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MM 80 Mathematics Mock Test IX – S. A. II March 2011 Time 3 h

Paper prepared by
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Blue Print

Topics	Allotted Marks	Number of Questions			
		1 Mark Ques	2 Marks Ques	3 Marks Ques	4 Marks Ques
Algebra (Contd.) Linear Equation in Two Variables	14	2	1	2	1
Geometry (Contd.) Quadrilaterals , Area , Circles , Constructions	35	3	4	4	3
Mensuration Surface Areas and Volumes	15	3	1	2	1
Statistics and Probability	16	2	2	2	1
Total	80	10	8	10	6

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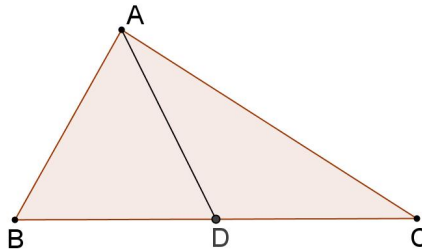


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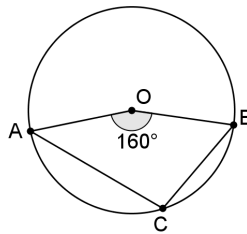
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3. In the following figure, if D is the mid-point of BC, then the incorrect statement is



- a) $\text{ar}(\triangle ABC) = \text{ar}(\triangle ADC)$
- b) $\text{ar}(\triangle ABD) = \text{ar}(\triangle ABC)$
- c) $\text{ar}(\triangle ABC) = 2\text{ar}(\triangle ADC)$
- d) $\text{ar}(\triangle ABD) = \frac{1}{2} \text{ar}(\triangle ABC)$

4. In the following figure, O is the centre of the circle. If $\angle AOB = 160^\circ$, then $\angle ACB$ is



- a) 100°
- b) 150°
- c) 65°
- d) 210°

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5. Each edge of a cube is increased by 40%. The percentage increase in the surface area is
a) 48 b) 148 c) 96 d) 192
6. The difference between the maximum and minimum observation is called
a) frequency b) class size c) range d) class mark
7. A die is thrown once. The probability of getting an even prime number is
a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{6}$ d) $\frac{2}{3}$
8. The solution of the linear equation $3x+0y+6=0$ in two variables is of the form
a) $(-2,p)$ b) $(q,-2)$ c) $(0,-2)$ d) $(-2,0)$
9. The diameter of a hemispherical bowl is 14 cm. Its curved surface area is
a) 308 cm^2 b) 462 cm^2 c) 616 cm^2 d) 1232 cm^2
10. If the lateral surface area of a cube is 1600 cm^2 then its edge is
a) 15 cm b) 18 cm c) 20 cm d) 25 cm

Section B 2 Marks Each

11. After 5 years the age of father will be two times then the age of son. Write a linear equation in two variables to represent this statement.

OR

Find the points where graph of the equation $4x+3y=12$ cuts the x-axis and y-axis.

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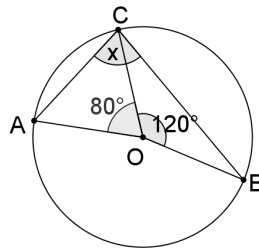
12. If O is the centre of the circle, find the value of x.



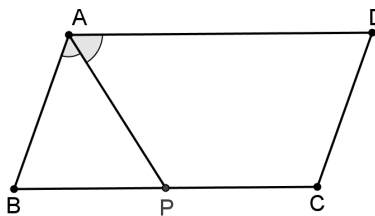
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13. Show that the line segment joining the mid-points of opposite sides of a quadrilateral bisect each other.
14. Three cubes whose edges measure 3 cm , 4 cm and 5 cm are melted to form a single cube. Find the surface area of the new cube.
15. In the following figure , P is the mid point of side BC , of a parallelogram ABCD such that $\angle BAP = \angle DAP$. Prove that $AD = 2CD$.



16. Find the mean of first 8 prime numbers.

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17. XY is a line parallel to the side BC of a $\triangle ABC$. BE \parallel AC , and CF \parallel AB meet the line XY at E and F respectively. Prove that the area ($\triangle ABE$) = area($\triangle ACF$)
18. A survey of 100 students is done regarding the likes and dislikes about the subject mathematics. The data are given below :

Views	No. of Students
Likes	80
Dislikes	20

Find the probability that student chosen randomly a) like mathematics b) does not like mathematics.

Section C 3 Marks Each

19. Draw the graphs of the equations $x + y = 7$, $5x + 2y = 20$ and find the coordinates of the point where these lines meet.
20. Let y varies directly as x. If $y = 12$, when $x = 4$, then write a linear equation. What is the value of y when $x = 5$?
21. In a parallelogram ABCD , the bisectors of adjacent angles C and D intersect each other at point O. Prove that $\angle COD = 90^\circ$
22. D , E and F are mid points of the sides BC , CA and AB of an equilateral $\triangle ABC$. Show that $\triangle ABC$ is divided into four congruent triangles by joining D , E and F.
- OR**
- ABCD is a rhombus. Show that diagonal AC bisects $\angle A$ as well $\angle C$ and diagonal BD bisects $\angle B$ as well as $\angle D$.

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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. A conical tent is to accommodate 11 persons. Each person must have 4 sq m of the space on the ground and 20 cu m of air to breathe. Find the height of the tent.

OR

A hemispherical tank is made up of iron sheet 1 cm thick. If the inner radius is 1 m, then find the volume of the iron used in making the tank.

25. The mean of the marks of 25 students of section A of class IX is 47, that of 35 students of section B is 51 and that of 30 students of section C is 53. Find the combined mean of the marks of student of three sections of class IX.
26. A die is thrown 800 times and the frequencies of the outcomes of the numbers 1, 2, 3, 4, 5, 6 are given below in the frequency table :

Outcome	1	2	3	4	5	6
Frequency	144	152	136	128	118	122

Find the probability of the happening of each of the events.

27. Prove that the parallelograms on the same base and between same parallel lines have the same area.

OR

In a $\triangle ABC$, E is the mid point of median AD. Show that $\text{area}(\triangle BED) = \frac{1}{4} \text{ar}(\triangle ABC)$

28. If a, b and c are the length, width and height of a cuboid, V is the volume of the cuboid and S is the surface area of cuboid, then prove that

$$\frac{1}{V} = \frac{2}{S} \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right)$$

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Section D 4 Marks Each

29. The auto fare in a city is as follows :
For the first kilometer, the fare is Rs.10 and for the subsequent distances it is Rs.6 per km. Taking distance covered as x km and total fare as Rs. y , write a linear equation for this information and draw its graph.

30. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point of the remaining part of the circle.

31. Prove that the circle drawn on any one of the equal sides of an isosceles triangle as diameter bisects the base.

OR

If two sides of a cyclic quadrilateral are parallel, prove that the remaining two sides are equal and the diagonals are equal.

32. Water is flowing at the rate of 2.5 km/hr through a circular pipe of 20 cm internal diameter into a circular cistern of diameter 20 m and depth 2.5 m. In how much time will the cistern be filled?

OR

The volume of the space inside a right circular conical tent is $138\frac{2}{7}$ cu m and its vertical height is 4 m. Find the canvas required to make the tent and also find the cost of the canvas at the rate of Rs.120 per m^2 . (Take $\sqrt{33} = 5.74$)

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33. Construct a triangle with perimeter 10 cm and base angles 60° and 45° . Also write the steps of construction.
34. The height of workers in a factory are as follows :

Height (in cm)	No of workers
130-140	8
140-150	18
150-160	20
160-170	5
170-180	4
180-190	3

Draw a histogram to represent the above data.

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