

DELHI PUBLIC SCHOOL, JAMMU  
PRE BOARD-II Assignment (Standard)

Class:X

Sub:-Mathematics

**Section A (Objective Type)**

**MCQ (1 to 10)**

1. Given the  $\text{HCF}(253,550) = 11$  and  $\text{LCM}(253,550) = 253xR$ . The value of R is  
(a) 400 (b) 40 (c) 440 (d) 50
2. Which of the following is irrational?  
(a)  $\sqrt{16} + \sqrt{9}$  (b)  $\sqrt{25} + \sqrt{4}$  (c)  $\sqrt{4} + \sqrt{9}$  (d)  $\sqrt{3} + \sqrt{5}$
3. If the zeroes of the quadratic polynomial  $x^2 + ax + b$  are 2 and -3, then  
(a)  $a = 0, b = -6$  (b)  $a = 2, b = -6$  (c)  $a = 5, b = -1$  (d)  $a = 1, b = -1.5$
4. If  $\alpha$  and  $\beta$  are the zeroes of  $p(x) = x^2 - 5x + 6$ , then the value of  $\alpha + \beta - \alpha\beta$  is  
(a) -23 (b) -1 (c) 13 (d) 23
5. If  $\sin \theta = \frac{1}{3}$ , then the value of  $2 \cot^2 \theta + 2$  is equal to:  
(a) 6 (b) 9 (c) 4 (d) 18
6. In a right triangle ABC, right angled at B,  $BC = 15\text{cm}$ ,  $AB = 8\text{cm}$ . A circle is inscribed in triangle ABC. The radius of the circle is  
(a) 1cm (b) 2cm (c) 3cm (d) 4cm.
7. If D, E, F are mid points of sides BC, CA, AB respectively of triangle ABC, then the ratios of the area of triangle DEF and ABC is  
(a) 1:4 (b) 1:2 (c) 2:3 (d) 4:5
8. If  $\triangle ABC$  and  $\triangle DEF$  are similar such that  $2AB = DE$  and  $BC = 10\text{cm}$ , then  $EF =$   
(a) 16cm (b) 12cm (c) 20cm (d) 4cm
9. If  $(x, 2)$ ,  $(-3, -4)$  and  $(7, -5)$  are collinear, then  $x =$   
(a) 60 (b) 63 (c) -63 (d) -60
10. The ratio in which  $(4, 5)$  divides the join of  $(2, 3)$  and  $(7, 8)$  is  
(a) 4:3 (b) 5:2 (c) 3:2 (d) 2:3

**Fill in the blanks (11-15)**

11. Probability of definite event is \_\_\_\_\_
12. Probability of an even prime number in a die is \_\_\_\_\_
13. Total number of outcomes when three dice are thrown simultaneously \_\_\_\_\_
14. If  $a$  and  $b$  are the roots of  $x^2 + 2ax + 3b = 0$ ,  $a + b =$  \_\_\_\_\_
15. For AP 10, 15, 20, 25, ... . 200<sup>th</sup> term is \_\_\_\_\_

**Very short type (16-20)**

16. In deck of playing cards, find probability of red face card.
17. Find discriminant for  $3x^2 + 8x - 5 = 0$ .

18. Find k if  $x=1$  is zero of  $3x^2 + 2kx - 2 = 0$ .
19. Find first term and common difference for 6,2,-2,-6,-----
20. Which term of AP 3,8,13,18,----,is 98.
21. Find the HCF of  $3^3 \times 5$  and  $3^2 \times 5^2$
22. Find distance between (a,b) and (-a, -b)
23. Find the value(s) of k, if the quadratic equation  $3x^2 - k\sqrt{3}x + 4 = 0$  has equal roots.
24. In  $\Delta ABC$ ,  $DE \parallel AB$ , and  $AD=2x$ ,  $DC=x+3$ ,  $BE=2x-1$  and  $CE=x$ , find x.
25. Find the eleventh term from the last term of the AP 27,23,19,....,-34
26. If  $15 \cot A = 8$ , find  $\sin A$  and  $\sec A$
27. Diameter of two concentric circles be 2cm and 4cm respectively . find area of ring formed.
28. Out of 200 bulbs in a box, 12 bulbs are defective. One bulb is taken out at random from box. What is probability that drawn bulb is not defective.

### Section B

29. Find HCF and LCM of 90 and 144 by method of prime factorization.
30. ABC is an isosceles triangle right angled at C. prove that  $AB^2 = 2AC^2$ .
31. The sum of first n terms of an AP is given by  $S_n = 2n^2 + 3n$ . Find the sixteenth term of the AP.
32. Prove that the points (3,0), (6,4) and (-1,3) are the vertices of a right angled triangle.
33. If  $\sin(A+B) = 1$  and  $\sin(A-B) = \frac{1}{2}$ , find A and B
34. If the radius of the circle is 6cm and the length of arc is 12cm. find angle and area of sector
35. Find area of major segment of sector of circle of radius 14cm with angle of sector =  $120^\circ$
36. The data of marks obtained by 48 students is given below. Find mode.

Marks obtained	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Number of students	1	1	2	0	0	10	25	7	2

### Section C

37. .Use Euclid division lemma to show that the square of any positive integer is of form  $3m$  Or  $3m+1$  for any.
38. .If  $\alpha$  and  $\beta$  are the zeroes of polynomial  $6y^2 - 7y + 2$ , find a quadratic polynomial whose zeroes are  $\frac{1}{\alpha}$  and  $\frac{1}{\beta}$
39. Solve for x:  $x^2 - (2b-1)x + (b^2 - b - 20) = 0$ .
40. Half the perimeter of a rectangular garden, whose length is 4m more than its width, is 36m. find the dimensions of garden.
41. Show that in a right triangle, the square of hypotenuse is equal to the sum of the squares of the other two sides.
42. .In what ratio does the X-axis divide the line segment joining the points (-4,-6) and (-1,7)? Find the coordinates of the point of division.
43. The sum of n terms of an AP is  $3n^2 + 5n$ . Find the AP and find its 15<sup>th</sup> term.
44. The sum of three numbers of an AP is 3 and the product of first and third number is -35. Find the three number.

45. If the coordinates of points A and B are (-2,-2) and (2,- 4) respectively find P if  $AP = \frac{3}{7} AB$ , where P lies on AB.
46. A 7m long flagstaff is fixed on the top of a tower. At a point on ground, the angle of elevation of top and bottom of flagstaff are  $60^\circ$  and  $45^\circ$  respectively. Find height of tower.
47. If  $\cos(40^\circ+x) = \sin 30^\circ$ , find x.
48. Show that  $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \operatorname{Cosec} A + \cot A$
49. If  $\sin\theta + \cos\theta = \sqrt{2}$ , then evaluate:  $\tan\theta + \cot\theta$ .
50. Radii of the end of frustum are 28cm and 7 cm . height is 45 cm. find volume and total surface area.

#### Section D

51. If the equation  $(1+m^2)x^2 + 2mcx + (c^2 - a^2) = 0$ , has equal roots, prove that  $c^2 = a^2(1+m^2)$ .
52. A train travelling at a uniform speed for 360km would have taken 48min less to travel the same distance if its speed were 5km/h more. Find the original speed of the train.
53. The sum of third and seventh term of an AP is 6 and their product is 8. Find the sum of first sixteen terms of AP.
54. An AP consists of 37 terms. The sum of the three middle most terms is 225 and the sum of the last three terms is 429. Find the AP
55. OCDE is a square of side 14cm and ADB is Quadrant in it. Find area of region between square and quadrant.
56. Construct a triangle of sides 4cm and 6cm and angle between them is  $75^\circ$ . construct  $\frac{7}{5}$  of this triangle and write steps
57. Prove that length of tangents drawn from an external point to the circle are equal.
58. A container open at the top, is in a form of frustum of cone of height 24 cm and radii of its lower and upper ends as 8 cm and 20 cm respectively. Find the cost of milk which can completely fill the container at the rate of Rs 27 per litre.
59. Find x and y.

Literacy rate ( in%)	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
No. of cities	1	2	3	x	y	6	8	4	2	3	2

60. From deck of well shuffled playing cards all black face cards are removed. Find the probability of:  
 (i) A face card (ii) A queen (iii) An black ace (iv) A club.