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X
TERM 1

Half Yearly Maths **MIND CURVE** Practice Paper Series 2026-27

PRACTICE PAPER 03

By Deepika Bhati Teaching Mathematics Passionately since 2009

S no	Syllabus Covered	Chapters(In Half Yearly)	Marking Scheme
1.	Unit 1 Number System	Real Numbers	10
2.	Unit 2 Algebra	Polynomials Linear Equation In 2 Var. Quadratic Equation Arithmetic Expression	25
3.	Unit 3 Geometry	Similar Triangles Circles	15
4.	Unit 4 Coordinate Geometry	Coordinate Geometry	10
5.	Unit 5 Trigonometry	Intro To Trigonometry Application of Trigonometry	20

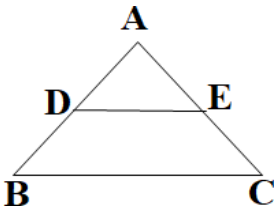
Note: Students/Teachers can refer to this Sample Paper for practice purpose. However, students may find or experience different exam pattern as syllabus or marking scheme may vary school to school.

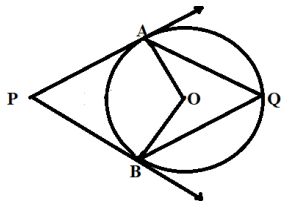
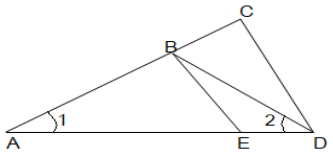
MM:80	GENERAL INSTRUCTIONS	TIME:3Hr

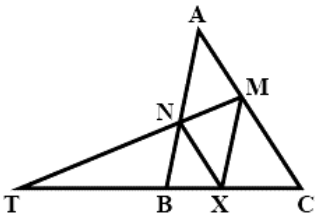
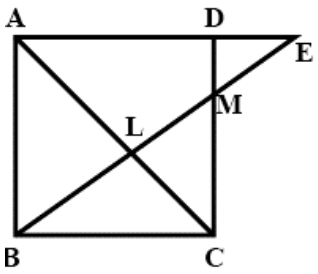
READ CAREFULLY ALL INSTRUCTIONS

1. **This Question Paper has 5 Sections A, B, C, D and E.**
2. **Section A has 20 MCQs carrying 1 mark each**
3. **Section B has 5 questions carrying 02 marks each.**
4. **Section C has 6 questions carrying 03 marks each.**
5. **Section D has 4 questions carrying 05 marks each.**
6. **Section E has 3 case based integrated units of assessment (04 marks each) with sub parts of the values of 1, 1 and 2 marks each respectively.**
7. **All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E**
8. **Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.**
9. **This paper consists of 38 questions.**
    a. **Write your answers neatly and legibly.**
    b. **Ensure you have not left any question unanswered**

CLASS X MID TERM MOCK TEST – 03 (2026-27)

	Section A **Consists of 20 questions of 1 mark each.**	
1	If the system of equations 3x+y =1 and (2k-1)x +(k-1)y =2k+1 is inconsistent, then k = (a) 1 (b) 0 (c) 1 (d) 2	**1**
2	If two tangents inclined at an angle of 60° are drawn to a circle of radius 3cm, then the length of each tangent is equal to (a) $\frac{3\sqrt{3}}{2}$ cm (b) 3cm (c) 6cm (d) $3\sqrt{3}$cm	**1**
3	If △ABC ~ △DEF and AB = 3 cm, DE = 4 cm, BC = 6 cm, then EF is: (a) 8 cm (b) 6 cm (c) 8 cm (d) 9cm	**1**
4	If the vertices of a parallelogram PQRS taken in order are P(3,4), Q(-2,3) and R(-3,-2), then the coordinates of its fourth vertex S are (a) (-2,-2) (b) (-2,-3) (c) (2,-1) (d) (1,2)	**1**
5	Let a and b be two positive integers such that a = p^3q^4 and b = p^2q^3 , where p and q are prime numbers. If HCF(a,b) = p^mq^n and LCM(a,b) = p^rq^s, then (m+n)(r+s)= (a) 15 (b) 30 (c) 35 (d) 72	**1**
6	Let p be a prime number. The quadratic equation having its roots as factors of p is (a) x^2 –px +p=0 (b) x^2–(p+1)x +p=0 (c) x^2+(p+1)x +p=0 (d) x^2 –px+p+1=0	**1**
7	If sinθ + cosθ = √2, then tanθ + cot θ = (a) 1 (b) 2 (c) 3 (d) 4	**1**
8	If x tan 60°cos 60°= sin60°cot 60°, then x = (a) cos30° (b) tan30° (c) sin30° (d) cot30°	**1**
9	If α and β are the zeros of a polynomial f(x) = px^2 – 2x + 3p and α + β = αβ, then p is (a)$\frac{-2}{3}$ (b)$\frac{2}{3}$ (c) $\frac{1}{3}$ (d) $\frac{-1}{3}$	**1**
10	If triangles ABC and DEF are similar and AB=4 cm, DE=6 cm, EF=9 cm and FD=12 cm, the perimeter of triangle ABC is: (a) 22 cm (b) 20 cm (c) 21 cm (d) 18 cm	**1**
11	In the given figure, DE ‖ BC, AE = a units, EC =b units, DE =x units and BC = y units. Which of the following is true? (a) x = $\frac{a+b}{ay}$ (b) y = $\frac{ax}{a+b}$ (c) x = $\frac{ay}{a+b}$ (d) $\frac{x}{y} = \frac{a}{b}$ 	**1**
12	ABCD is a trapezium with AD ‖ BC and AD = 4cm. If the diagonals AC and BD intersect each other at O such that $\frac{AO}{OC} = \frac{DO}{OB} = \frac{1}{2}$, then BC = (a) 6cm (b) 7 cm (c) 8cm (d) 9cm	**1**
13	The midpoint of a line segment joining two points A(2, 4) and B(-2, -4) is (a)(-2,4) (b) (2,-4) (c) (0,0) (d) (-2,-4)	**1**
14	30th term of the A.P: 10, 7, 4, …, is (a) 97 (b) 77 (c) -77 (d) -87	**1**
15	If 5 tanβ =4, then $\frac{5\sin\beta - 2\cos\beta}{5\sin\beta + 2\cos\beta}$ = (a) $\frac{1}{3}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (d) 6	**1**
16	Which term of the A.P. 3, 8, 13, 18, … is 78? (a) 12^{th} (b) 13^{th} (c) 15^{th} (d) 16^{th}	**1**

17	If O($\frac{P}{3}$, 4) is the midpoint of the line segment joining the points P(-6, 5) and Q(-2, 3), then the value of p is: (a) $\frac{7}{2}$ (b) -12 (c) 4 (d) -4	**1**
18	AB is a chord of the circle and AOC is its diameter such that angle ACB = 50^0 .If AT is the tangent to the circle at the point A, then BAT is equal to (a) 65°. (b) 60°. (c) 50°. (d) 40°.	**1**
19	**Statement A (Assertion):** If the co-ordinates of the mid-points of the sides AB and AC of ΔABC are D(3,5) and E(-3,-3) respectively, then BC = 20 units **Statement R(Reason) :** The line joining the mid points of two sides of a triangle is parallel to the third side and equal to half of it. (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) (c) Assertion (A) is true but reason(R) is false. (d) Assertion (A) is false but reason(R) is true.	**1**
20	**Statement A (Assertion):** If product of two numbers is 5780 and their HCF is 17, then their LCM is 340. **Statement R (Reason) :** HCF is always a factor of LCM (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.	**1**
	Section B **Consists of 5 questions of 2 marks each**	
21	In the given figure, O is the centre of circle. Find ∠AQB, given that PA and PB are tangents to the circle and ∠APB= 75°. 	**2**
22	If 49x+51y= 499, 51 x+49 y= 501, then find the value of x and y.	**2**
23	Find the sum of the first 25 terms of an A.P. whose n^{th} term is given by $a_n = 2 – 3n$. or Find the sum of the first 25 terms of an A.P. whose n^{th} term is given by $a_n = 7 – 3n$.	**2**
24	In the given figure below, $\frac{AD}{AE} = \frac{AC}{BD}$ and ∠1 = ∠2. Show that Δ BAE∼ΔCAD . 	**2**
25	If sin(A+B) =1 and cos(A-B)= $\frac{\sqrt{3}}{2}$, 0°< A+B ≤ 90° and A> B, then find the measures of angles A and B. or Find an acute angle θ when $\frac{\cos\theta - \sin\theta}{\cos\theta + \sin\theta} = \frac{1-\sqrt{3}}{1+\sqrt{3}}$.	**2**
	Section C **Consists of 5 questions of 3 marks each.**	

26	A train covered a certain distance at a uniform speed. If the train would have been 6 km/h faster, it would have taken 4 hours less than the scheduled time. And, if the train were slower by 6 km/hr ; it would have taken 6 hours more than the scheduled time. Find the length of the journey. or Anuj had some chocolates, and he divided them into two lots A and B. He sold the first lot at the rate of Rs 2 for 3 chocolates and the second lot at the rate of Rs 1 per chocolate, and got a total of Rs 400. If he had sold the first lot at the rate of Rs 1 per chocolate, and the second lot at the rate of Rs 4 for 5 chocolates, his total collection would have been Rs 460. Find the total number of chocolates he had.	**3**
27	Let X be any point on the side BC of a triangle ABC .If XM , XN are drawn parallel to BA and CA meeting CA ,BA in M,N respectively :MN meets BC produced in T ,prove that $TX^2 = TB \times TC$.  or In fig.M is a mid point of side CD of a parallelogram ABCD. The line BM is drawn intersecting AC at L and AD produced a E .Prove that EL = 2BL. 	**3**
28	Given that √3 is irrational, prove that 5 + 2√3 is irrational.	**3**
29	If the zeroes of the polynomial $x^2 + px + q$ are double in value to the zeroes of the polynomial $2x^2 - 5x - 3$, then find the values of p and q.	**3**
30	Prove the following identity : $\frac{(1+\sin\theta)^2+(1-\sin\theta)^2}{2cos^2\theta} = \frac{1+sin^2\theta}{1-sin^2\theta}$.	**3**
31	Prove the following that : $\frac{tan^3\theta}{1+tan^2\theta} + \frac{cot^3\theta}{1+cot^2\theta} = \sec\theta\,\text{cosec}\theta - 2\sin\theta\cos\theta$	**3**
	Section D **Consists of 4 questions of 5 marks each.**	
32	Prove that if a line is drawn parallel to one side of a triangle intersecting the other two sides in distinct points, then the other two sides are divided in the same ratio. Using the above theorem prove that a line through the point of intersection of the diagonals and parallel to the base of the trapezium divides the non parallel sides in the same ratio.	**5**
33	If we add 1 to the numerator and subtract 1 from the denominator, a fraction becomes 1. It also becomes 1/2 if we only add 1 to the denominator. What is the fraction?	**5**
34	To fill a swimming pool two pipes are used. If the pipe of larger diameter used for 4 hours and the pipe of smaller diameter for 9 hours, only half of the pool can be filled. Find, how long it would take for each pipe to fill the pool separately, if the pipe of smaller diameter takes 10 hours more than the pipe of larger diameter to fill the pool? or In a flight of 600km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr from its usual speed and the time of the flight increased by 30 min. Find the scheduled duration of the flight.	**5**

35 Prove that : **5**

(i) $\frac{tan\theta}{1-cot\theta} + \frac{\cot\theta}{1-tan\theta} = 1 + \tan\theta + \cot\theta$

(ii) $\text{cosec}^6\theta = \cot^6\theta + 3\cot^2\theta\,\text{cosec}^2\theta + 1$

or

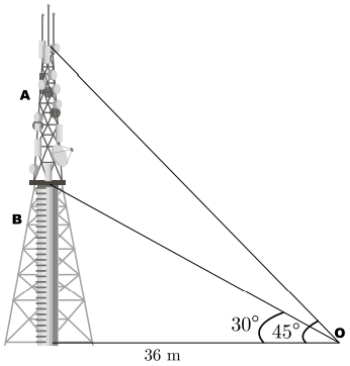
If $\cot\theta = \frac{1}{\sqrt{3}}$, find the value of $\frac{1-cos^2\theta}{2-sin^2\theta}$.

Section E

CASE BASE STUDY

Consists of 3 questions of 4 marks each.

36 Radio towers are used for transmitting a range of communication services including radio and television. The tower will either act as an antenna itself or support one or more antennas on its structure, including microwave dishes. There are 2 main types: guyed and self-supporting structures. On a similar concept, a radio station tower was built in two sections A and B. Tower is supported by wires from a point O. Distance between the base of the tower and point O is 36 m. From point O, the angle of elevation of the top of section B is 30° and the angle of elevation of the top of section A is 45°.



On the basis of information given, answer the following questions.

(i) What is the height of the section B? **1**

(ii) What is the length of the wire structure from the point O to the top of section B? **1**

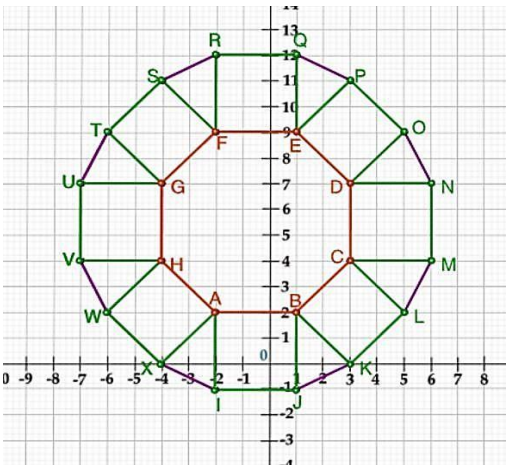
(iii) What is the height of the section A? **2**

or

What is the length of the wire structure from the point O to the top of section A?

37 A tiling or tessellation of a flat surface is the covering of a plane using one or more geometric shapes, called tiles, with no overlaps and no gaps. Historically, tessellations were used in ancient Rome and in Islamic art. You may find tessellation patterns on floors, walls, paintings etc. Shown below is a tiled floor in the archaeological Museum of Seville, made using squares, triangles and hexagons.

A craftsman thought of making a floor pattern after being inspired by the above design. To ensure accuracy in his work, he made the pattern on the Cartesian plane. He used regular octagons, squares and triangles for his floor tessellation pattern.



Use the above figure to answer the questions that follow:

(i) What is the length of the line segment joining points B and F? **1**

(ii) The centre 'Z'of the figure will be the point of intersection of the diagonals of quadrilateral WXOP. Then what are the coordinates of Z? **1**

(iii) What are the coordinates of the point on y axis equidistant from A and G? **2**

	Or What is the area of Trapezium AFGH?	
38	A road roller is a compactor-type engineering vehicle used to compact soil, gravel, concrete, or asphalt in the construction of roads and foundations. Similar rollers are used also at landfills or in agriculture. RCB Machine Pvt Ltd started making road roller 10 year ago. Company increased its production uniformly by fixed number every year. The company produces 800 roller in the 6th year and 1130 roller in the 9th year.  On the basis of the above information, answer the following questions : (i) What was the company's production in first year? (ii) What was the increase in the company's production every year? (iii) In which year the company's production was 1350 rollers? or What was the company's production in the 8th year?	 **1** **1** **2**