GOLDEN BELLS ACADEMY

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Assignment

Subject- Maths

Class-10

⇒ 1- Is $\bar{\Lambda}$rational ?

⇒ 2. $\frac{19}{2^3.5^6}$ has terminating decimal expansion ? Justify.

⇒ 3. H.C.F. of 210 and 55 is 5. Justify.

⇒ 4. Prove that $7\sqrt{5}$ is irrational.SS

⇒ 5. If P is prime, prove that $\sqrt{p}$ is irrational.

⇒ 6. Prove that for n ϵ N, 6^n end with digit zero.

⇒ 7. If 1 is zero of the polynomial f(x) = a^2x^2-3ax+3 x-1, then prove that a =2.

⇒ 8. If 1 is zero of $3x^2$ - x^2-$3x$+1, then the other two zeroes are -1 and 1/3. Justify.

⇒ 9. If α, β, γ are zeroes of ax^3+bx^2+cx +d, then $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}$ =- $\frac{c}{d}$.

⇒ 10. Verify than 2 is zero of x^3+4x^2+5x − 2.

⇒ 11. Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time and product of its zeroes as 2,-7,-14 respectively.

⇒ 12. Obtain all the zeroes of $3x^3$+6x^3+2x^2-10x -5, If two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

⇒ 13. The graphic representation of the pair of equations 2x+4y-15=0 and x+2y-4=0 gives a pair of parallel lines.

⇒ 14. If 2x-3y=7 and (a+b) x+x- (a+b-3) y = 4a+b have infinite solution then (a,b) =(-5,1).

⇒ 15.Ifx=2 and y=1 is a unique solution of the system x-y-1=0 and x+ky-5=0, then K=3.

⇒ 16. Solve the following equation graphically . $3x$+2y-11=0 and $2x$-3y+10=0. Shade the region bounded by these lines and the x-axis.

⇒ 17. Solve for x and y : $\frac{x}{a} + \frac{y}{b}$ = 2 and ax –by = a^2- b^2

⇒ 18. ABCD is a cycle quadrilateral. Find the angles of the cycle quadrilateral when

A = 4y+20, B= 3y-5, C= 4 x, D =7 x+5

⇒ 19. If x^2 +2 (K-2) x+ 9K =0 has a repeated root, then K=1, 4.

⇒ 20. If x=K is a root of x^2+4 x+3=0, then K= -3.

⇒ 21. If x=1 is a common root of ax^2+ax+3=0 and x^2+ x+b =0, then ab =3.

⇒ 22. The sum of the squares of two consecutive natural numbers is 421. Find the numbers.

⇒ 23. The sides of a right angled triangles Containing the right angle are 3(x+1) cm and (2x-1) cm. If area of triangle is 30 sq. cm. find the lengths of the sides of the triangle.

⇒ 24. A plane left 30 minutes later than the scheduled time and in order to reach its destination 1500km. away it has to increase its speed by 250 km/hr from its usual speed. Find the usual speed.

⇒ 25. Which term of the A.P. : 24, 21, 18, 15,…….. is the first negative term ?

⇒ 26.if $\frac{5+9+13+\cdots to\ n\ terms}{7+9+11+\cdots to\ (n+1)\ terms} = \frac{17}{16}$, then prove that n=7.

⇒ 27. The sum of all two digit natural numbers is 4905. Prove it.

⇒ 28. If an of an A.P. is 3+2n, find S_{24}.

⇒ 29. How many terms of 24, 21, 18---------- will make the sum 78 ?

⇒ 30. Find n and d if a=8, a_n=62, s_n =210.

⇒ 31. Two isosceles triangles have equal angles and their areas are in the ratio 16:25. then the ratio of their corresponding heights is 4:5. Prove it.

⇒ 32. In Δ ABC, AB = $6\sqrt{3}$cm, AC = 12cm and BC =6cm, then ∠ B= 60^0 . Prove it.

⇒ 33. Δ ABC ~Δ DEF and ar (Δ ABC) = 9cm^2 and ar (Δ DEF) =64 cm^2. If DE =5.1 cm, then AB = 1.91 cm.

⇒ 34. O is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.

⇒ 35. The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.

⇒ 36. If a line is drawn parallel to one side of a triangle intersecting the other two sides, in the same Ratio. Use the above, to prove the following:

ABCD is a parallelogram. P is a point on side BC and DP when produced meets AB Produced at BC and DP when produced meets AB produced at L. Prove that

(i) $\frac{DP}{PL} = \frac{DC}{BL}$ (ii) $\frac{DL}{DP} = \frac{AL}{DC}$

⇒ 37. If the centroid of Δ formed by (7, x), (y, -6) and (9, 10) is (6,3) then prove that (x, y) = (5,2).

⇒ 38. If the points (a, 0), (0, b) and (1, 1) are collinear then prove that $\frac{1}{a}+\frac{1}{b}=1$

⇒ 39. If the area of Δ formed by the points (x, $2x$), (-2, 6) and (3,1) is 5 sq. units, then prove that x =2.

⇒ 40. Prove that the points (5, -2), (6, 4) and (7, 2) from an isosceles triangle.

⇒ 41. If the points (x, y), (1, 2) and (7, 0) are collinear, prove that x +3y-7=0.

⇒ 42. A circle passes through A (6, -6), B(3, -7) and C(3,3). Find its centre.

⇒ 43. The value of $\frac{tan\ 50^0+\sec 50^0}{\cot 40^0+cosec40^0}+\cos 40^0 cosec\ 50^0=2$ Prove it.

⇒ 44. If sin θ +cos θ = p and sec θ + cosec θ = q, then q (p^2 -1) = 2p. Prove it.

⇒ 45. $\sqrt{\frac{\sec\theta-1}{\sec\theta+1}}+\sqrt{\frac{\sec\theta+1}{\sec\theta-1}}$ =2cosec θ

⇒ 46.If sec θ + tan θ = m and sec θ – tan θ =n, show that mn =1.

⇒ 47. Prove that $\frac{1}{\sec x-\tan x}-\frac{1}{cosx}=\frac{1}{cosx}-\frac{1}{\sec x+\tan x}$.

⇒ 48. If $\sqrt{3}$ tan θ =3 sin θ, Prove that $\sin^2\theta-\cos^2\theta=\frac{1}{3}$.

⇒ 49. A vertical pole 6m high and its shadow is $6\sqrt{3}$ m. Prove that angle of elevation of sum is 30^0

⇒ 50. The ratio of the length of vertical pole and its shadow is 1: $\sqrt{3}$. Prove that the angle of elevation of sun is 30^0.

⇒ 51. The angle of elevation of the top of a tower from a point what of the tower is $10\sqrt{3}$.

⇒ 52. You are stationed at a radar base and you observe an unidentified plane at an Altitude h = 5000m flying towards your radar base at an angle of elevation =30^0. After exactly one minute, your radar sweep revels that the plane is now at an angle of elevation 60^0 maintaining the same altitude. What is the speed (in m/s) of the plane ?

⇒ 53. Prove that the length of the tangent drawn from a point, whose distance from thecentre of a circle is 17 cm and the radius is 8 cm is 15 cm.

⇒ 54. It the given figure, a circle touches all the four sides of a quadrilateral ABCD, whose sides AB = 18 cm, BC=21 cm and CD =12 cm, Then prove that AD =9 cm.

⇒ 55. In the given figure , prove that the perimeter of Δ ABC if AP =10 cm is 20 cm.

⇒ 56. Prove the angle between the two tangents drawn from and external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact at the center.

⇒ 57. The radius of the incircle of a triangle is 4 cm and the segment into which one side Is divided by the point of contact are 6 cm and 8 cm. Determine the other two side of the triangle.

⇒ 58. Prove that opposite sides of a quadrilateral circumscribing a circle subtend Supplementary angle at the centre of the circle.

⇒ 59. In order to divide a line segment of length 10 cm internally in the ratio 3:2, We draw a line segment AB=10 cm, Draw any ray making an acute angle ∠ BAX. Along Ax mark off points A_1 , A_2 etc. such that $AA_1 = A_1A_2$etc, then join BA_5 . Draw a line parallel to A_5 B through the point A_3 . Prove it.

⇒ 60. For the above question, join B with A_5 .

⇒ 61. To draw a pair of tangents to a circle which are inclined to each other at an angle of 30^0 , it is required to draw tangents an angle at end points of two radii of the circle the angle between them should be 150^0 .

⇒ 62. Construct a triangle ABC whose side are 7.5 cm, 7 cm and 6.5 cm. construct another Triangle similar to Δ ABC and with sides$\frac{2}{3}$rd of the corresponding sides of Δ ABC.

⇒ 63. Draw a pair of tangents to a circle of radius 6 cm which are inclined to each other at 60^0.

⇒ 64. Construct a Δ ABC similar to a given equilateral Δ PQR with side 5 cm and that each of its sides is $\frac{6}{7}$th of the corresponding side of Δ PQR.

⇒ 65. If the area of a circle is A, radius of the circle is r and circumference of it is C, then Prove that rc = 2A.

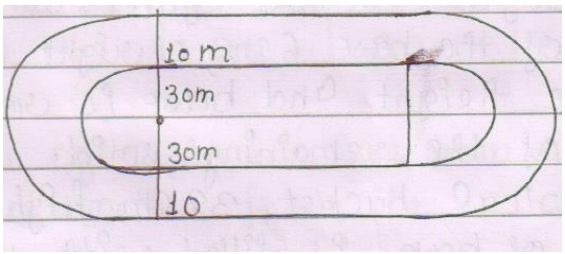
⇒ 66. If the ratio of areas of two circle is 16:25, the ratio of their circumference is 4:5.

⇒ 67. Show that in a circle with radius (r), the length of the arc (L) and area of sector (A) with the same inclination at the center is given by A = $\frac{L.r}{2}$.

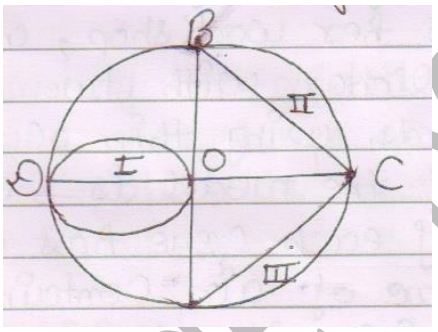
⇒ 68. The given figure depicts a racing track where left and right ends are semi-circular. The difference between the two minor parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide, find:

i] the distance around the track along its minor edge.

ii] the area of the track.



⇒ 69.In the given figure AB and CD and two diameters of a circle with center O, perpendicular to each other and OD is the diameter of the smaller circle. If OA= 7cm, Find the area of the shaded regions.

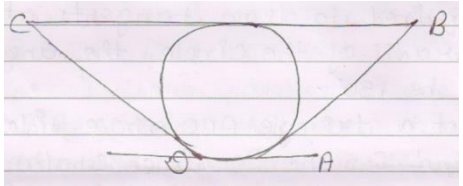


⇒ 70. A wire when bent in the from of an equilateral triangle enclosed an area of $121\sqrt{3}$. cm^2. If the same wire is bent into the form of a circle, find area of the circle.

⇒ 71. A hollow sphere of external and internal diameters 8 cm and 4 cm respectively is melted into a cone of base diameter 8 cm. then height of the cone is 14cm. Prove it.

⇒ 72. The volume of two spheres are in the ration 64:27. Then their radii if sum of their radii is 21 cm are 12 cm, 9 cm. Prove it.

⇒ 73. The largest sphere is carved out of a cube of side 7 cm. The volume of the sphere is 179.66 cm^3 .

⇒ 74. From a right 

circular cylinder with height 10

cm radius of the base 6 cm, a right

circular cone of the same height and base is removed. Find the volume of the remainingsolid.

⇒ 75. A cylindrical bucket, 32 cm high and 18 cm of radius of base, is filled with send. This bucket is emptied on the ground and a conical heap of send is formed. If the height of the conical heap is 24 cm. find the radius and slant height of the heap.

⇒ 76. Rachel, an engineering student was asked to make a modal in her workshop, which was shaped like a cylinder with two cones attached at its two ends, using thin aluminum sheet. The diameter of the modal is 3 cm and its length is 12 cm. If each

cone has a height of 2 cm, find the volume of air contained in the model that Rachel mode. (consider the outer and inner dimensions of the model to be nearly the same).

⇒ 77. The mean of 25 observation is 32 and that of the last observation is 39, then 13^{th} Observation is 23. Prove it.

⇒ 78. If $\Sigma f\iota = 17$, $\Sigma f_i x_i = 4p+63$ and mean =7, then P= 14. Prove it.

⇒ 79. The lower limit of the model class of the following limit dad is 20.

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	5	8	13	7	6

⇒ 80. Following distribution shows the marks obtained by a class of 100 students:

Marks	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	10	15	30	32	8	5

i] Draw an o give ι.e. " less than o give".

ii] Find out median from it.$\iota\iota$

⇒ 81. From the following information construct leas than and more than 0 give and find out the median from it,

Wages (Rupees)	0-30	30-40	40-50	50-60	60-70	70-80
No. of works	10	15	30	32	8	5

⇒ 82. If the median of the distribution given below is 28.5, find the values the 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

⇒ 83. If the probability of an event E is P (E), then prove that P (E) ∈(0,1).

⇒ 84. When a die is thrown, prove that the probability of getting a prime number is $\frac{1}{2}$.

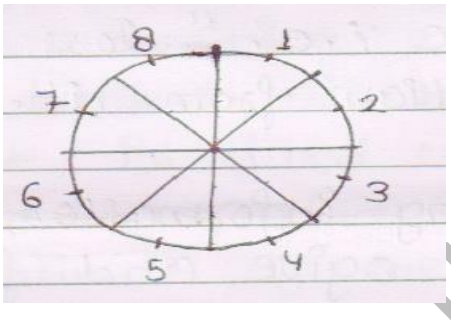
⇒ 85. Prove that P(A) + P($\bar{A}$) =1.

⇒ 86. 1000 tickets of a lottery were sold and there are 5 prizes on these tickets. If Gulshan Has purchased one lottery ticket, what is the probability of winning a prize ?

⇒ 87. A Game of chance consists of spinning an arrow which comes to rest pointing at One of the numbers 1,2,3,4,5,6,7,8, (see fig.) and these are equally liking outcomes. What is the probability that it will point at;

(i) 8 ? (ii) an odd number ? (iii) a number greater than 2 ?

(iv) a number less than 9 ?



⇒ 88. A box contains 5red marbles, 8 white marbles and 4 green marbles, one marble is ; taken out of the box at random. What is the probability that marble out win be

(i) red ? (ii) white (iii) not green ?