Sample Paper For Half Yearly 2008-09

Class - X
Subject- Maths

**Time: 3 hrs.**   **M.M.80.**

General Instructions:
1. Attempt all the questions
2. The questions paper consists of 30 questions divided into four sections A, B, C, D. Section A contains 10 questions of 1 marks each ,Section B contains 5 questions of 2 marks each, Section C contains 10 questions of 3 marks each and Section D is of 5 questions of 6 marks each.
3. There is no overall choice. However, internal choices have been provided.
4. In question on constructions, the drawing should be neat and exactly as per the given measurement.

Section A

1. State Euclid's Lemma.
2. Find the value of K, for which the following pair of linear equations has a unique solution.
    $2x + ky = 3$ and $6x + 2/3 y + 7 = 0$.
3. Find the nature of the roots of the quadratic eq . $3x^2 - 4\sqrt{3} x + 4 = 0$.
4. Find the number of terms of A.P.7,13,19,----------------------205.
5. Mean of 30 numbers is 18. What will be the new mean if each observation is increased by 2.
6. Find the area of the sector of a circle of radius 7c.m.subtending an angle of 60° at the centre.
7. Find AE in the figure given DE ∥ BC.
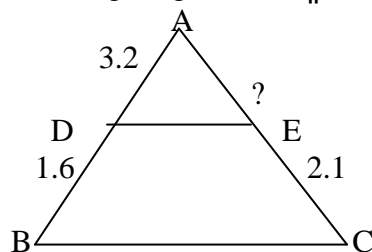
8. Areas of two similar triangles are $81cm^2$ and $49cm^2$ .If the attitude of the first triangle is 6.3 cm, find the correspoinding altitude of the other.
9. A die is thrown once , what is the probability of getting a prime number.
10. Evaluate $\dfrac{\cot 54^o}{\tan 36^o} + \dfrac{\tan 20^o}{\cot 70^o} - 2 \tan 45^o$

Section B

11. A box contains 5 red balls , 4 green balls and 7 white balls .A ball is drawn at random from the box . Find the probability that the ball drawn is neither red nor white .

12. Prove that

$$\sqrt{\frac{1-\cos A}{1+\cos A}} = \frac{\sin A}{1+\cos A}$$

13 .Show that the points L(- 2 , 3) , M (1,2) and N (7,0) are collinear .

14.The first term of an A.P is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.
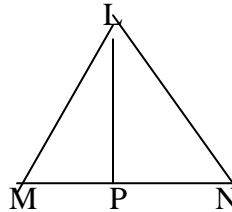
OR

Find the 31st term of AP when its 11th term is 38 and 16th term is 73.

15. In the given figure

$$LP \perp MN$$

Prove that :

$$LM^2 = MN^2 + LN^2 - 2MN.PN$$

Section C

16. Show that $3 + 5 \sqrt{2}$ is an irrational number.

17. If cot ɵ = 7/8

Evaluate : $\dfrac{(1+\sin ɵ)(1- \sin ɵ)}{(1+\cos ɵ)(1- \cos ɵ)}$

OR

If tan (A+B) = $\sqrt{3}$ and tan (A-B) = 1/ $\sqrt{3}$

$0^o < A + B \le 90^o$ and A > B

Find A and B.

18. For what value of 'K' will the following pair of linear equations have infinitely many solutions:

$$Kx + 3y = K-3$$
$$12x + Ky = K$$

19. Find the 11th term from the last term of the A.P 10,7,4,-----------------, - 62

OR

Find the sum of all three digits numbers which leave remainder 3 , when divided by 5.

20. Draw a circle of radius 3.5 cm. Construct two tangents inclined at an angle of 60° to each other. Measure them and write the length of each.

21. Prove that the points (-3,0) , (1, -3) and (4, 1) are the vertices of an isoceles right triangle.

22. Find the ratio in which the y axis divides the line segment joining the points (5, - 6) and (-1 , - 4). Also find the points of intersection.

OR

Co-ordinates of the vertices of Δ ABC are A(4,1) , B(-3, 2) and C(0,k). Given that the area of Δ ABC is 12 units^2. Find the value of k.

23. Find the area of a right circular cylinder whose base radius is 3.5 cm and height is 10 cm.

24. If a student had walked 1 km/hr faster , he would have taken 15 minutes less to walk 3 km . Find the rate at which he was walking.

25. In the figure ΔABC and ΔAMP are right angled at B and M resp.
Prove that CA x MP = PA x BC
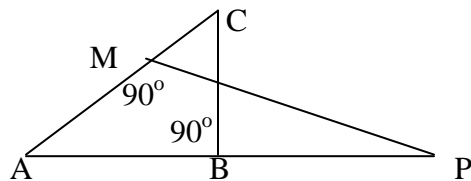
Section D

26. There are two poles , one each on either bank of a river , just opposite to each other . One pole is 60 m high. From the top of this pole , the angle of depression of the top and the foot of the other pole are 30° and 60° resp.
    Find the width of the river and the height of the other pole

27. Prove that in a right triangle , the square of the hypotenuse is equal to the the sum of the squares of the other two sides .
    Using the above theorem prove that in equilateral triangle ABC with AD $\perp$ BC ,
    $AD^2 = 3DC^2$

    OR

    If a line is drawn parallel to one side of a triangle , to intersect the other two sides in distinct points , prove that the other two sides are divided in the same ratio.
    Using the above prove the following:
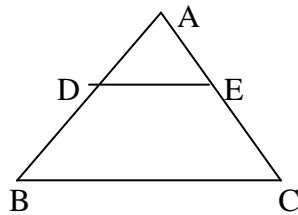
    DE ‖ BC and BD=CE
    Prove that ΔABC is an isosceles triangle.

28. The interior of a building is in the form of right circular cylinder of radius 7 m and height 6 m surmounted by right circular cone of vertical angle 60° . Find the cost of painting inside of the building at Rs 30 per meter square.

    OR

    A milk container (open at the top) made up of a metal sheet is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm resp.
    Find (i) the cost of milk that the container can contain at the rate of Rs. 23 per litre.
         (ii) the cost of metal sheet used if it costs Rs. 5 per 100 cm^2

29. The median of the following data is 20.75. Find the missing frequencies x and y , if the total frequency is 100.

Class Interval	Frequency
0-5	7
5-10	10
10-15	x
15-20	13

20-25	y
25-30	10
30-35	14
35-40	9

30. Draw the graph of the following pairs of linear Equations:

x + 3y = 6

2x - 3y = 12

Hence find the area of the region bounded by x = 0, y = 0 and 2x - 3y = 12.

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