

KENDRIYA VIDYALAYA GACHIBOWLI , HYDERABAD - 32
SAMPLE PAPER 05 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	1(1)	6(3)	15(5)	16(4)	38(13)
Mensuration Surface Areas and Volumes	2(2)	2(1)	6(2)	12(3)	22(8)
Statistics	1(1)	--	3(1)	8(2)	12(4)
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 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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CLASS : IX

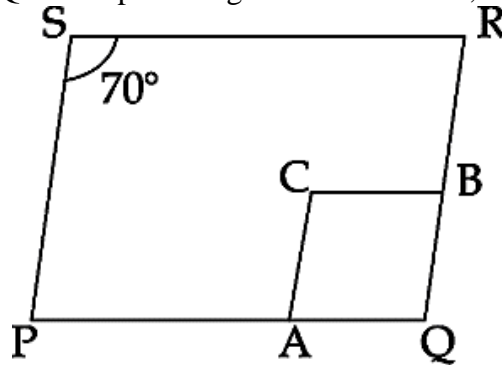
MAX. MARKS : 90
DURATION : 3 HRS

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.

SECTION – A

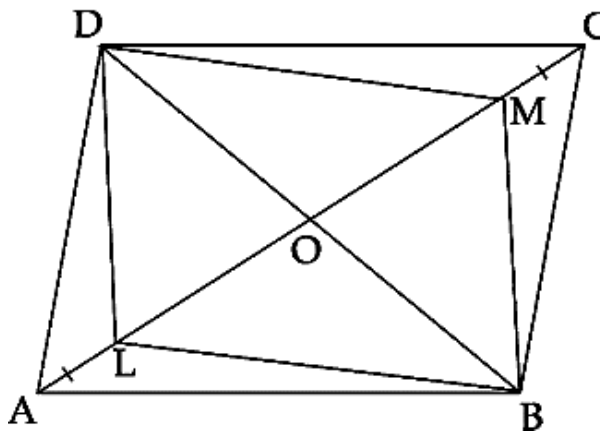
1. In the figure, PQRS and AQBC are parallelograms. If $\angle S = 70^\circ$, find $\angle ACB$.



2. The volume of two hemisphere are in the ratio 27:125. Find the ratio of their radii.
3. Find the mean of prime numbers between 20 and 30.
4. The total surface of a cone whose radius is $r/2$ and slant height is $2l$.

SECTION – B

5. MNOP is a parallelogram. Q and R are point on sides MN and ON respectively. If ar ($\triangle PRM$) = 12cm^2 , find ar ($\triangle POQ$).



6. 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.
7. In the figure, ABCD is a parallelogram whose diagonals AC and BD meet at the point O. L and M are points on AC such that $AL = CM$. Show that BMDL is a parallelogram.

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

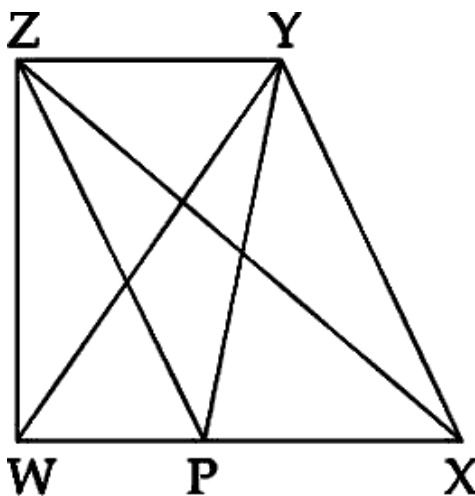
Number of girls in a family	0	1	2
Number of families	111	614	275

If a family is chosen at random, compute the probability that it has :

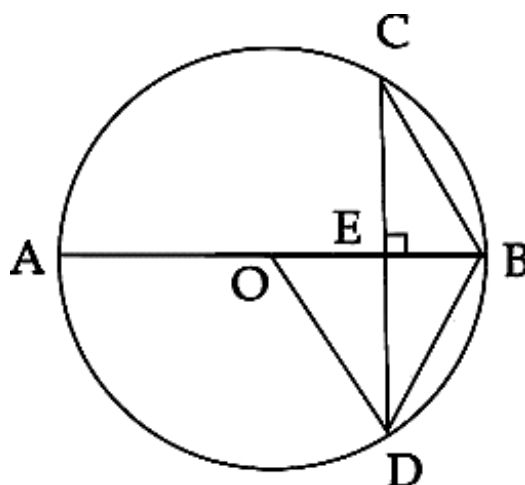
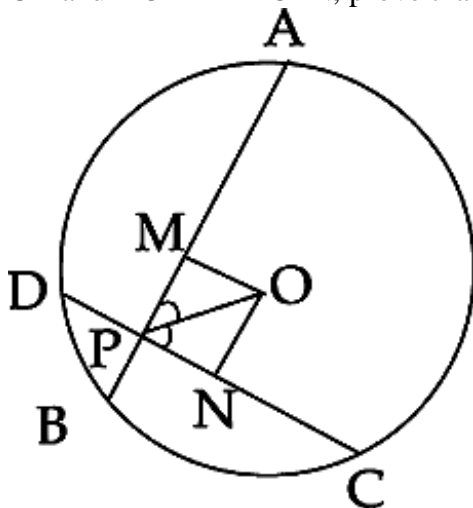
- (i) exactly 1 girl. (ii) exactly 2 boys.
9. Calculate the surface area of a cubical tank without lid whose volume is 1331 cm^3 .
10. If the probability of winning a race of an athlete is $\frac{1}{6}$ less than the twice the probability of losing the race. Find the probability of winning the race.

SECTION – C

11. In the given figure, WXYZ is a quadrilateral with a point P on side WX. If $ZY \parallel WX$, show that
 (i) $\text{ar}(\Delta ZPY) = \text{ar}(\Delta ZXY)$ (ii) $\text{ar}(\Delta WZY) = \text{ar}(\Delta ZPY)$ (iii) $\text{ar}(\Delta ZWX) = \text{ar}(\Delta XWY)$



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 $MB \parallel ND$.

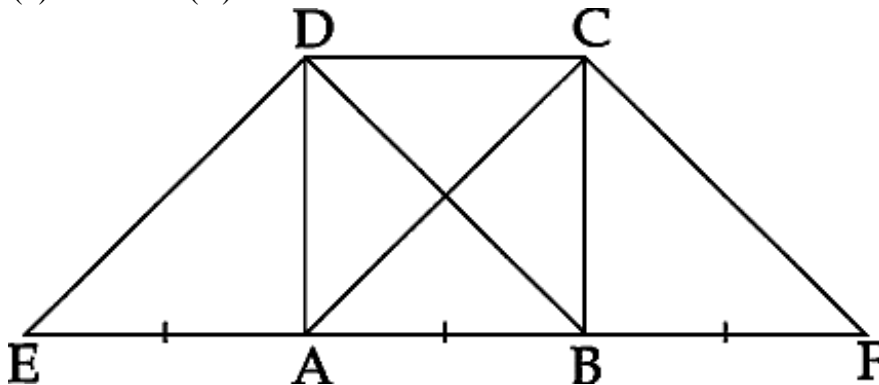


13. In the above right sided given figure, if O is the centre of the circle, $BD = OD$ and $CD \perp AB$, find $\angle CAB$ and $\angle BCD$.
14. The areas of three adjacent faces of cuboid are 15 cm^2 , 10 cm^2 and 24 cm^2 . Find the volume of cuboid.
15. Draw a line segment PQ of length 8 cm. Draw $\frac{1}{4}$ PQ, using compass and ruler.

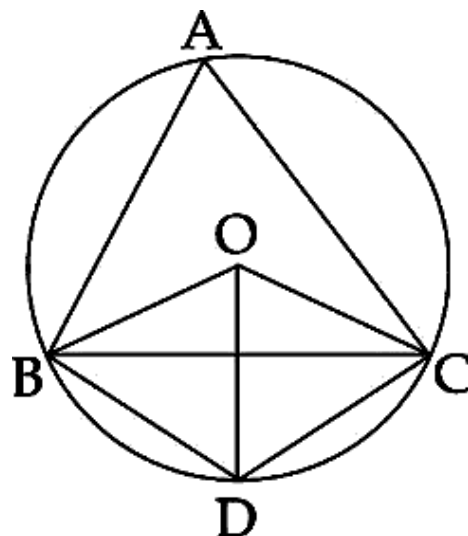
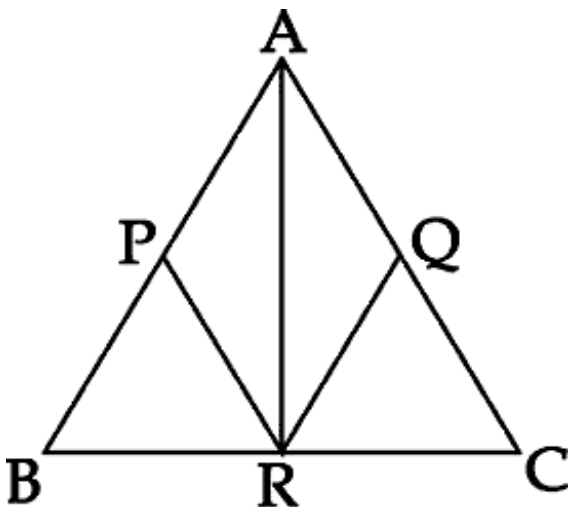
16. AB and CD are two parallel chords of a circle whose diameter is AC. Prove that $AB = CD$.
17. A metallic pipe weighs 3 grams per centimetre. Set up a linear equation with x representing the length of metallic pipe (in cms) and y representing weight of the pipe (in grams). Also, draw its graph.
18. 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.

SECTION – D

19. In the given figure, ABCD is a square. Side AB is produced to points E and F in such a way that $EA = AB = BF$. Prove that :
(i) $DE = DB$ (ii) $CA = CF$ (iii) $DE = CF$



20. The vertical height of a right circular conical tent is 4m and the volume of space inside it is $138\frac{2}{7} \text{ m}^3$. Find the canvas required to make the tent. Also find the cost of canvas at the rate of Rs. 120 per m^2 .
21. In $\triangle ABC$; 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 $\text{ar}(\triangle PBR) = 4 \text{ cm}^2$, find the area of parallelogram PAQR.



22. 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 $\angle BDC$.

23. Construct a $\triangle DEF$ in which $EF=7$ cm, $\angle E=40^\circ$ and $DE + EF=13$ cm.
24. 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?
25. 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 ?
26. 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

27. 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

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: ENERGY CONSUMPTION AND ELECTRICITY BILL

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. Why fasting is not good for weight loss? **(3 marks)**
31. Aditi wants to burn calories gained by eating one pastry and one medium French fries by doing physical activity. She chooses home activities and jogging for the same and spend x hours in home activities and y hours in jogging. Write a linear equation and draw the graph. **(4 marks)**
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