DELHI PUBLIC SCHOOL, CHANDIGARH

Summative Assessment-I, Sample Paper
Class : X, Subject : Maths

Time : 3 hours MM : 90

General Instructions:

(i) All questions are compulsory.
(ii) The question paper consists of 31 questions divided into four sections A,B,C and D. Section A comprises of 4 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 10 questions of 3 marks each and section D comprises of 11 questions of 4 marks each.
(iii) Use of calculator is not permitted.

SECTION – A

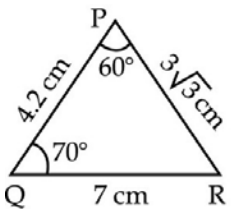
Question numbers 1 to 4 carry one mark each.

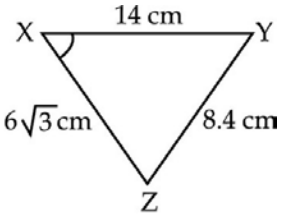
1. If LCM (54,336) = 3024, then find HCF (54,336).
2. If the sides of two similar triangles are in ratio 4:9, then find ratio of area of these triangles.
3. Find the Value of $5\tan^2 A - 5\sec^2 A$.
4. If mean = 24, median = 26, then find mode.

Section – B

Questions numbers 5 to 10 carry two marks each.

5. For what value of p will the following system of equations have no solution
   $(2p - 1)x + (p - 1)y = 2p + 1$; $y + 3x - 1 = 0$
6. If $\tan 2A = \cot (A - 18^o)$, where 2A is an acute angle, find the value of A.
7. Is $7 \times 11 \times 13 + 13$ a composite number? Justify your answer.
8. In the given figures, find the measure of $\angle X$.





9. If α and $\frac{1}{\alpha}$ are zeros of polynomial $4x^2 - 2x + (k - 4)$. Find k.
10. The following distribution gives the daily income of 50 workers of a factory:

Daily Income in (₹)	100-120	120-140	140-160	160-180	180-200
Number of workers	12	14	8	6	10

Write the above distribution as “less than type” cumulative frequency distribution.

Section-C

Questions numbers 11 to 20 carry three marks each.

11. The sum of a two digit number and the number obtained by reversing the digits is 66. If the digits differ by 2, find the number.

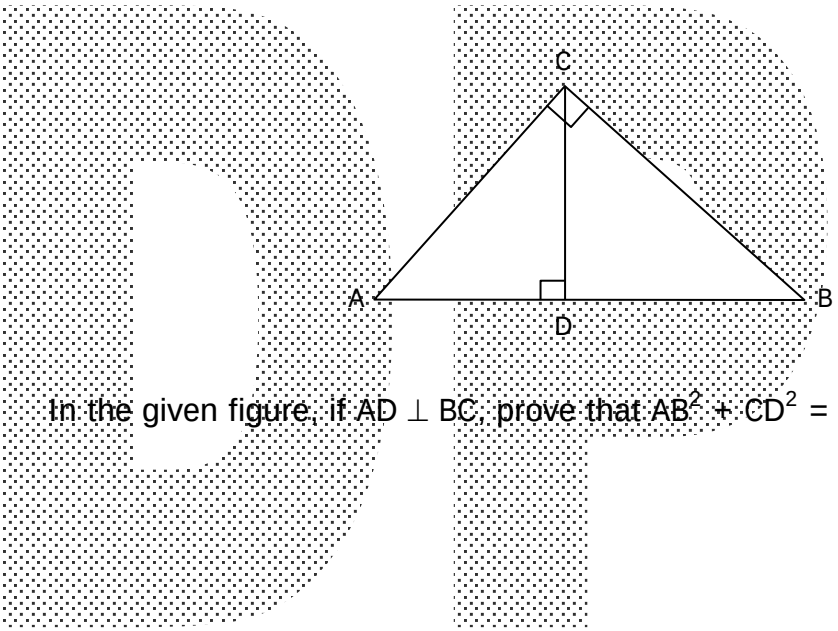
12. If α and β are the zeros of polynomial $x^2 - 2x - 8$ then form a quadratic polynomial whose zeros are 3α and 3β.

13. Prove that: $\dfrac{\cot A - \cos A}{\cot A + \cos A} = \dfrac{\text{cosec } A - 1}{\text{cosec } A + 1}$.

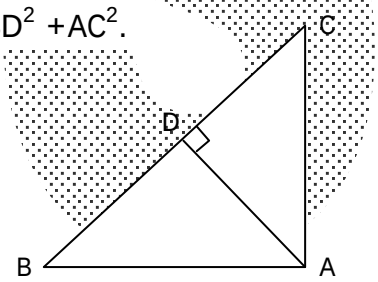
14. Evaluate: $\sin A \cos A - \dfrac{\sin A \cos(90 - A) \cos A}{\sec(90 - A)} - \dfrac{\cos A \sin(90 - A) \sin A}{\text{cosec }(90 - A)}$

15. Prove that: $\dfrac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$

16. In the given figure, $\angle ACB = 90°$ and $CD \perp AB$. Prove that $\dfrac{BC^2}{AC^2} = \dfrac{BD}{AD}$



17. In the given figure, if $AD \perp BC$, prove that $AB^2 + CD^2 = BD^2 + AC^2$.



18. Prove that $6 - \sqrt{5}$ is an irrational number.

19. The given distribution shows the number of runs scored by some top Batsman of the world in one day international cricket matches :

Runs scored	3000-4000	4000-5000	5000-6000	6000-7000	7000-8000	8000-9000	9000-10000	10000-11000
Number of batsman	4	18	9	7	6	3	1	1

Find the mode of the data.

20. If the mean of given data is 50. Find the value of p.

Class-Interval	0-20	20-40	40-60	60-80	80-100
Frequency	17	28	32	p	19

Section-D

Questions numbers 21 to 31 carry four marks each

21. Prove that: $\frac{1-\cos A+\sin A}{\sin A+\cos A-1}=\frac{1+\sin A}{\cos A}$

22. If two zeros of the polynomial $x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 \pm \sqrt{3}$, find other zeros.

23. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Find the co-ordinate of the vertices of triangle formed by these lines and x – axis, shade the region. Also find the area of triangle.

24. If the median of the distribution given below is 28.5. Find x and y.

Class-interval	0-10	10-20	20-30	30-40	40-50	50-60	Total
Frequency	5	x	20	15	y	5	60

25. Use Euclid's division lemma to show that the cube of any positive integer is of the form 9m, 9m + 1 or 9m + 8.

26. Two points A and B are 90 km apart from each other on a highway. A car starts from A and another from B at the same time. If they go in the same direction, they meet in 9 hours and if they go in the opposite directions, they meet in $1\frac{2}{7}$ hours, find their speeds.

27. Prove that in a right angle triangle, the square of the hypotenuse is equal to the sum of the squares of other two sides.

28. If $\sec\theta = x + \frac{1}{4x}$, then prove that $\sec\theta + \tan\theta = 2x$ or $\frac{1}{2x}$.

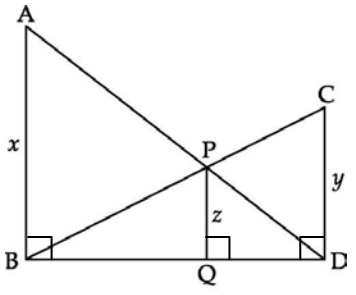
29. The following table gives production of wheat of 100 farms of a village.

Production (in kg/ha)	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80
Number of farms	2	8	12	24	38	16

Change the distribution to 'more than type' distribution and draw its ogive and find median.

30. Evaluate: $\frac{\sec^2(90-\theta)-\cot^2\theta}{2(\sin^2 25^\circ+\sin^2 65^\circ)}+\frac{2\cos^2 60^\circ\tan^2 28^\circ\tan^2 62^\circ}{\sin 30^\circ\cos 60^\circ}$

31. In the given figure, AB || PQ || CD, AB = x units, CD = y units and PQ = z units, prove that, $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}$



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