

Time 3 hours

Mathematics Mock Test SA2, 2015 –16

MM90

*Paper Prepared by Dev Anoop (Bathinda)
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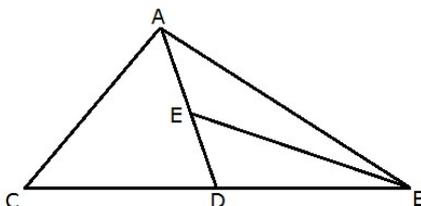
Note: 3 Blue coloured Questions are in lieu of OTBA

Section A - 1 Mark Each

1. A triangle ABC can be constructed in which $AB = 7$ cm, $\angle A = 30^\circ$ and $BC + AC = 7$ cm. State true or false justify.
2. A letter is chosen at random from the word MATHEMATICS. Find probability of a getting a vowel.
3. Construct an angle of 67.5°
4. The radius of a sphere is $3r$, find its volume.

Section B - 2 Marks Each

5. In figure D is the midpoint of BC and E is the midpoint of AD, if $\text{ar}(\triangle ABE) = x$ $\text{ar}(\triangle ABC)$, then find value of x



6. Two chords AB and AC of a circle subtends angles equal to 90° and 150° , respectively at the centre. Find angle BAC, if AB and AC lie on the opposite sides of the centre.
7. A cylinder, hemisphere and cone have same base and height. Find ratio of their volumes.
8. The cost of a notebook is thrice the cost of a pen. Write a linear equation in two variables to represent this statement.

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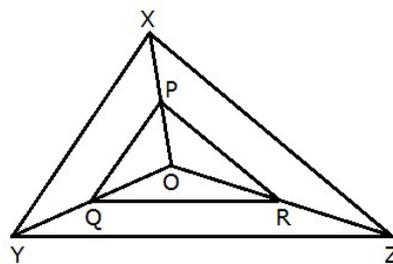
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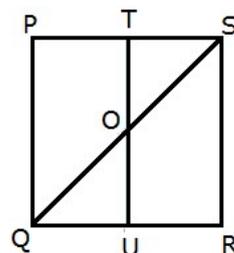
9. The probability of guessing the correct answer to a certain question is $\frac{x}{3}$, if the probability of not guessing the correct answer is $\frac{5x}{3}$, then find value of x.
10. In a class there are 'a' girls and 'b' boys, a student is selected at random then find the probability of selecting a girl.

Section C - 3 Marks Each

11. Construct a right triangle whose perimeter is 10 cm and one of the acute angles is equal to 60° .
12. P, Q and R the midpoints of XO, YO and ZO respectively as shown in figure. If $PQ = 4$ cm, $QR = 6$ cm and $PR = 8$ cm. Then find the perimeter of ΔXYZ .



13. PQRS is a square. T and U are respectively, the mid-points of PS and QR Figure. Find the area of ΔOTS , if $PQ = 8$ cm, where O is the point of intersection of TU and QS.





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14. ABCD is a parallelogram. The circle through A, B and C intersects CD (produced if necessary) at E. Prove that $AE = AD$.
15. Draw the graph of the linear equation $3x + 4y = 6$. At what points, the graph of the equation cuts the x -axis and the y -axis?
16. Cards numbered 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box. Find the probability that the number on the card is (a) less than 14 (b) a perfect square.
17. The diameter of a sphere is decreased by 25%. By what per cent does its curved surface area decrease?
18. Find mean of children per family from the given data

Number of Children	Number of Families
0	5
1	11
2	25
3	12
4	5
5	2

19. The mean marks (out of 100) of boys and girls in an examination are 70 and 73, respectively. If the mean marks of all the students in that examination are 71, find the ratio of the number of boys to the number of girls.
20. Find equation of a line passing through A (2, 3) and B (5, 11)

Section D - 4 Marks Each

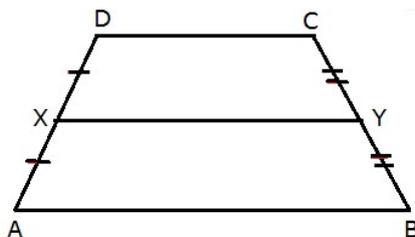
21. ABCD is a trapezium with $AB \parallel DC$. A line parallel to AC intersects AB at X and BC at Y. Prove that $\text{ar}(\triangle ADX) = \text{ar}(\triangle ACY)$.
22. Construct a triangle ABC, given $AB - AC = 3.5$ cm, $BC = 7$ cm and angle C = 22.5° .

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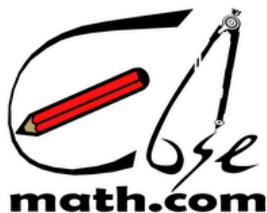


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23. Prove angle subtended by an arc at the center of circle is twice the angle subtended by it on the remaining part of circle.
24. Draw the graph of linear equation whose solutions are represented by the points whose sum of x coordinate and twice of y coordinate is always equal to 2, also find the area of the triangle formed by this graph and the axis.
25. ABCD is a trapezium with $AB \parallel DC$, X and Y are midpoints of sides AD and BC respectively, if $CD = 30$ cm and $AB = 50$ cm, show that $\text{ar}(\text{DCYX}) = \frac{7}{9}\text{ar}(\text{XYBA})$



26. The parking charges of a car at Mumbai railway station for first two hours is Rs 50 and Rs 10 for subsequent hours. Write a linear equation and represent the statement graphically. Sham parks the car for 18 hours and hands over Rs 270 to the parking boy. The boy told Sham about the correct charges and returned him the balance. How much amount is paid back? What value is depicted by the parking boy?
27. Prove parallelograms on same base and between same parallel lines are equal in area.
28. Rain water which falls on a flat rectangular surface of length 6 m and breadth 4 m is transferred into a cylindrical vessel of internal radius 20 cm. What will be the height of water in the cylindrical vessel if the rain fall is 1 cm. Give your answer to the nearest integer. (Take $\pi = 3.14$)
29. Monica has a piece of canvas whose area is 551 m^2 . She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m^2 , find the volume of the tent that can be made with it.



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30. The marks obtained (out of 60) by a class of 50 students are given below. Construct a histogram and frequency polygon on same graph to represent the data.

Marks	Number of Students
10 – 20	5
20 – 30	10
30 – 40	16
40 – 50	9
50 – 60	2

31. A sphere and a right circular cylinder of the same radius have equal volumes. By what percentage does the diameter of the cylinder exceed its height ?

or

Water is supplied to city population from a river through a cylindrical pipe the diameter of the cross section of pipe is 20 cm, the speed of water through the pipe is 18 km/h. Find the quantity of water in litres which is supplied to the city in 4 hours.