

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

Class: X

Sub:-Mathematics

**Section A ( Objective Type)**

**MCQ (Q 1 to 10) Section A (Objective Type)**

1. Given the HCF (253,550) = 11 and LCM(253,550) = 253x R . The value of R is (1)  
(a) 400 (b) 40 (c) 440 (d) 50
2. Which of the following is irrational? (1)  
(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 (1)  
(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 (1)  
(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: (1)  
(a) 6 (b) 9 (c) 4 (d) 18
6. In a right triangle ABC , right angled at B, BC=15cm, AB=8cm. A circle is inscribed in triangle ABC .The radius of the circle is (1)  
(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 (1)  
(a) 1:4 (b) 1:2 (c) 2:3 (d) 4:5
8. If  $\Delta ABC$  and  $\Delta DEF$  are similar such that  $2AB = DE$  and  $BC = 10\text{cm}$ , then  $EF =$  (1)  
(a) 16cm (b) 12cm (c) 20cm (d) 4cm
9. If (x,2), (-3,-4) and (7,-5) are collinear, then x= (1)  
(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 (1)  
(a) 4:3 (b) 5:2 (c) 3:2 (d) 2:3

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

11. Probability of definite event is \_\_\_\_\_ (1)
12. Probability of an even prime number in a die is \_\_\_\_\_ (1)
13. Total number of outcomes when three dice are thrown simultaneously \_\_\_\_\_ (1)
14. If a and b are the roots of  $x^2 + 2ax + 3b = 0$  ,  $a + b =$  \_\_\_\_\_ (1)
15. For AP 10,15,20,25,--- . 200<sup>th</sup> term is \_\_\_\_\_ (1)

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

16. In deck of playing cards, find probability of red face card. (1)  
 17. Find discriminant for  $3x^2 + 8x - 5 = 0$ . (1)  
 18. Find k if  $x=1$  is zero of  $3x^2 + 2kx - 2 = 0$ . (1)  
 19. Find first term and common difference for 6,2,-2,-6,----- (1)  
 20. Which term of AP 3,8,13,18,----,is 98.

**Section B**

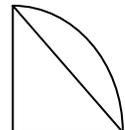
21. Find HCF of  $k, 2k, 3k$ , and  $5k$ , where  $k$  is positive integer.  
 22. Find altitude of Equilateral triangle when each of its side is 'a' cm.  
 23. Find point on x-axis which is equidistant from (2,-5) and (-2, 9)  
 24. Evaluate:  $\frac{\sin 90^\circ}{\cos 45^\circ} + \frac{1}{\operatorname{cosec} 30^\circ}$   
 25. Find the ratio in which P(4,m) divides the line segment joining the points A(2,3) and B(6,-3). Hence, find the value of m.  
 26. Find area of square that can be inscribed in a circle of radius 8 cm,  
 27. Find area of major sector of circle of radius 7cm with its angle as half of a right angle.  
 28. Find x, if mode of the data is 20; data is 15, 20, 25, 18, 13, 15, 25, 15, 18, 17, 20, 25, 20, x, 18.

**Section C (3×10 = 30)**

29. Find HCF by Euclid's division algorithm of the numbers 92690, 7378, 7161.  
 30. If one zero of polynomial  $3x^2 - 8x + 2k + 1$  is seven times other, find the value of k.  
 31. Solve the pair linear equations by substitution method:  $3x + 2y - 7 = 0$  ;  $4x + y - 6 = 0$   
 32. If A(-2,1), B(a,0),C(4,b) and D(1,2) are the vertices of a parallelogram ABCD, find the values of a and b. Hence find the lengths of its sides.  
 33. For what value of k,  $kx(x-2\sqrt{3}) + 10 = 0$  are equal.  
 34. How many three- digit numbers are divisible by 7?  
 35. If the area of two similar triangles is equal, prove that they are congruent  
 36. If C(-1,2) divides the line segment joining A(2,5) and B(x,y) in the ratio 3:4. Find x and y.  
 37. The angle of elevation of the top of tower from two points on the ground at a distance of 4 m and 9 m from the base of tower and in the same straight line with it are complementary. Prove that the height of the tower is 6m.  
 38. In  $\Delta PQR$ , right angled at Q,  $QR = 9$  cm and  $PR - PQ = 1$  cm. Determine the value of  $\sin R + \cos R$ .  
 39. Prove that  $(\cot\theta - \operatorname{cosec}\theta)^2 = \frac{1-\cos\theta}{1+\cos\theta}$   
 40. If  $\tan 2A = \cot(A-18^\circ)$ , where  $2A$  is an acute angle, find the value of A  
 41. A heap of rice is in the form of a cone of base diameter 24m and height 3.5m. Find the volume of the rice. How much canvas as cloth is required to just cover the heap?  
 42. A cubical block of side 10 cm is surmounted by a hemisphere. What is the largest diameter that the hemisphere can have? Find the cost of painting the total surface area of solid so formed, at the rate of Rs 5 per 100 sq. cm. (use  $\pi = 3.14$ )

**Section D**

43. In adjoining figure ABC is a quadrant of the circle of radius 14cm and a semi-circle is drawn with AC as a diameter. Find the area of region between quadrant and triangle.



44. A sum of Rs 700 is to be used to give seven cash prizes to the students for overall academic performance. If each prize is Rs 20 less than its preceding prize, find the value of all prizes.
45. State and prove Thales theorem
46. Prove that, in a right angled triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides
47. Construct an Isosceles triangle whose base is 6cm and the altitude 4 cm. Then construct another triangle whose sides are  $\frac{3}{4}$  times the corresponding sides given isosceles triangle.
48. a, b and c are the sides of a right triangle, where c is hypotenuse. A circle of radius r, touches the sides of triangle. Prove that  $r = \frac{a+b-c}{2}$ .
49. A motor boat whose speed is 18km/hr in still water takes 1 hr more to go 24km upstream than to a 21 m deep well with diameter 6 m is dug and earth dug out is evenly spread to form a platform of 27 m  $\times$  11m. Find the height of platform.
50. For the data of 400 students, calculate mean and median.

Ages (in years)	5-7	7-9	9-11	11-13	13-15	15-17	17-19
No. of students	70	120	32	100	45	28	5

51. The following distribution gives the daily income of 50 workers of a factory:

Daily income (in Rs.)	Number of workers
100-120	12
120-140	14
140-160	8
160-180	6
180-200	10

Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive.

52. Two dice are thrown simultaneously. find the probability of: (i) a doublet (ii) 5 appear on at least one of the die (iii) sum of number on both dice equal to 9.