

Σ XEMPLAR POINT[®] PVT. LTD.

IX MATHS PRACTICE PAPER

TIME: 3 HOURS

M.M.: 80

General Instructions:

- a. All questions are compulsory.
- b. The question paper consists of 30 questions divided into four sections A, B, C and D.
- c. Section A contains 6 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D contains 8 questions of 4 marks each.
- d. There is no overall choice. However, an internal choice has been provided in four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- e. Use of calculators is not permitted.

SECTION-A

1. Simplify: $\left[\frac{7^{-4}}{4^{-2}}\right]^{1/4}$. 1
2. If $\frac{1}{a^3} + \frac{1}{b^3} + \frac{1}{c^3} = 0$, then which among the following expression is correct? 1
 $a^3 + b^3 + c^3 = 0$; $a + b + c = 3a^{\frac{1}{3}} \cdot b^{\frac{1}{3}} \cdot c^{\frac{1}{3}}$; $a + b + c = 3abc$; $a^3 + b^3 + c^3 = 3abc$ 1
3. P is a point on y-axis at a distance of 6 units from x-axis lying below x-axis. What will be the coordinates of P? 1
4. Solve the equation $x + 4 = 10$ and state Euclid's axiom used. 1
5. In a cricket match, a batsman hits a sixer 8 times out of 32 balls played. Find the probability that a sixer is not hit in a ball. 1
6. If a circle is divided into eight equal parts, find the angle subtended by each arc at the centre. 1

SECTION-B

7. If $(3x - 4y)^3 = 27x^3 - 64y^3 + axy^2 + bx^2y$, then find the value of $a + b$. 2
8. Express the following equation as a linear equation in two variables in the standard form and indicate the values of a , b and c : $\frac{\sqrt{3}}{2}y = 3$. 2
9. If the point $(2k - 3, k + 2)$ lies on the graph of equation $2x + 3y + 15 = 0$, find the value of k . 2
10. Consider two postulates given below: 2
 - a. Given any two distinct points R and S, there exists a third point T which is in between R and S.
 - b. There exist at least three points which are not in the same straight line.

Now, answer the following questions:

 - (i) Do these postulates contain any underlined terms?
 - (ii) Do they follow from Euclid's postulates? Explain.
11. The floor of a rectangular hall has a perimeter 150 m. If the cost of painting the four walls at the rate of Rs. 10 per m^2 is Rs. 9000, find the height of the wall. 2
12. In a data, 14 numbers are arranged in ascending order. If the 9th entry is increased by 5, what will be the corresponding effect on the median? 2

SECTION-C

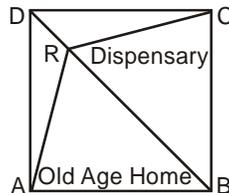
13. Represent $\sqrt{5}$ on the number line. 3
14. If $2x + 3y = 12$ and $xy = 6$, find the value of $8x^3 + 27y^3$. 3

15. Gurnam and Akhthar have some money with them. Gurnam says to Akhthar, if you give me Rs. 40, my money will be three times the money left with you. Represent this situation as a linear equation in two variables. Also, find two solutions for this equation. 3

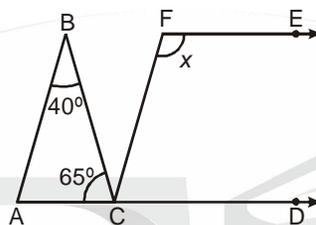
OR

Half the perimeter of a rectangular garden is 36 m. Write a linear equation which satisfies this data. Draw the graph for the same.

16. In which quadrant or on which axis do the points $(-2, -4)$, $(2, 4)$, $(0, 2)$ and $(4, -6)$ lie? Verify your answer by locating them on the cartesian plane. 3
17. In figure Sunita has a plot of land which she decides to use for building an old age home and a dispensary for the needy. Her plot is shown in the figure. Plot ABCD is a rhombus. If R is a point on diagonal BD, show that equal areas are allotted for building, old age home and the dispensary. 3

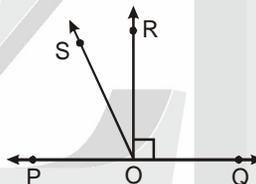


18. In figure if $AB \parallel CF$, $CD \parallel EF$, then find the value of x . 3



OR

In figure POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$.



19. If the non-parallel sides of a trapezium are equal, prove that it is cyclic. 3
20. A die is thrown 1000 times with the frequencies for the outcomes 1, 2, 3, 4, 5 and 6 given in the following table: 3

Outcome	1	2	3	4	5	6
Frequency	179	150	157	149	175	190

Find the probability of getting each outcome.

21. A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained. 3
22. Construct a right triangle whose base is 12 cm and sum of its hypotenuse and other side is 18 cm. 3

OR

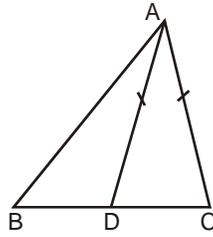
Construct a triangle XYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11$ cm.

SECTION-D

23. Evaluate: $\frac{15}{\sqrt{10} + \sqrt{20} + \sqrt{40} - \sqrt{5} - \sqrt{80}}$, when it is given that $\sqrt{5} = 2.236$ and $\sqrt{10} = 3.162$. 4
24. If $a^3 + b^3 + c^3 = 3abc$ and $a + b + c = 0$, prove that $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$. 4

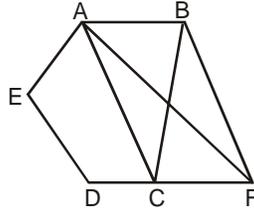
25. D is a point on side BC of $\triangle ABC$ such that $AD = AC$. Show that $AB > AD$.

4



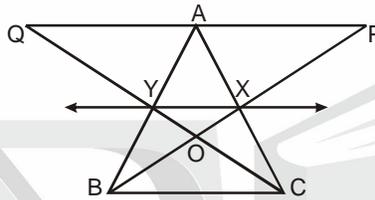
26. In figure ABCDE is a pentagon. A line through B parallel to AC meets DC produced at F. Show that (i) $\text{ar}(\triangle ABC) = \text{ar}(\triangle ACF)$, (ii) $\text{ar}(\triangle AEDF) = \text{ar}(\text{pentagon } ABCDE)$.

4



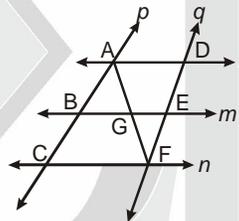
OR

In figure X and Y are the mid-points of AC and AB respectively, $QP \parallel BC$ and CYQ and BXP are straight lines. Prove that $\text{ar}(\triangle ABP) = \text{ar}(\triangle ACQ)$.



27. l, m and n are three parallel lines intersected by transversals p and q such that l, m and n cut off equal intercepts AB and BC on p. Show that l, m and n cut off equal intercepts DE and EF on q also.

4



28. Find the area of an isosceles triangle whose one side is 10 cm greater than its each equal side and its perimeter is 100 cm. (Take $\sqrt{5} = 2.236$)

4

29. The ratio of total surface area to the curved surface area of a right circular cylinder is 3 : 2. Find the volume, if its total surface area is 14784 cm^2 .

4

OR

A cloth having an area of 165 m^2 is shaped into the form of a conical tent of radius 5 cm.

- a. How many students can sit in the tent if a student on an average, occupies $\frac{5}{7} \text{ m}^2$ on the ground?
- b. Find the volume of the cone.
30. A class consists of 50 students out of which 30 are girls. The mean marks scored by girls in a test is 73 (out of 100) and that of boys is 71. Determine the mean score of the whole class.

4

OR

Prepare a continuous grouped frequency distribution from the following data:

Mid-point	3	15	25	35	45
Frequency	4	8	13	12	6

Also find the size of class intervals.