

X
TERM 1

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

PRACTICE PAPER 02

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	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.

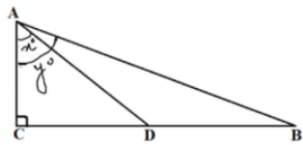
MM:80

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

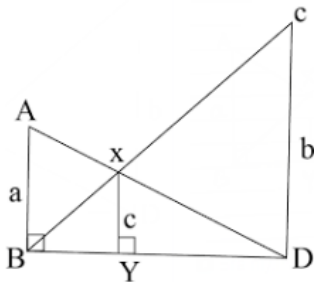
Section A Consists of 20 questions of 1 mark each.		
1	The point of intersection of lines : $x = -3$ and $y = 0$ is : (a) $(0, -3)$ (b) $(-3, 0)$ (c) $(0,0)$ (d) none of these	1
2	If 2 is root of the equation $x^2 + bx + 12 = 0$, then the value of b is : (a) -8 (b) 8 (c) -2 (d) none of these	1
3	If $\sec \theta - \tan \theta = 1/3$, then the value of $(\sec \theta + \tan \theta)$ is : (a) $-1/3$ (b) 9 (c) -9 (d) none of these	1
4	The quadratic polynomial whose roots are $2 + \sqrt{3}$ and $2 - \sqrt{3}$ is : (a) $x^2 + 4x + 1$ (b) $x^2 - 4x + 1$ (c) $x^2 - 4x - 1$ (d) none of these	1
5	The HCF of 96 and 408 is 24 , then LCM is : (a) 408 (b) 1632 (c) 816 (d) none of these	1
6	Solve x by factorization : $(x - 1)^2 - 5(x - 1) - 6 = 0$ (a) 0,7 (b) 0,0 (c) 1,7 (d) 1,1	1
7	The value of $\sqrt{12\sqrt{12 + \sqrt{12 + \dots \dots \dots \infty}}}$ is (a) 4 (b) 3 (c) 2 (d) 3.5	1
8	In the given fig, D is the mid point of BC ,then value of $\frac{\cot y^\circ}{\cot x^\circ}$  (a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$	1
9	The value of $(1 + \cos A)(1 - \cos A) \operatorname{cosec}^2 A$ is (a) 1 (b) 2 (c) 3 (d) 5	1
10	The point of intersection of the line represented by $3x - y = 3$ and y – axis is given by (a) $(0, -3)$ (b) $(0, 3)$ (c) $(1,0)$ (d) $(-1, 0)$	1
11	The coordinates of the vertex S of a rectangle BEST whose three vertices are given as $B(0,0)$, $E(3,0)$ and $T(0,4)$ are : (a) $(4,0)$ (b) $(3,4)$ (c) $(0,3)$ (d) $(4,3)$	1
12	The ratio in which the x – axis divides the line segment joining the points $A(-6,5)$ and $B(-4, -1)$ is : (a) 1:5 (b) 1: 7 (c) 5: 1 (d) 7: 1	1
13	In ΔABC is a right angled at B , if $\tan A = \sqrt{3}$, then $\cos A \cos C + \sin A + \sin C =$ (a) -1 (b) 0 (c) 1 (d) $\frac{\sqrt{3}}{2}$	1
14	A point (x,y) is at a distance of 5 units from the origin,How many such points lie in the third quadrant ? (a) 0 (b) 1 (c) 2 (d) indefinitely many	1
15	If $\Delta ABC \sim \Delta PQR$ such that $\angle A = 31^\circ$ and $\angle R = 69^\circ$, then $\angle Q$ is (a) 70° (b) 100° (c) 90° (d) 80°	1
16	In $\Delta ABC \sim \Delta PQR$. If AM and PN are altitudes of ΔABC and ΔPQR respectively and $AB^2 : PQ^2 = 4 : 9$, then $AM : PN =$ (a) 3 : 2 (b) 16 : 81 (c) 4 : 9 (d) 2 : 3	1
17	The end points of a diameter of a circle are $(2, 4)$ and $(-3, -1)$.The radius of the circle is (a) $2\sqrt{5}$ (b) $\frac{5}{2}\sqrt{5}$ (c) $\frac{5}{2}\sqrt{2}$ (d) $5\sqrt{5}$	1
18	Which of the following is a quadratic polynomial with zeroes $\frac{5}{3}$ and 0 ? (a) $3x(3x - 5)$ (b) $3x(x - 5)$ (c) $x^2 - \frac{5}{3}$ (d) $\frac{5}{3}x^2$	1
19	Statement A(Assertion) : The largest number that divide 70 and 125 which leaves remainder 5 and 8 is 13 .	1

	Statement R (Reason) : HCF (65 ,117) = 13 (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	
20	Statement A(Assertion) : The mid point of the line segment joining the points A (3,4) and B(k , 6) is P (x,y) and $x + y - 10 = 0$, the value of k is 7 Statement R (Reason) : Midpoint of line segment is $\left(\frac{x_1+x_2}{2} + \frac{y_1+y_2}{2} \right)$ (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	For which value of k will the following equations have no solution ? $3x + y = 1 , (2 k - 1) x + (k - 1) y = 2k + 1 .$ or For which value of k will the following equations have infinitely many solutions ? $kx + 3y = k - 3 , 12x + ky = k .$	2
22	Find the value of k for which the quadratic polynomial $kx^2 + x + k$ has equal zeroes .	2
23	Find the point on the y – axis which is equidistant from the points (5 , -2) and (-3 , 2) . or Find the co – ordinates of one of the points of trisection of the of the line segment joining the points (12,0) and (-6 ,15)	2
24	Find the value of x , given $\sin 2x = \sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ$.	2
25	In the fig. PQR and QST are two right angles ,right angles at R and T respectively. Prove that $QR \times QS = QP \times QT$	2
Section C Consists of 5 questions of 3 marks each.		
26	Evaluate : $\frac{\tan^2 60^\circ + 4\sin^2 45^\circ + 3 \sec^2 30^\circ + 5 \cos^2 90^\circ}{\operatorname{cosec} 30^\circ + \sec 60^\circ - \cot^2 30^\circ}$.	3
27	E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F . Show that $\triangle ABE \sim \triangle CFB$.	3
28	Prove that $\frac{5\sqrt{3}}{\sqrt{2}}$ is an irrational number.	3
29	Solve the quadratic equation $2\left(\frac{2x-1}{x+3}\right) - 3\left(\frac{x+3}{2x-1}\right) = 5 , x \neq -3 , \frac{1}{2} .$ or If the equation $(1 + m^2)x^2 + 2mcx + c^2 - a^2 = 0$ has equal roots then show that $c^2 = a^2 (1 + m^2)$.	3

30	If α, β are the zeroes of the polynomial $f(x) = x^2 - (k - 6)x + (2k + 1)$, find the value of k , if the sum of zeroes equals the product of zeroes.	3
31	The sum of the digits of a two digit number is 8 .If 18 is added to the number ,then the digits interchange their places .Find the number . or For what values of a and b , the following pair of equations will have indefinitely many solutions ? $x + 2y = 1$; $(a - b)x + (a + b)y = a + b - 2$	3

Section D

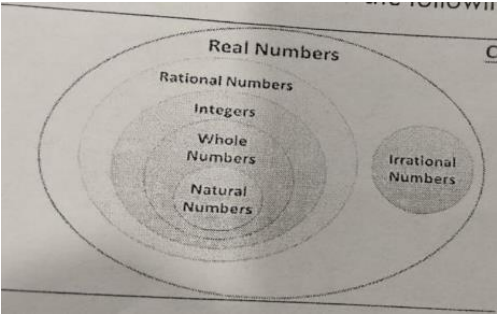
Consists of 4 questions of 5 marks each.

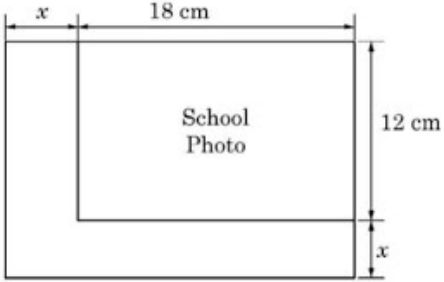
32	Point P divides the line segment joining the points A(-1 , 3) and B (9,8) such that AP : PB = k : 1 .If P lies on the line $x - y + 2 = 0$,find the value of k .Also find the coordinates of point P.	5
33	Prove the identities : $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$ Or $\left(\frac{1+\tan^2 A}{1+\cot^2 A}\right) = \left(\frac{1-\tan A}{1-\cot A}\right)^2 = \tan^2 A$	5
34	A boy standing on a horizontal plane finds a bird, flying at a distance of 100 m from him at an elevation of 30° . A girl standing on the roof of a 20 m high building finds the angle of elevation of the same bird to be 45° . Both the boy and the girl are on the opposite side of the bird. Find the distance of the bird from the girl. Or A vertical tower stands on a horizontal plane and surmounted by a vertical flagstaff of height 'h' .At a point on the plane ,the angles of elevation of the bottom and the top of the flagstaff are α and β respectively .Prove that the height of the tower is $\frac{h \tan \alpha}{(\tan \beta - \tan \alpha)}$	5
35	In the figure , if $\angle ABD = \angle XYD = \angle CDB = 90^\circ$, AB = a , XY = c and CD = b ,then prove that $c(a + b) = ab$. 	5

Section E

CASE BASE STUDY

Consists of 3 questions of 4 marks each.

36	Kumar has made a project on real numbers, where he finely explained the applicability of exponential laws and divisibility conditions on real numbers. He also included some assessment questions at the end of his project as listed below. Answer the following questions: (i) two bells toll at intervals of 12, 15 minutes respectively. If they toll together at 9am , after how much time will they next toll together. (ii) HCF of two numbers is 27 and their LCM is 162. If one of the number is 54. Find the other.		1 1
-----------	--	--	--------------------------

	(iii) if the HCF of 85 and 153 is expressible in the form $85n - 153$, then find the value of n .	2
37	Raj and Ajay are very close friends. Both the families decide to go to Ranikhet by their own cars. Raj's car travels at a speed of x km/h while Ajay's car travels 5 km/h faster than Raj's car. Raj took 4 hours more than Ajay to complete the journey of 400 km. (i) What will be the distance covered by Ajay's car in two hours in terms of x ? (ii) What is the speed of Raj's car? or How much time did Ajay take to complete the journey ? (iii) What is the speed of Ajay's car ?	 1 2 1
38	While designing the school year book, a teacher asked a student that the length and width of a particular photo are increased by X units each to double the area of the photo. The original photo is 18 cm long and 12 cm wide. Based on the above information, answer the following questions. (i) Write an algebraic equation, depicting the above information. (ii) write the corresponding quadratic equation in standard form. (iii) What should be the new dimensions of the enlarged photo? Or Can any rational value of x make the new area equal to 220 cm^2 ?	 1 1 2