

**NEW HORIZON GURUKUL**  
**PRACTICE PAPER (2025-2026)**

**Class: X**

**Max Marks: 80**

**Subject: Mathematics Standard (041)**

**Time: 3 hours**

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**General Instructions**

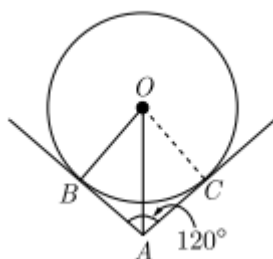
Read the following instructions very carefully and strictly follow them:

- (i) This question paper contains **38** questions. **All** questions are compulsory.
- (ii) This question paper is divided into **FIVE** sections- **Section A, B, C, D** and **E**.
- (iii) In **Section-A** question numbers **1** to **18** are Multiple Choice Questions (MCQs) and question numbers **19** and **20** are Assertion-Reason based questions of **1** mark each.
- (iv) In **Section-B** question numbers **21** to **25** are Very Short Answer (VSA) type questions, carrying **2** marks each.
- (v) In **Section-C** question numbers **26** to **31** are Short Answer (SA) type questions, carrying **3** marks each.
- (vi) In **Section-D** question numbers **32** and **35** are Long Answer (LA) type questions, carrying **5** marks each.
- (vii) In **Section E** question numbers **36** and **38** are Case Study based integrated questions carrying **4** marks each. Internal choice is provided in **2** marks question in each case study.
- (viii) There is no overall choice. However, an internal choice has been provided in 2 questions of **Section- B**, 2 questions of **Section-C**, 2 questions of **Section-D** and in all the 2 marks questions of **Section – E**.
- (ix) Draw neat figures wherever required. Take  $\pi = 22/7$  wherever required if not stated,
- (x) Use of calculators is NOT allowed.

**SECTION A**

1. The graph of a quadratic polynomial  $p(x)$  passes through the points  $(-3,0)$ ,  $(1, 0)$ , and  $(0,-3)$ . The zeroes of the polynomial are 1
- (A) - 6,0                      (B) 4, 6                      (C) - 3,1                      (D) 0,-3

2. If the lines given by  $2x + ky = 1$  and  $3x - 5y = 7$  are parallel, then the value of  $k$  is 1
- (A)  $-\frac{10}{3}$  (B)  $\frac{10}{3}$  (C) -13 (D) -7
3. Which of the following statements is not true? 1
- 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.
4. Find the sum of 12 terms of an A.P. whose  $n$ th term is given by  $a_n = 3n + 4$  1
- (A) 262 (B) 272 (C) 282 (D) 292
5. If two solid hemispheres of same base radius  $r$  are joined together along their bases, then curved surface area of this new solid is 1
- (A)  $4\pi r^2$  (B)  $6\pi r^2$  (C)  $3\pi r^2$  (D)  $8\pi r^2$
6. If  $4\tan\theta = 3$ , then  $\frac{4\sin\theta - \cos\theta}{4\sin\theta + \cos\theta}$  is equal to 1
- (A)  $\frac{2}{3}$  (B)  $\frac{1}{3}$  (C)  $\frac{1}{2}$  (D)  $\frac{3}{4}$
7. In the given figure, two tangents AB and AC are drawn to a circle with centre O such that  $\angle BAC = 120^\circ$ , then OA is equal to 1



- (A) 2AB (B) 3AB (C) 4AB (D) 5AB
8. A quadratic polynomial having zeroes as  $-\sqrt{\frac{5}{2}}$  and  $\sqrt{\frac{5}{2}}$  is 1
- (A)  $x^2 - 5\sqrt{2}x + 1$  (B)  $2x^2 - 5$  (C)  $15x^2 - 6$  (D)  $x^2 - 2\sqrt{5}x - 1$
9. Consider the data: 1

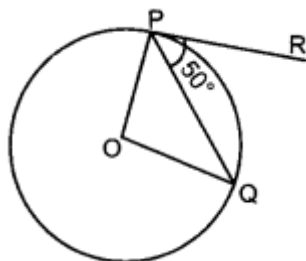
Class	65-85	85-105	105-125	125-145	145-165	165-185	185-205
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Frequency	4	5	13	20	14	7	4
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The difference of upper limit of the median class and the lower limit of the modal class is

- (A) 0 (B) 19 (C) 20 (D) 38

10. In figure if O is centre of a circle, PQ is a chord and the tangent PR at P makes an angle of  $50^\circ$  with PQ, then  $\angle POQ$  is equal to



- (A)  $100^\circ$  (B)  $80^\circ$  (C)  $90^\circ$  (D)  $75^\circ$

11. The quadratic equation  $3x^2 + 4\sqrt{3}x + 4$  has

- (A) 2 Distinct roots (B) 2 equal real roots  
(C) No real roots (D) More than 2 real roots

12. If  $\sin \theta = 0.8$ , then what is the value of  $\cos \theta$  ?

- (A)  $\pm 0.2$  (B)  $\pm 0.4$  (C)  $\pm 0.6$  (D)  $\pm 0.8$

13. The curved surface area of a cylinder is  $528 \text{ cm}^2$  and its height is 8cm. What is its radius?

- (A) 4 cm (B) 6 cm (C) 10.5 cm (D) 12 cm

14. A two digit number is formed with the digits 3,5 and 7 (repetitions of digits is not allowed). The probability that the number so formed is greater than 57 is

- (A)  $\frac{1}{5}$  (B)  $\frac{1}{2}$  (C)  $\frac{2}{6}$  (D)  $\frac{2}{4}$

15. The area of triangle formed by the lines  $x = 3$ ,  $y = 4$  and  $x = y$  is

- (A) 0.5 sq. units (B) 1sq.unit (C) 6 sq. units (D) 4.5sq.units

16. The mode and the mean is given by 7 and 8, respectively. Then the median is

- (A)  $\frac{1}{13}$  (B)  $\frac{13}{3}$  (C)  $\frac{23}{3}$  (D) 33

17. The point which divides the line segment joining the points (7, -6) and (3, 4) in ratio 1: 2 internally lies in the

- (A) I Quadrant (B) II Quadrant (C) III Quadrant (D) IV Quadrant

18. There are 30 cards of the same size in a bag in which the numbers 1 to 30 are written. One card is taken out of the bag at random. What is the probability that the number on the selected card is not divisible by 3?

(A)  $\frac{1}{15}$

(B)  $\frac{2}{3}$

(C)  $\frac{1}{10}$

(D)  $\frac{1}{3}$

**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

19. **Assertion (A):** HCF of any two consecutive even natural numbers is always 2. 1

**Reason (R):** Even natural numbers are divisible by 2.

20. **Assertion (A):** If the radius of sector of a circle is reduced to its half and angle is doubled then the perimeter of the sector remains the same. 1

**Reason (R):** The length of the arc subtending angle  $\theta$  at the centre of a circle of

$$\text{radius } r = \frac{\pi r \theta}{180}$$

### SECTION B

21. Find the LCM and HCF of 1296 and 5040 by prime factorization method. 2

**OR**

Check whether  $14^n$  can end with the digit zero for any natural number  $n$ ?

22. How many positive three digit integers have the hundredths digit 8 and unit digit 5? Find the probability of selecting one such number out of all three digit numbers. 2

**OR**

Jayanti throws a pair of dice and records the product of the numbers appearing on the dice. Pihu throws 1 dice and records the square of the number that appears on it. Who has the better chance of getting 36? Justify your answer.

23. Prove that: 2

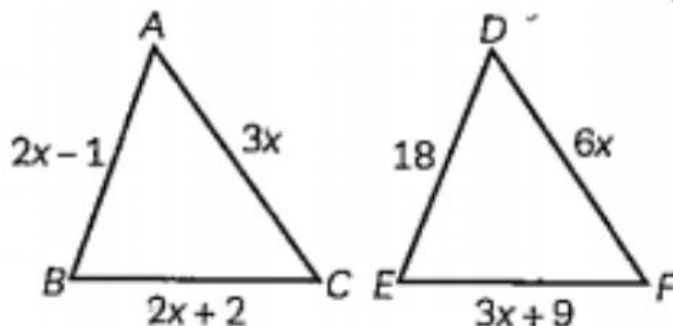
$$\frac{\sin A - 2\sin^3 A}{2\cos^3 A - \cos A} = \tan A$$

24. Find the points on the x - axis which are at a distance of  $2\sqrt{5}$  from the point (7, -4). How many such points are there? 2

25. AOBC is the rectangle whose three vertices are vertices A(0, 3), O(0, 0) and B(5, 0). What is the length of the diagonal. 2

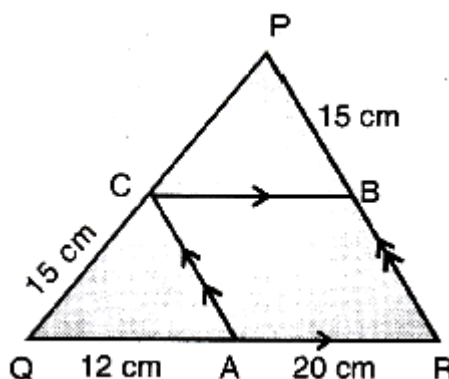
### SECTION C

26. In the given figure, if  $\triangle ABC \sim \triangle DEF$  and their sides of lengths (in cm) are marked along them, then find the lengths of sides of each triangle. 3



OR

In the given figure,  $CB \parallel QR$  and  $CA \parallel PR$ . If  $AQ = 12\text{ cm}$ ,  $AR = 20\text{ cm}$ ,  $PB = CQ = 15\text{ cm}$ , calculate  $PC$  and  $BR$ .



27. Represent the system of linear equations  $3x + y = 5$  and  $2x + y = 5$  graphically. From the graph, find the points where the lines intersect y axis. 3
28. If  $\alpha$  and  $\beta$  are the zeroes of the quadratic polynomial  $p(s) = 3s^2 - 6s + 4$ , find the value of  $\frac{\alpha}{\beta} + \frac{\beta}{\alpha} + 2\left(\frac{1}{\alpha} + \frac{1}{\beta}\right) + 3\alpha\beta$ . 3

OR

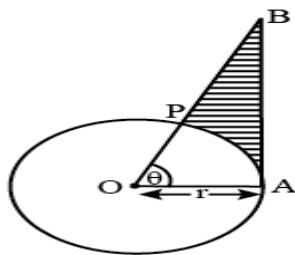
If the zeroes of the polynomial  $x^2 + px + q$  are double in value to the zeroes of  $2x^2 - 5x - 3$ , find the value of  $p$  and  $q$ .

29. Evaluate: 3

$$\frac{3\tan^2 30^\circ + \tan^2 60^\circ + \operatorname{cosec} 30^\circ - \tan 45^\circ}{\cot^2 45^\circ}$$

30. In the given figure, sector OAP of a circle with centre O, containing  $\angle \theta$  is shown. 3

AB is perpendicular to the radius OA and meets OP produced at B. Prove that the perimeter of shaded region is  $r (\tan \theta + \sec \theta + \frac{\pi\theta}{180} - 1)$



31. Prove that  $\sqrt{5}$  is irrational and hence show that  $3 + \sqrt{5}$  is also irrational. 3

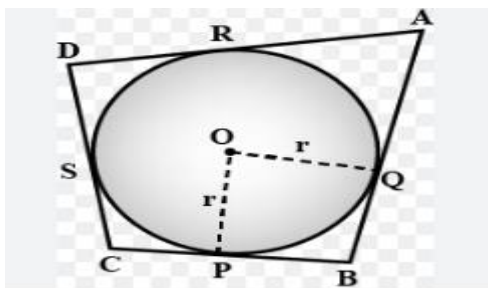
#### SECTION D

32. Place A and B are 160km apart on a highway. One car starts from A and another from B at the same time. If they travel in the same direction. They meet in 8 hours. But if they travel towards each other, they meet in 2 hours. Find the speed of each car. 5

OR

If three times the larger of two numbers is divided by the smaller, we get 4 as the quotient and 8 as the remainder. If five times the smaller is divided by the larger, we get 3 as the quotient and 5 as the remainder. Find the numbers.

33. In the figure, a circle with centre O is inscribed in a quadrilateral ABCD such that, it touches the sides BC, AB, AD and CD at points P, Q, R and S respectively. If  $AB = 29$  cm,  $AD = 23$  cm,  $\angle B = 90^\circ$  and  $DS = 5$ cm, then find the radius of the circle (in cm) 5



34. The angle of elevation of a cloud from a point 60m above a lake is  $30^\circ$  and the angle of depression of the reflection of cloud in the lake is  $60^\circ$ . Find the height of the cloud. 5

OR

The angle of elevation of a jet plane from a point A on the ground is  $60^\circ$ . After a flight of 30 seconds, the angle of elevation is  $30^\circ$ . If the jet plane is flying at a constant height of  $3600\sqrt{3}$  m, find the speed of the jet plane.

35. The mode of the following frequency distribution is 36. Find the missing frequency  $f$  and mean of the following data. 5

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	10	$f$	16	12	6	7

### SECTION E

36. A bakery is an establishment that produces and sells flour-based food baked in an oven such as bread, cookies, cakes, pastries, and pies. Some retail bakeries are also categorized as cafes, serving coffee and tea to customers who wish to consume the baked goods on the premises.



Tania runs a bakery shop and her bakery is very famous for tasty biscuits. The amount of mixture required to make one biscuit is 18 cu cm. Before it is cooked, the mixture is rolled into a sphere. After the biscuit is cooked, the biscuit becomes a cylinder of radius 3 cm and height 0.7cm. The increase in volume is due to air being trapped in the biscuit. Biscuits are packed in a cylindrical card box of height 14 cm. The arrangement of biscuits is shown below:



- |  |   |
|--|---|
| (i) What is the volume of the biscuits after it is cooked? What is the volume of air trapped, while cooking the biscuit? | 1 |
| (ii) How many biscuits will be there in a box?   | 1 |
| (iii) How much space is vacant in box after biscuits are packed?   | 2 |

**OR**

If weight of 7 biscuits is 50 grams, what will be the weight of box of biscuits?

37. India is competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. 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. Based on the above information, answer the following questions:



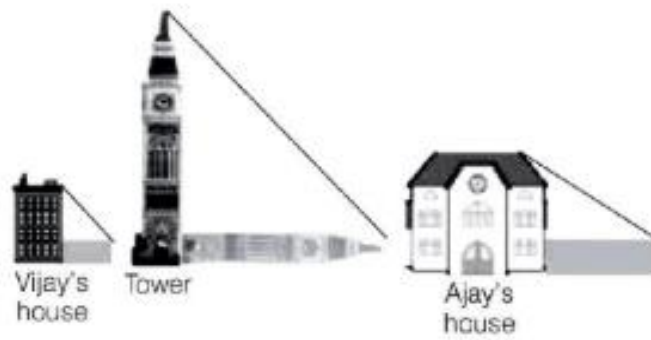
- |  |   |
|--|---|
| (i) Find the production during first year.       | 1 |
| (ii) Find the production during first 3 years.   | 1 |
| (iii) In which year, the production is ₹ 29,200? | 2 |

**OR**

Find the difference in the production during 7<sup>th</sup> year and 4<sup>th</sup> year.

38. Vijay is trying to find the average height of a tower near his house. He is using the properties of similar triangles. The height of Vijay's house is 20m when Vijay's house casts a shadow 10m long on the ground. At the same time, the tower casts a shadow 50m long on the ground and the house of Ajay casts 20m shadow on the ground.





- (i) What is the height of the tower?
- (ii) What will be the length of the shadow of the tower when Vijay's house casts a shadow of 12m?
- (iii) When the tower casts a shadow of 40m, at the same time what will be the length of the shadow of Ajay's house?

1

1

**OR**

2

When the tower casts a shadow of 40m, at the same time what will be the length of the shadow of Vijay's house?