KENDRIYA VIDYALAYA GACHIBOWLI, HYDERABAD – 32
SAMPLE PAPER 05 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)	--	6(2)	8(2)	**16(6)**
Geometry Quadrilaterals, Area, Circles & Construction	1(1)	6(3)	15(5)	16(4)	**38(13)**
Mensuration Surface Areas and Volumes	1(1)	2(1)	3(1)	12(3)	**18(8)**
Statistics	--	--	6(2)	4(1)	**10(3)**
Probability	--	4(2)	--	4(1)	**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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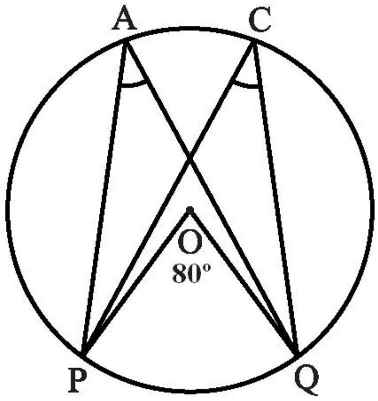
SUBJECT: MATHEMATICS **MAX. MARKS : 90**
CLASS : IX **DURATION : 3 HRS**

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.

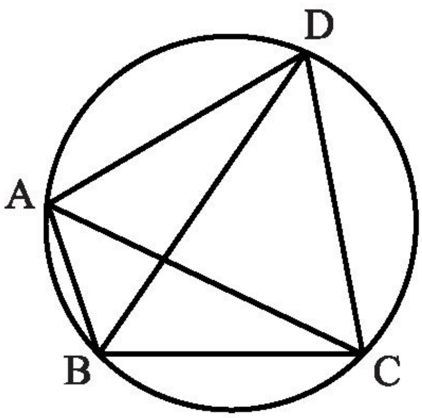
SECTION – A

1. The volume of two hemisphere are in the ratio 27:125. Find the ratio of their radii.
2. Determine the point on the graph of the linear equation $2x + 5y = 19$, whose ordinate is 2 imes its abscissa.
3. Find the points where the graph of the equation $3x + 4y = 12$ cuts the y-axis.
4. In the below figure, $\angle POQ = 80^0$, find $\angle PAQ$



SECTION – B

5. MNOP is a parallelogram. Q and R are point on sides MN and ON respectively. If ar (ΔPRM) = 12cm^2, find ar (ΔPOQ).
6. In below Fig, ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If $\angle$ DBC = 55° and $\angle$BAC = 45°, find $\angle$BCD.



7. If diagonals of a cyclic quadrilateral are diameters of the circle through the opposite vertices of the quadrilateral, prove that the quadrilateral is a rectangle.

8. 1000 families with 2 children were selected randomly and the following data were recorded :

Number of girls in a family	0	1	2
Number of families	111	614	275

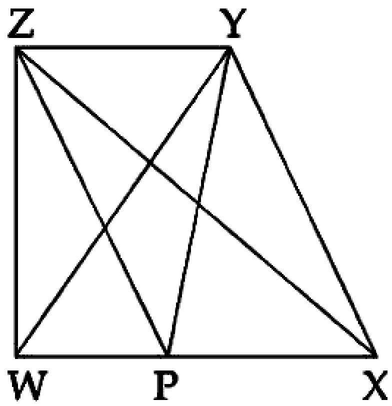
If a family is chosen at random, compute the probability that it has :
(i) exactly 1 girl. (ii) exactly 2 boys.

9. Calculate the surface area of a cubical tank without lid whose volume is 1331 cm^3.

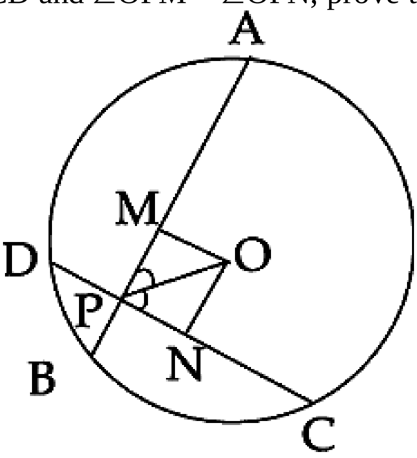
10. If the probability of winning a race of an athlete is $\frac{1}{6}$ less than the twice the probability of losing the race. Find the probability of winning the race.

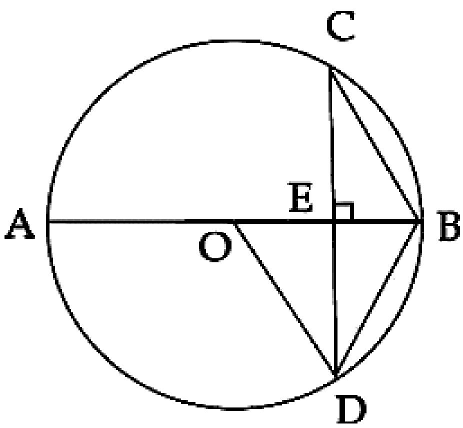
SECTION – C

11. In the given figure, WXYZ is a quadrilateral with a point P on side WX. If ZY || WX, show that (i) ar (ΔZPY) = ar (ΔZXY) (ii) ar (ΔWZY) = ar(ΔZPY) (iii) ar(ΔZWX) = ar (ΔXWY)



12. In the given figure, AB and CD are two chords of a circle whose centre is O. If OM$\perp$AB, ON$\perp$CD and $\angle$OPM = $\angle$OPN, prove that MB□ND.





13. In the above right sided given figure, if O is the centre of the circle, BD=OD and CD$\perp$AB, find $\angle$CAB and $\angle$BCD.

14. The linear equation that converts Fahrenheit (F) to Celsius (C) is given by the relation

$$C = \frac{5F - 160}{9}$$

(i) If the temperature is 86°F, what is the temperature in Celsius?
(ii) If the temperature is 35°C, what is the temperature in Fahrenheit?

(iii) If the temperature is 0°C what is the temperature in Fahrenheit and if the temperature is 0°F, what is the temperature in Celsius?

15. Give the geometric representations of $x = 3$ as an equation
(i) in one variable (ii) in two variables

16. The areas of three adjacent faces of cuboid are 15 cm^2, 10 cm^2 and 24 cm^2. Find the volume of cuboid.

17. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:
41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60
Find the mean, median and mode of this data.

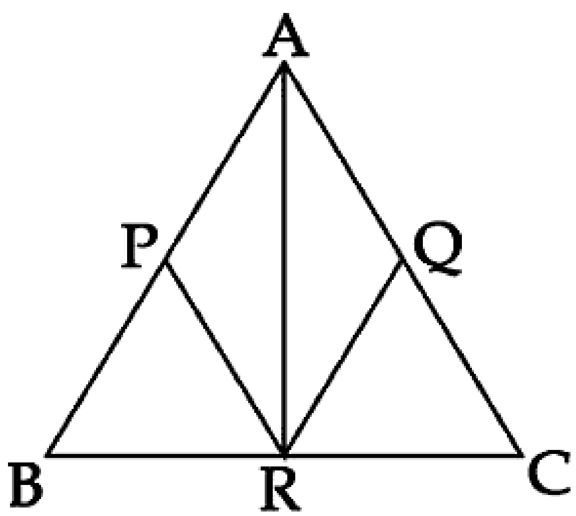
18. Find the mean salary of 60 workers of a factory from the following table:

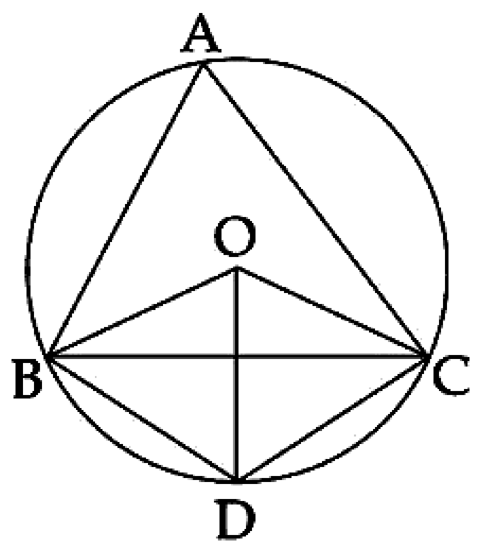
Salary (Rs)	**Number of workers**
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
Total	**60**

SECTION – D

19. The vertical height of a right circular conical tent is 4m and the volume of space inside it is $138\frac{2}{7}\ m^3$ Find the canvas required to make the tent. Also find the cost of canvas at the rate of Rs. 120 per m^2.

20. In ΔABC ; P, Q and R are points on sides AB, AC and BC such that $BP = AP$, $AQ = AC$ and $BR = CR$. Show that PAQR is a parallelogram. If $ar(\Delta PBR) = 4\ cm^2$, find the area of parallelogram PAQR.





21. O, B, D and C are the vertices of a rhombus and A, B, D and C lie on the circle with centre O, as shown in the figure. Find $\angle BOC$, $\angle OBC$, $\angle BAC$ and $\angle BDC$.

22. Construct a ΔDEF in which EF=7 cm, $\angle E=40^0$ and DE + EF=13 cm.

23. The dome of a building where people live is in the shape of a hemisphere of radius 7 m. Eleven children decided to help the old aged people by collecting money for white washing the dome. If white washing costs Rs. 2 per square meter, how much would each children would pay ? Also find volume of air inside the dome ? Which value is depicted by the children?

24. A teak wood log is in the form of cuboid of length 2.3 m, width 75cm and of certain thickness. Its volume is 1.104 cu m. How many rectangular planks of size 2.3 m x 75 cm x 4 cm can be cut from the cuboid ?

25. Draw the frequency polygon representing the following frequency distribution:

Class Interval	30 –34	35 – 39	40 – 44	45 – 49	50 – 54	55 – 59
Frequency	12	16	20	8	10	4

26. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Find the coordinates of the point where two lines intersect.

27. The taxi fare in a city is as follows: For the first kilometre, the fare is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.

28. Two dice are thrown simultaneously 500 times. Each time the sum of two numbers appearing on their tops is noted and recorded as given in the following table :

Sum of numbers	2	3	4	5	6	7	8	9	10	11	12
Frequency	19	30	22	55	52	75	70	53	26	28	70

If the dice are thrown once more, find the probability of getting a sum (i) of 7 (ii) more than 11 (iii) less than or equal to 6 (iv) between 5 and 10

SECTION – E (OTBA)

THEME 2: 'QUADRILATERALS IN ARCHITECTURE, WAH TAJ!

29. What properties of Taj Mahal makes it seventh wonder of the world? What is the total land area of the Taj in how many rectangular parts,the Taj complex is divided? **(3 marks)**

30. In this theme, the Taj Mahal complex was divided in how many sections? Mention all.**(3 marks)**

31. What do you understand by golden ratio and golden rectangle? Explain **(4 marks)**