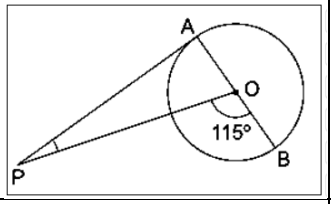
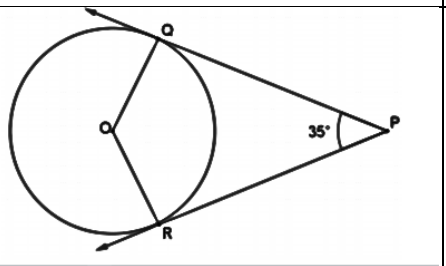
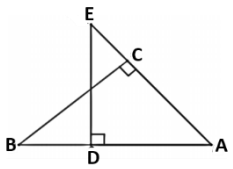
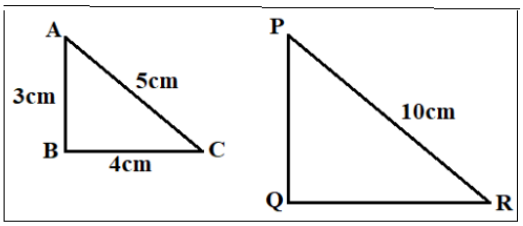
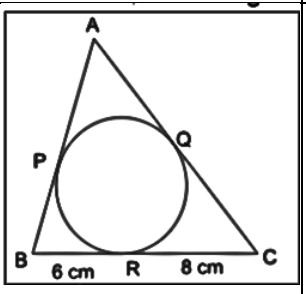
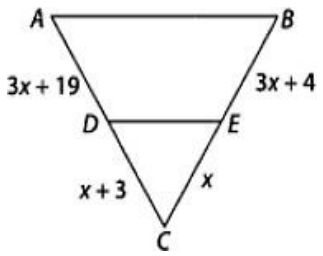
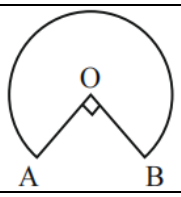
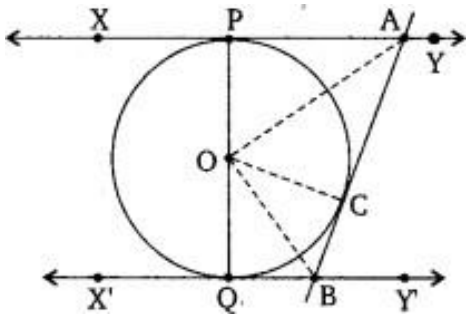
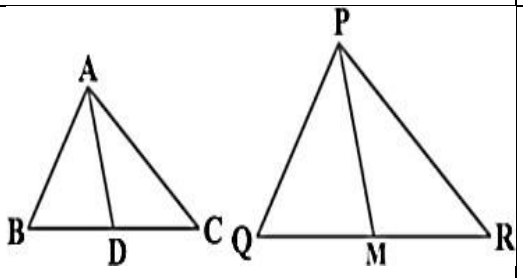
KENDRIYA VIDYALAYA, ERNAKULAM REGION
PRE-BOARD-PRACTICE TEST I 2026-27
Class- X Time: 3 Hrs Sub- MATHEMATICS (BASIC - 241) M.M :80

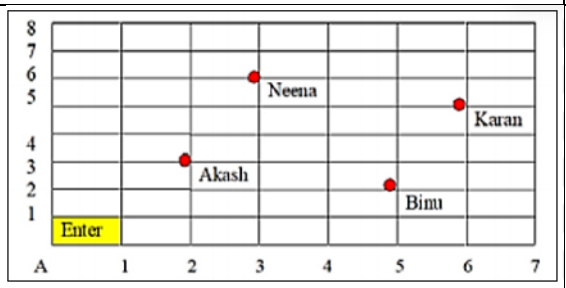
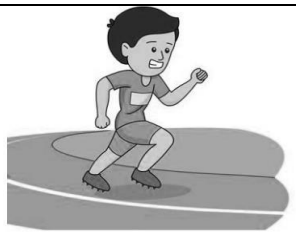
GENERAL INSTRUCTIONS:
1. This Question Paper has 5 Sections A-E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with subparts 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 π =22/7 wherever required if not stated.

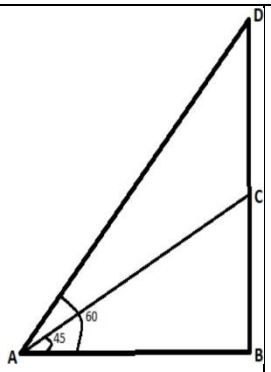
	SECTION A	
SN	Section A consists of 20 questions of 1 mark each.	MARKS
1	HCF of the smallest prime number and the smallest 2 digit number is (a) 2 (b) 1 (c) 10 (d) 20	1
2	In the given figure, PA is a tangent from an external point P to a circle with centre O and diameter AB. If ∠POB=115°, then measure of ∠APO is  A) 25° B) 30° C) 20° D) 65^0	1
3	If the quadratic equationis $3x+\frac{1}{x}=x+3$ written in standard form, then (a) a=3, b=3, c=1 (b) a=3, b=-3, c=1 (c) a=2, b=-3, c=1 (d) a=3, b=-3, c=3	1
4	For what value of m will m + 4, 2m – 2 and 5m + 6 are the consecutive terms of an A.P.? (a) -6 (b) -1 (c) 6 (d) -14	1
5	In the given figure, PQ and PR are tangents to a circle centred at O. If ∠QPR=35^0 then ∠QOR is equal to  (a) 70^0 (b) 90^0 (c) 135^0 (d) 145^0	1
6	If one zero of the polynomial f(x)= $2x^2-7x+k$ is the reciprocal of the other, what is the value of k ? (a) 2 (b)-2 (c) 1 (d) -1	1
7	Point (x, y) is at distance of 5 units from the origin. How many such points lie in the third quadrant? (a) 0 (b) 1 (c) 2 (d) infinitely many	1

8	If P(2, 4), Q(0, 3), R(3, 6) and S(5, y) are the vertices of a parallelogram PQRS, then the value of y is (a) 8 (b) 7 (c) -8 (d) -7	1
9	Which of the following statements is not true? (a) A number of secants can be drawn at any point on the circle. (b) Only one tangent can be drawn at any point on a circle. (c) A chord is a line segment joining two points on the circle (d) From a point inside a circle only two tangents can be drawn.	
10	In the given figure, ΔBAC is similar to (a) ΔAED (b) ΔEAD (c) ΔACB (d) ΔBCA 	1
11	If in ΔABC and ΔDEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar , when (a) ∠B=∠E (b) ∠A=∠D (c) ∠B=∠D (d) ∠A=∠F	1
12	A bus stop P divides the route joining A(1,2) and B(7,8) internally in the ratio 1:2 What are the coordinates of P? (a) (2,3) (b) (3,4) (c) (4,5) (d) (5,6)	1
13	ΔABC~ΔPQR, then perimeter of the triangle PQR (in cm) is (a) 12 (b) 24 (c) 18 (d) 20 	1
14	The minute hand of a clock is 7 cm long. Find the area of the face of the clock described by minute hand in 30 minutes. (a)154 Sq cm (b)38.5 Sq cm (c)105 Sq cm (d)77 Sq cm	1
15	The surface area of the two spheres are in the ratio 1 : 2. The ratio of their volumes is : (a) √2: 1 (b) 1 : 2√2 (c) 1 : 8 (d) 1 : 4	1
16	Find the Total Surface Area of a hemispherical solid having radius 7 cm. (a) 624 (b) 642 (c) 426 (d) 462	1
17	Two parallel lines touch the circle at points A and B respectively. If area of the circle is 25π cm^2 , then AB is equal to (a)5 cm (b) 8 cm (c) 10 cm (d) 25 cm	1
18	If perimeter of given triangle is 38 cm, then length AP is equal to (a)19 cm (b) 5 cm (c) 10 cm (d)8 cm 	1

	DIRECTION: In the question number 19 and 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option (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
19.	**Assertion (A):** The point (–1, 6) divides the line segment joining the points (–3, 10) and (6, –8) in the ratio 2 : 7 internally. **Reason (R):** Distance between 2 points is given by $d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$	1
20	Assertion (A): If $\cos A + \cos^2 A = 1$, then $\sin^2 A + \sin^4 A = 1$ Reason (R): $\sin^2 A + \cos^2 A = 1$	1
	SECTION B	
	Section B consists of 5 questions of 2 marks each.	
21	Solve the following pair of equations: $49x + 51y = 499$ $51x + 49y = 501$	2
22a)	Will 6^n end in zero? Explain OR	2
b)	Explain how $7 \times 3 \times 5 \times 11 + 3 \times 11$ is a composite number?	
23	Evaluate $\frac{\tan^2 60}{\sin^2 60 + \cos^2 60}$ OR If $\tan\theta + \cot\theta = 5$, find the value of $\tan^2\theta + \cot^2\theta$.	2
24	Find the value of x for which DE || AB is given 	2
25	In the given figure, the shape of the top of a table is that of a sector of a circle with centre O and <AOB = 90°. If AO = OB = 42 cm, then find the perimeter of the top of the table.. 	2
	SECTION C	
	Section C consists of 6 questions of 3marks each.	

26	Prove that $3-2\sqrt{5}$ is irrational	3
27 a) b)	Find the zeroes of $p(x) = 2x^2 - x - 6$ and verify the relationship of zeroes with these co-efficients. OR Find the quadratic polynomial whose zeroes are -2 and -5. Verify the relationship between zeroes and coefficients of the polynomial.	3
28 a) b)	A fraction becomes $\frac{5}{7}$ if 2 is added to both numerator and denominator. If 1 is subtracted from both, it becomes $\frac{1}{2}$. Find the fraction. OR Solve graphically : $x - 2y = 0$ $3x + 4y = 20$	3
29	If $\sin(A+2B) = \frac{\sqrt{3}}{2}$ and $\cos(A+4B) = 0$. $A>B$ and $(A+4B) \leq 90$ .Find A and B	3
30	In figure, XY and X′ Y′are two parallel tangents to a circle , x with centre O and another tangent AB with point of contact C intersecting XY at A and X′Y′at B. Prove that ∠AOB = 90°. 	3
31	A cylindrical bottle containing medicine has radius 3.5cm and height 20 cm. It is filled to $\frac{3}{4}$ of its capacity . Find the volume of medicine in the bottle. Use $\pi = \frac{22}{7}$	3
	SECTION D	
	Section D consists of 4 questions of 5 marks each.	
32a) b)	A shopkeeper buys some books for 80. If he had bought 4 more books for the same amount, each book would have cost ₹1 less. Find the number of books he bought. OR A train travels 180 km at a uniform speed. If the speed had been 9 km/hour more, it would have taken 1 hour less for the same journey. Find the speed of the train	5
33	State and Prove Thales theorem OR If AD and PM are medians of triangles ABC and PQR, respectively where $\Delta ABC \sim \Delta PQR$ Prove that $\frac{AB}{PQ} = \frac{AD}{PM}$. 	5

34	Prove the identity: $\frac{CosA-Sin\ A+1}{CosA+Sin\ A-1} = Cosec\ A + Cot\ A$	5
35	A solid toy is in the form of a hemisphere surmounted by a right circular cone of height 2cm and diameter of base 4cm. If a right circular cylinder circumscribes the toy, find the difference of the volumes of the cylinder and the toy. [Use π = 3.14]	5
	SECTION E	
	Section E consists of 3 questions of 4 mark each.	
36	Read the text carefully and answer the questions: Karan went to the Lab near to his home for COVID 19 test along with his family members. The seats in the waiting area were as per the norms of distancing during this pandemic (as shown in the figure). His family member took their seats surrounded by circular area.  (a)What is the distance between Neena and Karan? (b) What are the coordinates of seat of Akash? OR Find distance between Binu and Karan.	
37	Aditya is a fitness freak and great athlete. He always wants to make his nation proud by winning medals and prizes in the athletic activities. An upcoming activity for athletes was going to be organised by Railways. Aditya wants to participate in 200 m race. He can currently run that distance in 51 seconds. But he wants to increase his speed, so to do it in 31 seconds. With each day of practice, it takes him 2 seconds less.  (i) He wants to makes his best time as 31 sec. In how many days will be able to achieve his target? (ii) a)What will be the difference between the time taken on 5^{th} and 7^{th} day. OR (ii) b)Which term of the arithmetic progression 3, 15, 27, 39 will be 120 more than its 21^{st} term? iii) How many days would he have taken if he had started with 52sec and takes 3 sec less with each day of practice? (c) What will be the coordinates of a point exactly between Akash and Binu	

38	A flagstaff stands on the top of a 5-meter-high tower. From a point on the ground the angle of elevation of the top of the flag staff is 60° and from the same point the angle of elevation of the top of the tower is 45°.Based on the above, answer the following questions:  i. What is the distance of the point from the foot of the tower? ii. What is the height of the flagstaff? iii. (a) If at some other point, the top of tower's angle of elevation is 30°, then find the distance of this new point from the foot of the tower. OR (b) Find the distance between the top of the tower and the point at which the angle of elevation of the top of tower is 30°	