

KENDRIYA VIDYALAYA GACHIBOWLI , HYDERABAD - 32
SAMPLE PAPER 02 FOR SA - II (2016-17)

SUBJECT: MATHEMATICS

BLUE PRINT : SA-II CLASS IX

Unit/Topic	MCQ (1 mark)	Short answer (2 marks)	Short answer (3 marks)	Long answer (4 marks)	Total
Algebra Linear Equations in two variables	2(2)	4(2)	6(2)	4(1)	16(6)
Geometry Quadrilaterals, Area, Circles & Construction	--	4(2)	6(2)	28(7)	38(11)
Mensuration Surface Areas and Volumes	1(1)	--	9(3)	8(2)	18(7)
Statistics	1(1)	2(1)	3(1)	4(1)	10(4)
Probability	--	2(1)	6(2)	--	8(3)
Total	4(4)	12(6)	30(10)	44(11)	90(31)

The test of OTBA for SA-II will be from Unit-II Quadrilaterals

MARKING SCHEME FOR SA – II

SECTION	MARKS	NO. OF QUESTIONS	TOTAL
VSA	1	4	04
SA – I	2	6	12
SA – II	3	8	24
LA	4	10	40
OTBA	3	2	6
	4	1	4
GRAND TOTAL			90

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SUBJECT: MATHEMATICS
CLASS : IX

MAX. MARKS : 90
DURATION : 3 HRS

General Instructions:

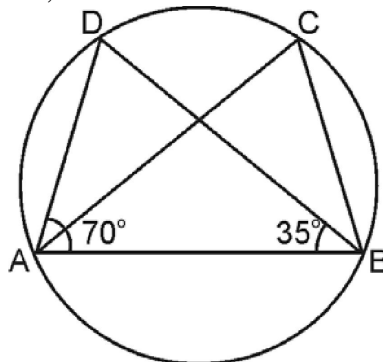
1. All questions are compulsory.
 2. Question paper is divided into four sections: Section A consists 4 questions each carry 1 marks, Sections B consists 6 questions each carry 2 marks, Sections C consists 8 questions each carry 3 marks, Sections D consists 10 questions each carry 4 marks and Sections E consists 2 questions of 3 marks 1 question of 4 marks from OTBA Text Theme
 3. There is no overall choice.
 4. Use of Calculator is prohibited.
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SECTION – A

1. In a frequency distribution, the mid-value of a class is 20 and the width of the class is 8, then find the lower limit of the class.
2. If the volume of a sphere is numerically equal to its surface area, then find the radius of the sphere.
3. Find the points where the graph of the equation $3x + 4y = 12$ cuts the x -axis.
4. If the point $(4, 3)$ lies on the graph of $3x = ay + 5$, then find the value of a .

SECTION – B

5. D and E are points on sides AB and AC respectively of $\triangle ABC$ such that $\text{ar}(\triangle DBC) = \text{ar}(\triangle EBC)$. Prove that $DE \parallel BC$.
6. In a cricket match, a batsman hits a boundary 4 times out of 30 balls, he plays. Find the probability that he did not hit a boundary.
7. Find the solution of the linear equation $x + 2y = 8$ which represents a point on (i) x -axis (ii) y -axis
8. For what value of c , the linear equation $2x + cy = 8$ has equal values of x and y for its solution.
9. In the below figure, $\angle DAB = 70^\circ$, $\angle DBA = 35^\circ$. Find the measure of $\angle ACB$.



10. The mean of the following data is 37. Find x
28, 35, 25, 32, x , 40, 45, 50

SECTION – C

11. A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7mm and the diameter of the graphite is 1mm. If the length of the pencil is 14cm, find the volume of the wood. (use $\pi = 22/7$).
12. A heap of wheat is in the form of a cone, the diameter of whose base is 14m and height is 3m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.
13. Find mean of the following data:

Marks	10	11	12	13	14	15
No. of Students	6	3	4	5	7	5

14. The radius of a spherical balloon increases from 7cm to 14cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.
15. The ages of Rahul and Haroon are in the ratio 5:7. Four years later the sum of their ages will be 56 years. What are their present ages?
16. Draw the graph of the linear equation $3x + 4y = 6$. At what points, the graph cuts the x -axis and the y -axis.
17. A recent survey found that the ages of workers in a factory is distributed as follows:

Age(in years)	20 – 29	30 – 39	40 – 49	50 – 59	60 and above
Number of workers	38	27	86	46	3

If a person is selected at random, find the probability that the person is:

- (i) 40 years or more
(ii) under 40 years

18. A die is thrown 400 times with the frequencies for the outcomes 1, 2, 3, 4, 5 and 6 as given in the following table.

Outcomes	1	2	3	4	5	6
Frequency	72	65	70	71	63	59

Find the probability of (i) getting a number less than 3. (ii) getting an outcome 6. (iii) getting a number more than 4.

SECTION – D

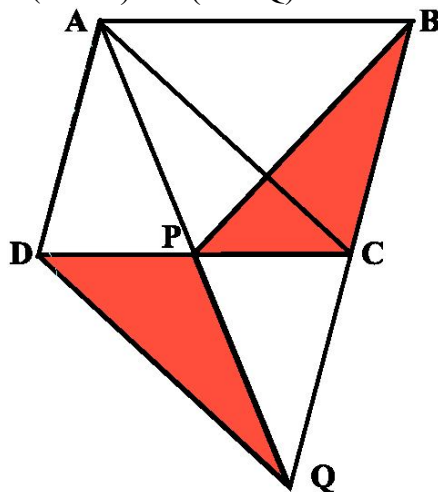
19. Construct a triangle ABC in which $BC = 8\text{cm}$, $\angle B = 30^\circ$ and $AB - AC = 3.5\text{cm}$
20. A storage tank is in the form of a cube. When it is full of water, the volume of the water is 15.625m^3 . If the present depth of the water is 1.3m, find the volume of water already used from the tank.
21. If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the centre makes equal angles with the chords.

22. Prove that “Two parallelograms on the same base and between the same parallels are equal in area”.

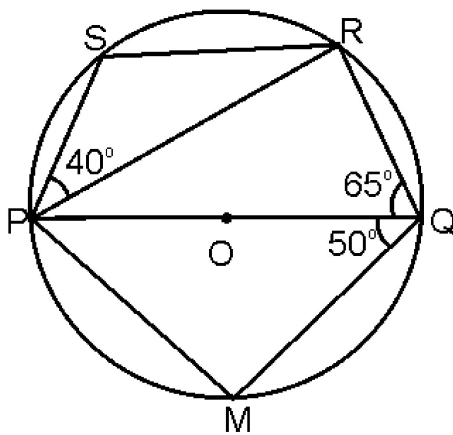
23. A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square metre, find the (i) inside surface area of the dome, (ii) volume of the air inside the dome.

24. Give the geometric representations of $2x + 9 = 0$ as an equation
 (i) in one variable (ii) in two variables

25. In fig. ABCD is a parallelogram and BC is produced to a point Q such that $AD = CQ$. If AQ intersects DC at P, show that $\text{ar}(\triangle BPC) = \text{ar}(\triangle DPQ)$



26. In Fig., PQ is the diameter of the circle with centre O. If $\angle PQR = 65^\circ$, $\angle RPS = 40^\circ$ and $\angle PQM = 50^\circ$, find $\angle QPR$, $\angle PRS$ and $\angle QPM$.



27. AC and BD are chords of a circle which bisect each other. Prove that (i) AC and BD are diameters, (ii) ABCD is a rectangle.

28. A random survey of the number of children of various age groups playing in a park was found as follows: Draw a histogram to represent the data above.

Age(in years)	Number of children
1 – 2	5
2 – 3	3
3 – 5	6
5 – 7	12
7 – 10	9
10 – 15	10
15 – 17	4

Why playing is important for the children?

SECTION – E (OTBA)

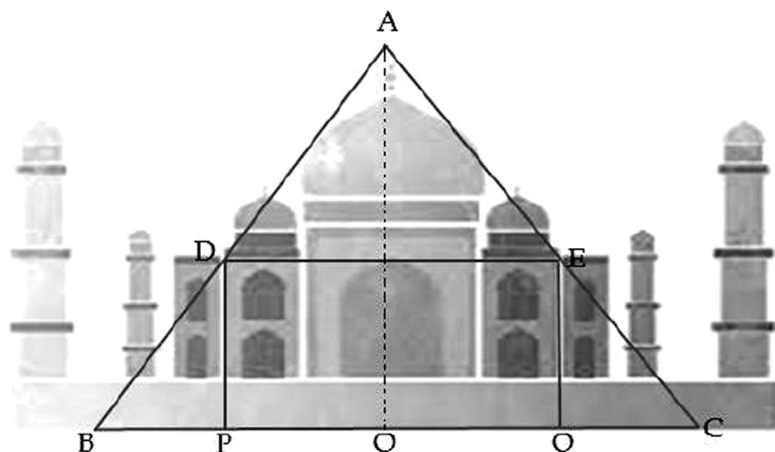
THEME 2: 'QUADRILATERALS IN ARCHITECTURE, WAH TAJ!

29. D and E are the mid-points of the sides AB and AC of a triangle ABC and O is any point on the side BC. O is joined to A. If P and Q are the mid-points of side OB and OC respectively, then prove that

a) DEQP is a parallelogram

b) If $AB = AC$ then DECB is an isosceles trapezium.

[4 marks]



30. What properties of quadrilateral make them most popular choice for architects?

[3 marks]

31. Prove that quadrilateral formed by joining the mid points of the adjacent sides of a rectangle is a rhombus. In the figure below given that EFGH is a rectangle and P, Q, R, S are mid-points of sides EF, FG, GH & HE respectively.

[3 marks]

