

KENDRIYA VIDYALAYA GACHIBOWLI , HYDERABAD - 32
SAMPLE PAPER 02 FOR SA - II (2015-16)

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	--	--	6(2)	4(1)	10(3)
Geometry Quadrilaterals, Area, Circles & Construction	2(2)	6(3)	6(2)	24(6)	38(13)
Mensuration Surface Areas and Volumes	1(1)	--	9(3)	12(3)	22(7)
Statistics	1(1)	4(2)	3(1)	4(1)	12(5)
Probability	--	2(1)	6(2)	--	8(2)
Total	4(4)	12(6)	30(10)	44(11)	90(31)

The test of OTBA for SA-II will be from Unit-II Linear Equation in Two variables

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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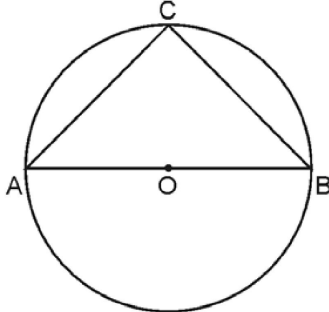
MAX. MARKS : 90
DURATION : 3 HRS

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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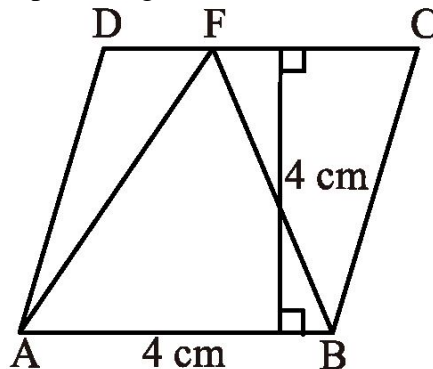
SECTION – A

1. In Fig.1, AOB is a diameter of the circle and $AC = BC$, then find $\angle CAB$.



2. 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.
3. If the volume of a sphere is numerically equal to its surface area, then find the radius of the sphere.

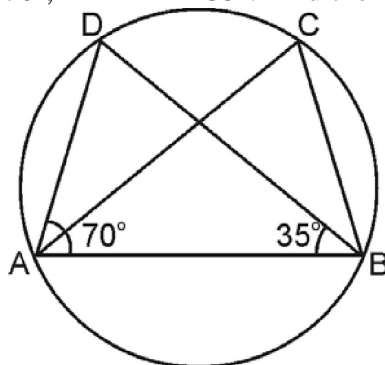
In the below figure, ABCD is a parallelogram, then find $\text{ar}(\triangle AFB)$



SECTION – B

4. 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 $DE \parallel BC$.
5. Find the mode of the following data:
5, 7, 6, 5, 9, 8, 6, 7, 11, 10, 5, 7, 6, 8, 6, 9, 10.

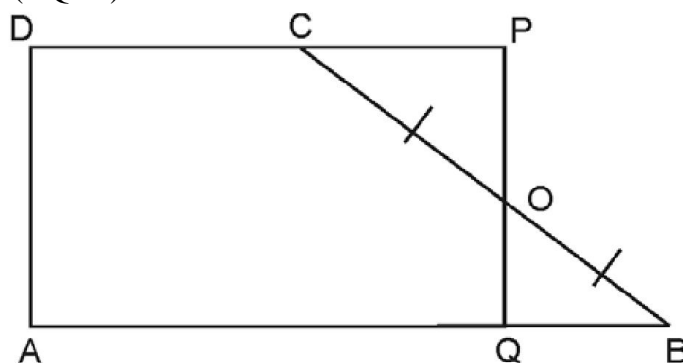
6. In a cricket match, a batsman hits a boundary 4 times out of 30 balls, he plays. Find the probability that he did not hit a boundary.
7. Prove that equal chords of a circle subtend equal angles at the centre.
8. In the below figure, $\angle DAB = 70^\circ$, $\angle DBA = 35^\circ$. Find the measure of $\angle ACB$.



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

SECTION – C

10. Prove that a diagonal of a parallelogram divides it into two congruent triangles.
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. In the below Fig., ABCD is a trapezium in which $AB \parallel DC$. O is the mid point of BC. Through the point O, a line PQ $\parallel AD$ has been drawn which intersects AB at Q and DC produced at P. Prove that $\text{ar}(ABCD) = \text{ar}(AQP)$.



13. 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.
14. Find mean of the following data:

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

15. 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.

16. 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

17. 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

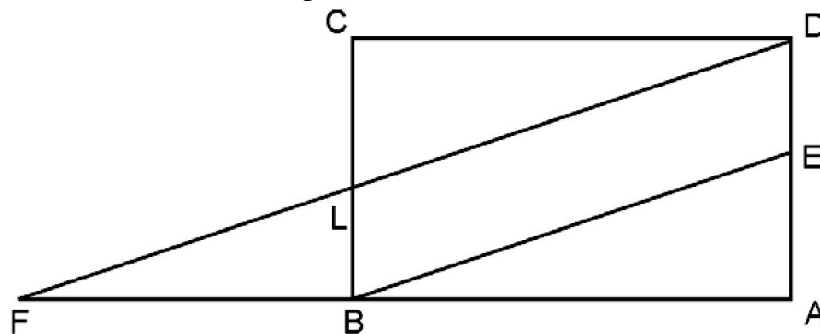
Find the probability of (i) getting a number less than 3. (ii) getting an outcome 6. (iii) getting a number more than 4.

SECTION – D

18. Show that the line segments joining the mid points of the opposite sides of a quadrilateral bisect each other.

19. Construct a triangle ABC in which $BC = 8\text{cm}$, $\angle B = 30^\circ$ and $AB - AC = 3.5\text{cm}$

20. In the below Fig., ABCD is a parallelogram and E is the mid point of AD. $DL \parallel BE$ meets AB produced at F. Prove that B is the midpoint of AF and $EB = LF$.



21. 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.

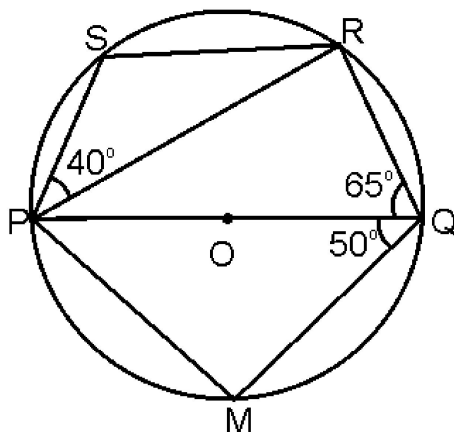
22. Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that $\text{ar}(\text{AOD}) = \text{ar}(\text{BOC})$. Prove that ABCD is a trapezium.

23. 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.

24. The circumference of the base of a cone is $\frac{220}{7}$ cm and its slant height is 13cm. Find the volume of the cone. (Use $\pi = \frac{22}{7}$)

25. 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.

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. 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 – 1: CHILDHOOD OBESITY IN INDIA

28. The height of Amit is 200 cm. If x and y represents the BMI and the weight, respectively, then form a linear equation to represent the given information. Draw its graph also. **(3 marks)**
29. It is stated that “Children from age one onwards grows taller and heavier till they reach adolescence at a whopping rate of about 2 kg every year for weight and 3 inches for height.” If a child at the age 1 weighs 5 kg and its height is 24 inches, then what is height of the child when his weight is 8 kg. **(3 marks)**
30. Aditya wants to burn 50 k cal in exactly 15 minutes by choosing home activities and walking on the basis of table provided in the text. Make plan for Aditya for time spent in home activities and walking by considering x minutes for home activities and y minutes of walking. Identify the suitable time to be invested by Aditya in home activities and walking by the use of graph. **(4 marks)**