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TERM 1

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

PRACTICE PAPER 01

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	7
2.	Unit 2 Algebra	Polynomials Linear Equation In 2 Var. Quadratic Equation Arithmetic Expression	25
3.	Unit 3 Geometry	Similar Triangles Circles	18
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.

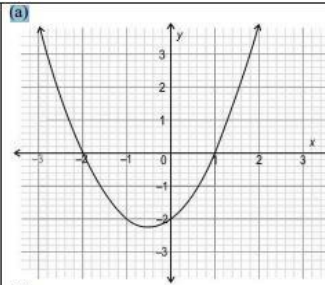
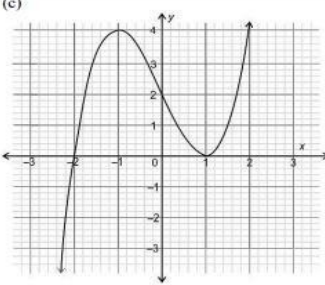
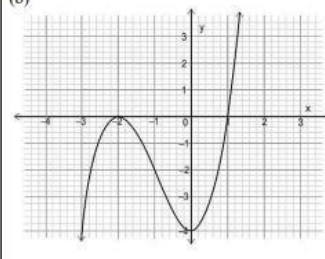
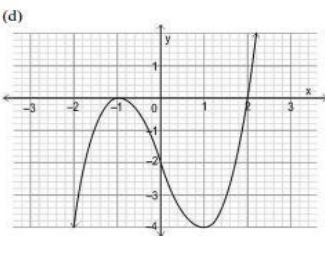
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GENERAL INSTRUCTIONS

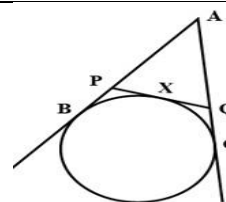
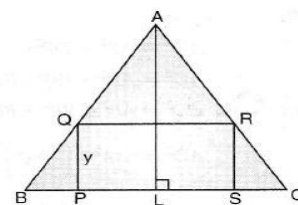
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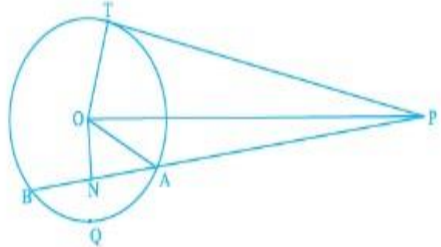
READ CAREFULLY ALL INSTRUCTIONS

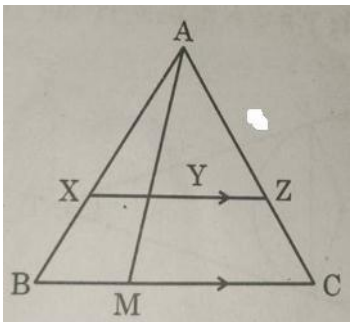
1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated 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

Section A Consists of 20 questions of 1 mark each.		
1	Three bells ring at intervals of 10, 15, and 24 minutes, respectively. The three bells ring together at 12 am. At what time will they ring together next? (a) 1 am (b) 1.30 am (c) 2 am (d) 2.30 am	1
2	Which of the following could be the graph of the polynomial? $(x - 1)^2 (x + 2)$?  (a)  (c)  (b)  (d)	1
3	If one of the zeroes of a quadratic polynomial of the form $x^2 + ax + b$ is the negative of the other, then it? (a) has no linear term and the constant term is negative. (b) has no linear term and the constant term is positive. (c) can have a linear term but the constant term is negative. (d) can have a linear term but the constant term is positive.	1
4	If the system of equations: $3x + y = 1$ & $(2k - 1)x + (k - 1)y = 2k + 1$ is inconsistent, then $k =$? (a) 1 (b) 2 (c) -1 (d) -2	1
5	The pair of equations of lines $x = 0$ and $x = -7$ has (a) One solution (b) Two solutions (c) Infinitely many solutions (d) No solution	1
6	If the roots of the equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal, then (a) $ac = bd$ (b) $ab = cd$ (c) $ad = bc$ (d) all are true	1
7	Let p be the prime number the quadratic equation having its root as the factor 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
8	If n^{th} term of the AP: 131, 128, 125, ... is the first negative term. What is n ? (a) 42 (b) 41 (c) 40 (d) 45	1
9	Express $\sec \theta$ in term of $\cot \theta$? (a) $\frac{\sqrt{1 - \cot^2 \theta}}{\cot \theta}$ (b) $\frac{\sqrt{1 + \cot^2 \theta}}{\cot \theta}$ (c) $\frac{\cot \theta}{\sqrt{1 - \cot^2 \theta}}$ (d) $\frac{\cot \theta}{\sqrt{1 + \cot^2 \theta}}$	1
10	In ΔABC right angled at B, Given $15 \cot A = 8$, $\sin A \cos C - \cos A \sin C =$? (a) 1 (b) $\frac{9}{17}$ (c) $\frac{160}{289}$ (d) $\frac{161}{289}$	1

11	If $x\sin^3\theta + y\cos^3\theta = \sin\theta \cos\theta$ and $x\sin\theta = y\cos\theta$, then find $x^2 + y^2 - 1 = ?$ (a) 1 (b) 2 (c) 3 (d) 0	1
12	If $x = r \sin A \cos C$, $y = r \sin A \sin C$ and $z = r \cos A$, then find $x^2 + y^2 + z^2 = ?$. (a) $3r^2$ (b) $r^2 + 3$ (c) $3r^2 + 3$ (d) r^2	1
13	A girl of height 90 cm is walking away from the base of a lamp - post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds? (a) 155 cm (b) 157 cm (c) 160 cm (d) 162 cm	1
14	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,-1) (b) (2,5) (c) (2,-5) (d) (2,1)	1
15	ABCD is a trapezium in which $AB \parallel DC$ and P, Q are points on AD and BC respectively s.t. $PQ \parallel DC$. If PD = 18 cm, BQ = 35 cm and QC = 15 cm, find AD. (a) 50 cm (b) 55 cm (c) 60 cm (d) 65 cm	1
16	ABC is an isosceles triangle in which $AB = AC = 10$ cm and $BC = 12$ cm PQRS is a rectangle inside the isosceles triangle such that P on AB and $PQ = SR = y$ and $PS = QR = 2x$ (a) $4x + 3y = 24$ (b) $3x - 4y = 24$ (c) $3x + 4y = 24$ (d) $4x - 3y = 24$	1
17	If a, b, c are the sides of a right triangle where c is the hypotenuse the radius r of the circle which touches the sides of the triangle, then diameter of circle is : (a) $a + b - c$ (b) $a + b + c$ (c) $a + c - b$ (d) $c + b - a$	1
18	If AB, AC, PQ are tangents in the figure and $AB = 5$ cm. The perimeter of $\triangle APQ$ is (a) 8 cm (b) 10 cm (c) 12 cm (d) 15 cm	1
19	Statement A (Assertion): HCF of $3x$ and $5x$ is equal to 5. only true for $x = 5$. Statement R (Reason) : Product of LCM and HCF is always equal to Product of all numbers. (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): The distance between the points P(2, -4) and Q(10, y) is 10. then y must equal to 2 only. Statement R (Reason) : The point (0, -6) divides the line segment joining the points (2, -4) and (-7, -13) in the ratio 2 : 7 internally. (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	Places A and B are 100 km apart on a highway. One car starts from A and another from B at the same time. If the cars travel in the same direction at different speeds, they meet in 5 hours. If they travel towards each other, they meet in 1 hour. What are the speeds of the two cars?	2
22	Prove that $\sqrt{7}$ is an irrational number.	2
23	If all three angles of a triangle are in AP, smaller is half of greatest angles then find them.	2
24	Find the ratio in which line segment joining A (1, -5) and B (-4, 5) is divided by the y-axis. Also, find the coordinates of the point of division. OR Ravi and Raju are sitting on the corner of a line segment (-1, 4) and (-3, -2). Their mother gives them a task to divide the line segment into three equal parts. Find the coordinates of the points which divide the line segment into desired part.	2
25	If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$, show that $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$. OR If A, B, C are the angles of a triangle and $\cos (B+C-A) = \frac{\sqrt{3}}{2}$, $\sin (C+A-B) = \frac{\sqrt{3}}{2}$, find the values of A, B and C?	2
Section C Consists of 5 questions of 3 marks each.		
26	find the least Number which leaves remainder 8 and 12 when divided by 28 and 32 respectively.	3
27	If α and β are the zeros of the quadratic polynomial $p(y) = y^2 - \frac{7y}{5} + \frac{1}{5}$, find α and β ? also verify the relationship between zeros and its coefficient?	3
28	The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class.	3
29	ABCD is a parallelogram . AB is divided at P and CD at Q so that AP : PB = 3 : 2 and CQ : QD = 4 : 1 . If PQ meets AC at R then prove that $AR = \frac{3}{7} AC$. OR two poles of height a metres and b metres are p metres apart. If the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is given c metres. then prove $\frac{1}{c} = \frac{1}{a} + \frac{1}{b}$.	3
30	If the point (x, y) is equidistant from the points (a + b , b - a) and (a - b , b + a), prove that bx = ay	3
31	PQ is a chord of length 8 cm of a circle of radius 5 cm with centre O. The tangents at P and Q intersect at a point T. Find the length TP. OR from an external point P, a tangent PT and a line segment PAB is drawn to a circle with centre O. ON is perpendicular on the chord AB. Prove that:- (a) $PA \times PB = PT^2$ (b) $PA^2 - AN^2 = OP^2 - OT^2$ (c) $PA \times PB = PT^2$ 	3
Section D Consists of 4 questions of 5 marks each.		

32	A peacock is sitting on the top of a pillar, which is 9 m high. From a point 27 m away from the bottom of the pillar a snake is coming to its hole at the base of the pillar. Seeing the snake the peacock pounces on it. If their speeds are equal, at what distance from the whole snake is it caught?	5
33	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. Also Find the length of XY, if in the given figure, XZ is parallel to BC. AZ = 3 cm, ZC = 2 cm, BM = 3 cm and MC = 5 cm.	5 
34	(a) If $\sin \theta + \sin^2 \theta = 1$, then find the value of $\cos^{12} \theta + 3\cos^{10} \theta + 3\cos^8 \theta + \cos^6 \theta - 2\cos^4 \theta - 2\cos^2 \theta + 2$? (b) $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$. OR (a) If $5\sin \theta + 3\cos \theta = 5$, then find the value of $5\cos \theta - 3\sin \theta$? (b) $\left(\frac{(1 - \tan A)}{(1 - \cot A)} \right)^2 = \tan^2 A$	5
35	From an aeroplane vertically over a straight horizontal road, the angles of depression of two consecutive milestones on opposite sides of the aeroplane are observed to be 30degree and 45 degree. find the height in miles of aeroplane ?. OR A round balloon of radius r subtends an angle α at the eye of the observer while angle of elevation of its centre is β .Then the height of the centre of the balloon is $r \sin \beta \operatorname{cosec} \frac{\alpha}{2}$.	5
Section E CASE BASE STUDY Consists of 3 questions of 4 marks each.		
36	A thief , after committing a theft , runs on his bike at a speed of 43 m/min and his speed by 2m/min every succeeding minute . After 3 minutes, a policeman runs on his jeep to catch him. He goes 70m in the first min and increases his speed by 5 m/min every succeeding minute. (a) Find the n^{th} term for thief ? (b) Find the sum of n^{th} term for policeman ? (c) After how many minutes policeman will catch the thief ? OR (d)If policeman runs on his jeep with uniform speed. Then after how many minutes he will catch the thief ?	 1 1 2

37	The lower window of a house is at height of 2m above the ground and its upper window is 4m vertically above the lower window. At certain instant the angles of elevation of a balloon from these windows are observed to be 60° and 30°, respectively. height of the balloon above the ground is h metre. (a) Find the distance of the balloon from the lower window ? (b) Find the distance of the balloon from the upper window ? (c) Find the height of the balloon above the ground? OR (d) Find the height of the balloon above the lower window?	1 1 2
38	If Arjun (A), Bablu (B), Chetan (C) and Deepak (D) are sitting on the corner of square plot ABCD respectively. The two opposite vertices of a square plot ABCD are $A(-1, 2)$ and $C(3, 2)$ are shown in the below figure. Then (a) Find the distance between Bablu and Deepak ? (b) Find the distance between Chetan and Deepak ? (c) Find the co-ordinate of point Bablu ? OR (d) Find the co-ordinate of point Deepak ?	1 1 2

