

DELHI PUBLIC SCHOOL JAMMU
ASSIGNMENT PREBOARD -1st

Class: X

Sub: Maths

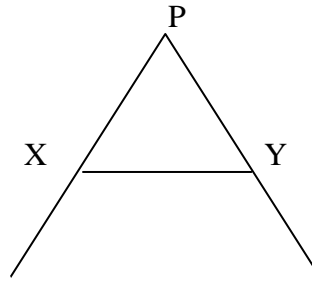
- Q1. The product of the HCF and LCM of the smallest prime number and the smallest composite number is (1)
(a) 2 (b) 4 (c) 6 (d) 8
- Q2. How many prime factors are there in prime factorization of 5005? (1)
(a) 2 (b) 4 (c) 6 (d) 7
- Q3. If one zero of $2x^2 - 3x + k$ is reciprocal of the other, then the value of K is (1)
(a) 2 (b) $\frac{-2}{3}$ (c) $\frac{-3}{2}$ (d) -3
- Q4. Product of all the zeroes of the cubic polynomial $3x^3 - 5x^2 + 8x - 12$ is (1)
(a) $\frac{8}{3}$ (b) $\frac{2}{3}$ (c) $\frac{5}{3}$ (d) 4
- Q5. The pair of linear equations $3x + 4y + 5 = 0$ and $12x + 16y + 15 = 0$ have (1)
(a) Unique solution (b) Many solution
(c) Exactly two solutions (d) No solution]
- Q6. If abscissa of a point is zero, then it lies on (1)
(a) x – axis (b) y – axis
(c) I Quadrant (d) III Quadrant
- Q7. The midpoint of the line segment AB is the point (0,4). If the coordinates of B are (-2,3), then the coordinates of A are (1)
(a) (2,5) (b) (-2,-5)
(c) (2,9) (d) (-2, 11)
- Q8. Choose the correct option (1)
 $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} =$
(a) $\sin 60^\circ$ (b) $\cos 60^\circ$
(c) $\tan 60^\circ$ (d) $\sin 30^\circ$

Q9. The angle of elevations of sun, when shadow of a pole h meters high is $\sqrt{3}h$ meter long is (1)

- (a) 60° (b) 30° (c) 45° (d) 15°

Q10. If in ΔPQR $xy \parallel QR$. $Px = x - 2$, $xq = 3x$, $py = x + 2$ and $yr = 9x$, then the value of x is (1)

- (a) 1 (b) 2 (c) 3 (d) 4



Q11. A ladder is against a wall such that its foot is at a distance of 2.5m from the wall and top reaches 6m above ground. The length of the ladder is (1)

- (a) 6.5cm (b) 5cm (c) 9cm (d) 4cm

Q12. In the given fig. of if $\Delta ABC \sim \Delta PQR$ the value of 'x' is (1)

- (a) 2.5cm (b) 3.5cm (c) 2.75cm (d) 3cm

Q13. Construction of a cumulative frequency table is useful in determining the (1)

- (a) Mean (b) median (c) mode (d) all

Q14. The mean of 5 observations x , $x + 2$, $x + 4$, $x + 6$ and $x + 8$ is 11 then the value of x is (1) (a) 4 (b) 7

- (c) 11 (d) 6

Q15. For a symmetrical distribution, which is correct? (1)

- (a) $mean > mode > median$ (c) $mode = \frac{mean + median}{2}$
 (b) $mean < mode < median$ (d) $mean = median = mode$

Q16. A tangent PQ at a point P if a circle of radius 5 cm meets a line through the centre O at a point Q so that OQ = 12 cm. length PQ is (1)

- (a) 12cm (b) 13cm (c) 8.5cm (d) $\sqrt{119}$

Q17. When the point is inside the circle, how many tangents can be constructed (1)

- (a) None (b) one (c) two (d) three

Q18. AB is the diameter and TB is the tangent to the circle. If Q is a point on TB . then QA is equal to (1)

- a) $\sqrt{AB^2 - QB^2}$ b) $\sqrt{AB^2 + QB^2}$
 c) $\sqrt{4AB^2 + QB^2}$ d) $\sqrt{AB^2 + 4QB^2}$

Q19. Choose the correct $\frac{1+\tan^2 A}{1+\cot^2 A} =$ (1)

- a) $\sec^2 A$ b) - 1
 c) $\cot^2 A$ d) $\tan^2 A$

Q20. Choose the correct (1)

$(1 + \tan \theta + \sec \theta) (1 + \cot \theta - \operatorname{cosec} \theta) =$

- a) 0 (b) 1 (c) 2 (d) $\cos A$

Section – B

Q21. 10 students of class X took part in a mathematics quiz. If the number of girls is 4 more than the number of boys, find the number of boys and girls who took part in the quiz (2)

Q22. Find the ratio in which the Line segment joining A (1, -5) and B (-4 , 5) is divided by the x – axis . Also find the coordinates of the point of division (2)

Q23. Find the area of a rhombus if its vertices are (3,0) , (4,5) (-1,4) and (-2 , -1) taken in order

Or

Find the value of : (2)

$$\frac{\sin^3\theta - \cos^3\theta}{\sin\theta - \cos\theta} + \frac{\sin^3\theta + \cos^3\theta}{\sin\theta + \cos\theta}$$

Q24. Prove that $\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\operatorname{cosec} A - 1}{\operatorname{cosec} A + 1}$ (2)

Q25. If the angle of elevation of the tops of two statues of height m_1 and m_2 are 60° and 30° respectively from the mid point of the line segment joining their feet, then find the ratio $m_1 : m_2$ (2) Q26. Prove that the parallelogram circumscribing a circle is a rhombus (2)

Q27. Prove that $3 + 2\sqrt{5}$ is irrational

Q28. Find all the zeroes of $2x^4 - 3x^3 + 6x - 2$. If its two zeroes are $\sqrt{2}$ and $-\sqrt{2}$

Q29. Solve the pairs of equations by reducing them

$$\frac{10}{x+y} + \frac{2}{x-y} = 4, \quad \frac{15}{x+y} - \frac{15}{x-y}$$

Q30. Evaluate: $\frac{\sin 35^\circ \cos 55^\circ + \cos 35^\circ \sin 55^\circ - 2 \operatorname{cosec} 43^\circ \cos 47^\circ}{\tan 15^\circ \tan 25^\circ \tan 60^\circ \tan 75^\circ \tan 65^\circ}$

Q31. The shadow of a tower standing on a level ground is found to be 40 m longer when the sun's altitude is 30° than when it is 60° . Find the height of the tower

Q32. In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. Prove it

Q33. Draw less than and more than ogive on the same graph and find median on graph (3)

C .g	0-10	10-20	20-30	30-40	40-50
Frequency	5	10	15	06	04

Q34. Prove that the lengths of tangents drawn from one external point to a circle are equal. (3)

Q35. The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class (4)

Q36. The two opposite vertices of a square are $(-1, 2)$ and $(3, 2)$. Find the coordinates of the other two vertices (4)

Q37. If $A + B = 90^\circ$, then prove that $\sqrt{\frac{\tan A \tan B + \tan A \cot B}{\sin A \sec B} - \frac{\sin^2 B}{\cos^2 B}}$

Q38. If $\tan \theta + \sin \theta = m$ and $\tan \theta - \sin \theta = n$,

Show that $m^2 - n^2 = 4\sqrt{mn}$

Q39. The angle of elevation of an aeroplane from a point on the ground is 60° . After a flight of 30 seconds, the angle of elevation changes to 30° . If the plane is flying at a constant height of $3600\sqrt{3}m$, find the speed of the plane in km / hour

(4)

Q40. BL and CM are medians of a triangle ABC right angled at A, prove that

$$4(BL^2 + CM^2) = 5BC^2$$

Q41. If the median of the following frequency distribution is 32.5. find the values of F_1 and F_2

(4)

Class	frequency
0-10	F_1
10-20	5
20-30	9
30-40	12
40-50	F_2
50-60	3
60-70	2
	40

+

42. Check whether the following statement is true or false. Justify your answer.
 "Every quadratic equation has at least one real root."

43. Does there exist a quadratic equation whose coefficients are all distinct irrational but both the roots are rationals? Why?
44. Does there exist a quadratic equation whose coefficients are rational but both of its roots are irrational? Justify your answer.
45. The 51st, 11th and last term of an AP are 0, 8, $-\frac{1}{5}$ respectively. Find the common difference and the number of terms?
45. Find the 10th term from the end of the AP, 4, 9, 14, ..., 254.
46. The sum of three numbers in AP is 3 and their product is -35. Find the numbers.
47. If the first and the last terms of an AP are 17 and 350 respectively and the common difference is 9, how many terms are there in the AP?
48. If the 3rd and the 9th term of an AP are 4 and -8 respectively. Which term of this AP is zero.
49. The eighth term of an AP is 131. If its 15th term exceeds its 11th term by 16, find the AP.
50. Find the value of k for which $2k-7$, $k+5$ and $3k+2$ are first consecutive terms of an AP. Find the AP.
51. Draw a line segment PQ of length 7cm and divides it internally in the ratio 8:5. Also measure the lengths of two parts so obtained.
52. Draw a line segment AB of length 4cm and divides it internally in the ratio 2:3. Also give the justification for this construction.
53. Why is tossing a coin considered to be a fair way of deciding which team should get the ball at the beginning of a football game.?
54. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting (1) a king of red colour (2) a face card (3) the queen of diamond.
55. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball determine the number of blue balls in the bag.
56. Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of 60 degree.
57. Construct a triangle with sides 5 cm 6 cm 7 cm and then other triangle whose sides are $\frac{7}{5}$ of the corresponding sides of the first triangle.
58. Sum of the areas of two squares is 468 m sq. If the difference of their perimeters is 24 m, find the sides of two squares
59. Find two consecutive odd positive integers sum of whose squares is 290.
60. A train travels 360km at a uniform speed. If the speed had been 5 kmph more

It would have taken 1 hour less for the same journey .Find the speed of the tran.