameters of the circle. O' is the centre of the circle of diameter CO. Find the area if the shaded region.
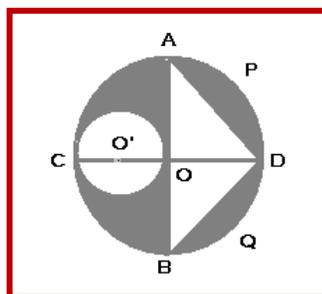
24. Using distance formula, show that (3, 3) is the Centre of the circle passing through the points (6, 2), (0, 4) and (4, 6). Find its radius also.

25. For area of ΔABC with vertices A (4,-6), B (3,-2) and C (5, 2) verify that median of the triangle divides it in to two triangles of equal areas.

Section D 6 marks each

26. A metallic right circular cone 20cm high and whose vertical angle is 60^0 is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter 1/16 cm, find the length of the wire.

(OR)

A bucket of height 8cm and made up of copper sheets in the form of frustum of a right circular cone with radii of its lower and upper ends as 3cm and 9cm respectively. Calculate
(i) the height of the cone of which the bucket is a part,
(ii) the volume of water which can be filled in the bucket,
(iii) the area of copper sheet required to make the bucket (leave the answer in terms of ∏)

27. From the top and foot of a tower 40m high, the angles of elevation of the top of a light house is found to be 30^0 and 60^0 respectively. Find the height of the lighthouse. Also find the distance of the top of the lighthouse from the foot of the tower.

28. Find the missing frequencies **f_1** & **f_2** in the following table if the mean of the distribution is 53.

| Age	0-20	20-40	40-60	60-80	80-100	Total
No. of persons	15	f_1	21	f_2	17	100

29. If a line is drawn parallel to one side of a triangle, the other two sides are divided in the same ratio. Prove it. Use this result to prove the following:

    In fig, if ABCD is a trapezium in which AB∥DC∥EF, then $\dfrac{AE}{ED} = \dfrac{BF}{FC}$
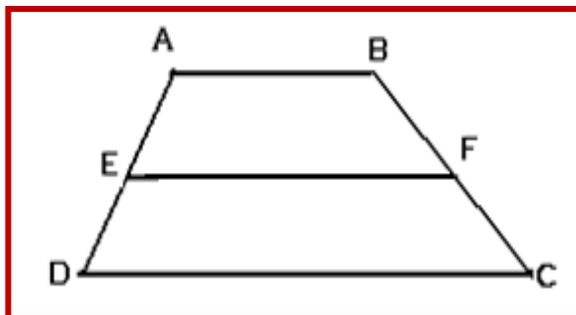
(OR)

Prove that the lengths of the two tangents drawn from an external point to a circle are equal. Using this result, do the following. In the fig, a circle is inscribed in a quadrilateral ABCD in which $\angle D = 90^0$. If AD=23cm, AB=29cm and DS=5cm, find the radius of the circle.
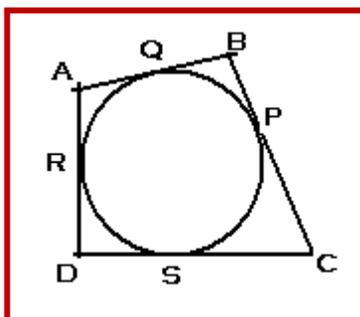
30. Solve the following pair of linear equations graphically: 3x+y-12=0, x-3y+6=0. Shade the region bounded by these lines and the x-axis. Also find the ratio of areas of triangles formed by given lines with X-axis and the Y-axis.