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SAMPLE PAPER 04 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(7)**
Geometry Quadrilaterals, Area, Circles & Construction	1(1)	2(1)	15(5)	20(5)	**38(12)**
Mensuration Surface Areas and Volumes	--	--	6(2)	12(3)	**18(5)**
Statistics	1(1)	2(1)	3(1)	4(1)	**10(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 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**

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. In the figure, AB and CD are two chords equidistant from the centre O. OP is the perpendicular drawn from centre O to AB. If CD = 6 cm. find PB
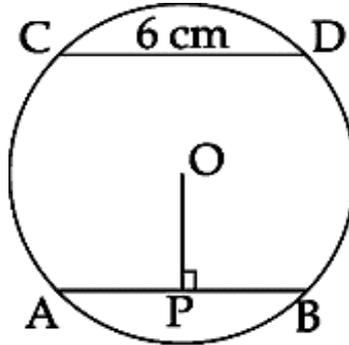
2. If the mean of the observations: x, x + 3, x + 5, x + 7 and x + 10 is 9, then find the value of x.

3. If x = 3, y = -2 is a solution of the linear equation $3x – ky = 1$, then find the value of k.

4. Write the linear equation such that each point on its graph has an ordinate 3 times its abscissa.

SECTION – B

5. DEFG is a parallelogram with GH⊥DE. If GH = 10 cm and GF=12 cm, find ar (ΔGEF) and ar(||^{gm}DEFG).

6. Express the linear equation $2x = -5y$ in the form $ax + by + c = 0$ and indicate the values of a, b and c.

7. Find four solutions of the linear equation $2x + 3y = 4$.

8. In a bottle there are 7 red buttons, 5 green buttons and 8 purple buttons. What is the probability that randomly drawn button from the bottle is a purple button ? If one extra green button is put in side the bottle, what will be the probability that randomly drawn button is purple ?

9. The blood group of 60 students are selected of class IX and recorded as below :

Blood group	A	B	AB	O	Total
Number of Students	12	18	16	14	60

If a student is chosen at random find the probability that it is :
(i) A blood group student (ii)   O blood group student

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10. The points scored by a basket-ball team in a series of matches are as follows:

$$17, 2, 7, 27, 25, 5, 14, 18 , 10, 24, 10, 8, 7, 10.$$

Find mean and mode for the data.

SECTION – C

11. AB and CD are two parallel chords of a circle whose diameter is AC. Prove that AB = CD.
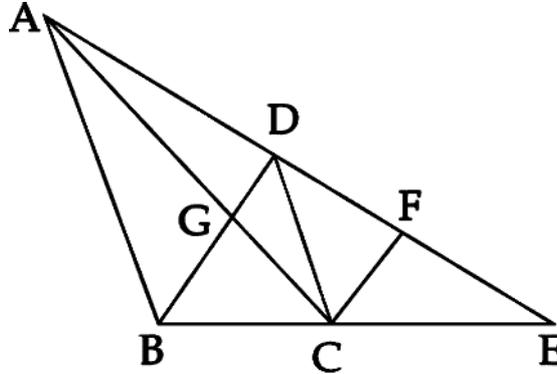
12. Draw an angle of 120^0 using protractor. Bisect it and verify the result.

13. Find the mean of the following observations:

Variate (x)	4	6	8	10	12
Frequency (f)	12	10	9	8	5

14. The radius and height of a cylinder are in the ratio 5 : 7. If its volume is 4400 cm^3, find the radius of the cylinder.

15. Two cubes of edge 14 cm each are joined end to end to form a cuboid. Find the total surface area of the resulting cuboid.

16. The force exerted to pull a cart is directly proportional to the acceleration produced in the body. Express the statement as a linear equation of two variables and draw the graph of the same by taking the constant mass equal to 6 kg. Read from the graph, the force required when the acceleration produced is (i) 5 m/sec^2, (ii) 6 m/sec^2.

17. The following values of *x* and *y* are thought to satisfy a linear equation, Write the linear equation.

x	6	–6
y	–6	6

Draw the graph, using the values of *x*, *y* as given in the above table. At what point the graph of the linear equation (i) cuts the *x*-axis. (ii) cuts the *y*-axis.

18. D and F are points on side AE of ΔABE. Through point D a line DC is drawn which is parallel to AB and meets BE in C. Prove that ar (ΔACF) = ar (BCFD).

SECTION – D

19. In ΔABC, D, E and F are mid-points of sides BC, AC, and AB respectively. If ar (ΔDEF) = 12 cm^2, find ar(ΔABC).

20. Construct a right triangle whose base is 7 cm and sum of its hypotenuse and the other side is 16 cm.

21. In the given figure, O is the centre and AE is a diameter of the semicircle ABCDE. If AB = BC and ∠AEC = 60^0, then find (i) ∠CBE (ii) ∠CDE (iii)∠AOB. Also, prove that BO ∥ CE.
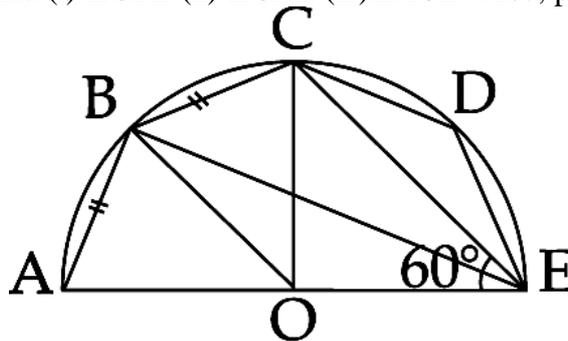
22. Solve the equation 2y + 1 = y – 3, and represent the solution(s) on
   (i) the number line,
   (ii) the Cartesian plane.

23. Prove that "*The sum of either pair of opposite angles of a cyclic quadrilateral is* 180º."

24. A conical tent has the area of its base as 154 sq m and its curved surface area as 550 sq m. Find the volume of the tent.

25. Ramesh threw a party on the recovery of his injured friend from the accident. Ramesh served him and 5 other friends with chilled juice which was in cylindrically shaped cans of radius 4.2 cm and height 15 cm. Find the total volume of juice they drink and total surface area of 7 juice cans. Which value is depicted by Ramesh ?

26. The volumes of the two spheres are in the ratio 64 : 343. Find the ratio of their surface areas.

27. Construct a histogram and frequency polygon for the following frequency distribution:

Weight(in kg)	40-45	45-50	50-55	55-60	60-65	65-70
No. of persons	15	25	28	15	12	5

28. A parent has collected data of number of school based on the monthly fees, so that he can choose the school for admission of his child. Data is as follows:

Monthly School Fee (in Rs)	250-500	500-750	750-1000	1000-1250	1250-1500	1500-1750	1750-2000
No. of Schools	14	16	18	12	14	8	8

If a school is selected at random, find the probability that the school is having (i) minimum fee (ii) maximum fee (iii) fee of atmost Rs 1000 (iv) fee between Rs 1000 and Rs 1500.

SECTION – E (OTBA)
THEME 2: 'QUADRILATERALS IN ARCHITECTURE, WAH TAJ!

29. A playground is in the shape of a quadrilateral ABCD in which the opposite sides are equal in length. Prove that the playground is in the shape of a parallelogram.   **(4 marks)**

30. In parallelogram ABCD, if AB = 8cm, BC = 6m and perpendicular distance between AB and DC is 3m, then find the perpendicular distance between AD and BC.   **(3 marks)**

31. If it is required to design rectangular shaped playground of same area as their playground such that its one side is 6m then find the other side.   **(3 marks)**