PRE BOARD Mock Test 1 (SESSION-2025-26)
Class X Mathematics(041)

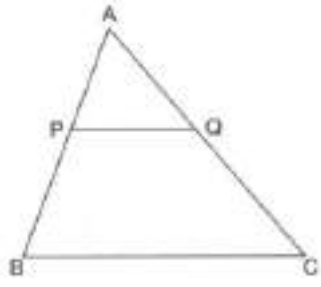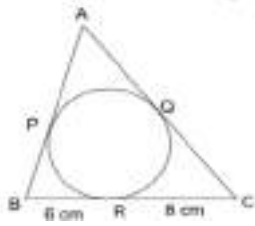**TIME: 3 HOURS**   **MAX. MARKS: 80**
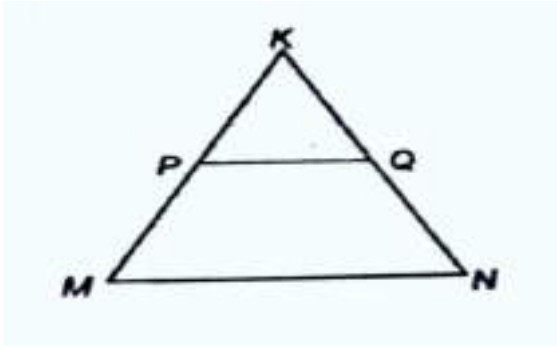
GENERAL INSTRUCTIONS:
1. This question paper has 5 sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 2 marks each.
4. Section C has 6 questions carrying 3 marks each.
5. Section D has 4 questions carrying 5 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each.
7. All questions are compulsory. However, an internal choice in 2 questions of 2 marks, 2 questions of 3 marks and 2 question of 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.
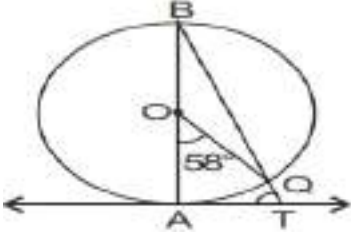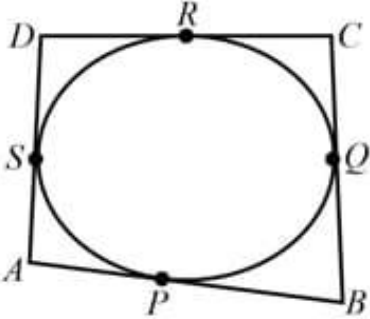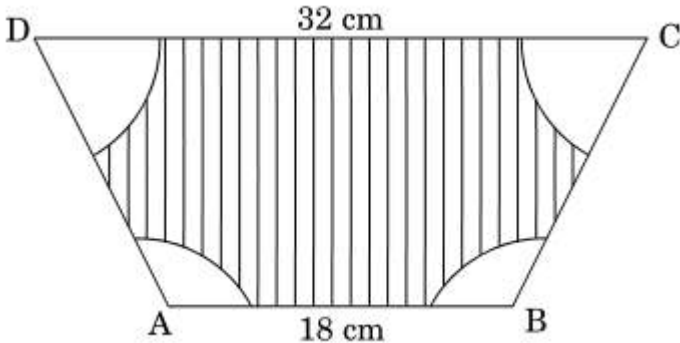
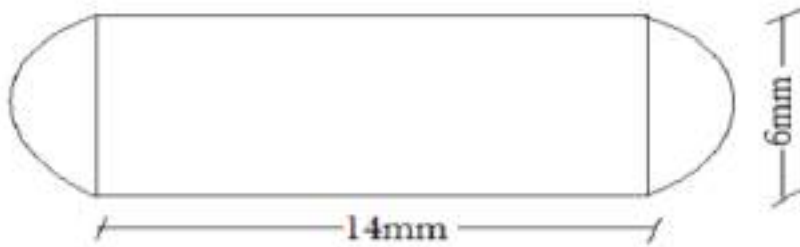|	SECTION A	
	Section A consists of 20 questions of 1 mark each.	
1.	The HCF and the LCM of 12, 21 ,15 respectively is (a)3 ,140 (b) 12, 420 (c) 3, 420 (d) 420,3	1
2.	Which of the following quadratic polynomials has zeroes that are equal and real? (a) $x^2 + 2x + 3$ (b) $x^2 + 4x + 4$ (c) $x^2 + 3x + 5$ (d) $x^2 - 2x + 5$	1
3.	A sector is cut from a circle of radius 21 cm. The angle of the sector is 150°. Find the length of the arc (a) 44 cm (b) 55 cm (c) 69 cm (d) 79 cm	1
4.	If a $=x^3y^2z^2$, b= $x^2y^2z^3$, and c=$x^3y^2z^n$ and the LCM (a,b,c) = $x^3y^2z^5$ then the value of n is: (a) 3 (b) 2 (c) 5 (d) 1	1
5.	A fraction becomes 1/ 3 when 1 is subtracted from the numerator and it becomes 1 /4 when 8 is added to the denominator. The fraction is: (a) 3 /12 (b) 4 /12 (c) 5 /12 (d) 7 /12	1
6.	If the roots of the equation ax^2+bx+c= 0 , a≠0 are real and equal then which of the following relation is true? a) $a=b^2 / c$ b) $b^2=ac$ c) $ac=b^2 /4$ d) $c=b^2/ a$	1

7.	In figure, $PQ \parallel BC$. Find the length of side AC, given that PB = **6** cm , AP = **4** cm and AQ =**8** cm.	1
	a) 12 cm b) 20 cm c) 6 cm d) 14 cm	
8.	The distance of the point (−1,7) from x−axis is a) −1 b) 7 c) 6 d) √50	1
9.	If the points A(4, 3) and B(x, 5) lies on a circle with the centre O(2,3) then the value of x is (a) 1 (b) 3 (c) 2 (d) 9	1
10.	If cosec θ – cot θ = 1/ 3 , the value of (cosec θ + cot θ) is (a) 1 (b) 2 (c) 3 (d) 4	1
11.	If sin θ – cos θ = 0, then the value of (sin⁴ θ + cos⁴ θ) is (a) 1 (b) 1 / 2 (c) 3 /4 (d) 1 /4	1
12.	If the area of the base of a right circular cone is 51cm² and it's volume is 85 cm³ , then the height of the cone is given as (a) 5 /6 cm (b) 5 /3 cm (c) 5/ 2 cm (d) 5cm	1
13.	One card is drawn from a well-shuffled deck of 52 cards. What is the probability of getting a face card? (a) 1 /26 (b) 2 /13 (c) 1/ 13 (d) 3/13	1
14.	The mode and mean of the data are 15x and 18x, respectively. Then the median of the data is (a) x (b) 11x (c) 17x (d) 34x	1
15.	A rectangular sheet of paper 40cm x 22cm, is rolled to form a hollow cylinder of height 40cm. The radius of the cylinder (in cm) is: (a) 3.5 (b) 7 (c) 80/7 (d) 5	1
16.	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
17.	In $\triangle ABC$ and $\triangle DEF$, ∠B = ∠E , ∠F = ∠C and AB =**3**DE. Then the two triangles are a) Congruent but not similar b) Neither congruent nor similar c) similar but not congruent d) congruent as well as similar	1

18.	Cards bearing numbers 2, 3, 4, ..., 11 are kept in a bag. A card is drawn at random from the bag. The probability of getting a card with a prime number is (a)1/ 2 (b)2 / 5 (c) 3/ 10 (d) 5 / 9	1
	DIRECTIONS: 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.	
19.	Assertion (A): The number 12^n cannot end with the digit 0, where n is a natural number Reason (R): A number ends with 0, if its prime factorization contains both 2 and 5	1
20.	Assertion (A): $\sin^2 67 + \cos^2 67 = 1$ Reason (R): For any value of θ ,$\sin^2 θ + \cos^2 θ = 1$	1

SECTION B	
Section B consists of 5 questions of 2 marks each.	

21.	A man receives Rs. 60 for the first week and Rs. 3 more each week than the preceding week. How much does he earn by the 20th week? Or If the number x +3,$2x$ +1 and x−7 are in AP find the value of x.	2
22.	In Figure, PQ is parallel to MN. If KP / PM = 4 /13 and KN = 20.4 cm. Find KQ. 	2
23.	If x = a cos θ – b sin θ and y = a sin θ + b cos θ, then prove that $a^2 + b^2 = x^2 + y^2$ Or If cos A = 2/5, find the value of $4 + 4 \tan^2 A$	2

24.	In given figure, AB is the diameter of a circle with centre O and AT is a tangent. If ∠AOQ = 58°, find ∠ATB.	2
25.	The minute hand of a clock is 14 cm long. Find the area on the face of the clock described by the minute hand in 5 minutes.	2

SECTION C		
Section C consists of 6 questions of 3 marks each.		
26.	Prove that 3 + 2√5 is irrational.	3
27.	Find the zeroes of the quadratic polynomial $4x^2 - 4x + 1$ and verify the relationship between the zeroes and the coefficients. Or, Find a quadratic polynomial whose zeroes are three times the zeroes of P(x) = 2x²+7x+6	3
28.	A part of monthly hostel charges in a college is fixed and the remaining depends on the number of days one has taken food in the mess. When a student 'A' takes food for 22 days, he has to pay Rs.1380 as hostel charges. Whereas a student 'B' who takes food for 28 days, pays Rs. 1680 as hostel charges. Find the fixed charges and the cost of food per day. Or A two digit number is such that product of its digits is18 and if 63 is subtracted from it the digits got interchanged. Find the number	3
29.	If sin θ = 1/ 2 , then show that 3cos θ – 4 cos^3θ = 0	3
30.	A corporation of Amaravathi city has allocated a parallelogram ABCD shaped land to construct a circular cricket stadium touching all the sides of ABCD to BCCI. Show that ABCD is a rhombus and find its area if AC = 2.5 km and BD = 3.2 km. 	3

31.	A box contains 19 balls bearing numbers 1, 2, 3, ..., 19. A ball is drawn at random from the box. What is the probability that the number on the ball is	3

	(i) a prime number
	    (ii) divisible by 3 or 5
	    (iii) neither divisible by 5 nor by 10	

<div align="center">SECTION D</div>

<div align="center">Section D consists of 4 questions of 5 marks each.</div>

32.	The side of a square exceeds the side of another square by 4 cm and the sum of the areas of the two squares is 400 cm^2. Find the sides of the squares.	5
33.	(i)Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio. (ii) ABCD is a trapezium in which AB//DC and its diagonals intersect each other at the point O. Show that AO/BO=CO/DO.	3+2
34.	A farmer has a field in the shape of a trapezium ABCD with AB∥DC, AB = 18 cm, DC = 32 cm and distance between AB and DC is 14 cm. If in 4 corners (arcs) of equal radii 7 cm with centres A, B, C and D have been drawn and grow different types of flowers, and in the remaining (shaded region) area he planned to grow wheat. Find the area of the field in which flowers and wheat can be grown. Or A medicine capsule is in the shape of cylinder with two hemispheres stuck to each of its ends. The length of the entire capsule is 14 mm and the diameter of the capsule is 6 mm, find its surface area. Also find its volume.	5

35. The distribution below gives the marks of 100 students of a class, if the median marks are 24, find the frequencies f1 and f2

Marks	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of students	4	6	10	f1	25	f2	18	5

Or

The mode of the following frequency

distribution is 55. Find the missing frequencies 'a' and 'b'.

Class interval	0-15	15-30	30-45	45-60	60-75	75-90	total
Frequency	6	7	a	15	10	b	51

5

SECTION E

Case study-based questions

36. **CASE STUDY 1**

The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.
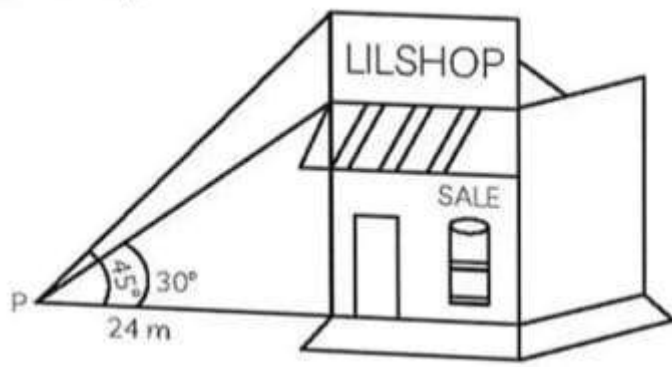

   i)   Find the production during 1st year.

   ii)   Find the production during 8th year.

   iii)   Find the production during first 3 years.

       Or

       In which year, the production is Rs. 29,200

1+ 1+ 2

37.	On the occasions of `Diwali' a rectangular plot have been allotted for 'Diwali Mela' to students of secondary school in Hyderabad. In order to reduce smog and pollution they decided to keep little leaf linden plant on the boundary at a distance of 1 m from each other. Four air purifier machines have also been set up at points L, M, N, O. (Answer the following questions considering A as origin).	1+ 1+ 2
	i) What are the coordinates of L?	
	ii) Considering D as origin, what are the coordinates of M?	
	iii) Find the mid point of the segment joining the points L and N(A as origin)	
	Or	
	Find the Distance between L and O.	
38	Anita purchased a new building for her business. Being in the prime location, she decided to make some more money by putting up an advertisement sign for a rental ad income on the roof of the building. From a point P on the ground level, the angle of elevation of the roof of the building is 30° and the angle of elevation of the top of the sign board is 45°. The point P is at a distance of 24 m from the base of the building.	2+ 1+ 1

(i) Find the height of the building (without the sign board).
OR
Find the height of the building (with the sign board)
(ii) Find the height of the sign board.
(iii) Find the distance of the point P from the top of the sign board.