



- All the black face cards are removed from a pack of 52 cards. Find the probability of getting a,
 - face card
 - red card
 - black card
 - king
- On the annual day of school, age wise participation of students is given in the following frequency distribution table

Age (in year)	Number of Students
Less than 6	2
Less than 8	6
Less than 10	12
Less than 12	22
Less than 14	42
Less than 16	67
Less than 18	76

- When is an equation called ‘an identity’ prove the trigonometric Identity $1 + \tan^2 A = \sec^2 A$
- Simplify $\frac{\sin\theta \cdot \sec(90^\circ - \theta) \tan\theta}{\operatorname{cosec}((90^\circ - \theta) \cos\theta \operatorname{co} + (90^\circ - \theta))} - \frac{\tan(90^\circ - \theta)}{\cot\theta}$
- On a straight line passing through the foot of a tower, two points card D are at distances of u m and 16 m from the foot respectively, If the angles of elevation of C and D from the top of the tower are complementary, then find the height of the tower.
- An aeroplane, when flying at a height of 4000 m from the ground passes vertically above another aeroplane at an instant when the angles of elevation of the two planes from the same point on the ground are 60° and 45° respectively find the vertical distance between the aeroplanes at that instant (take $\sqrt{3} = 1.73$)
- Solve for X

$$\sqrt{3} x^2 - 2\sqrt{2} x - 2\sqrt{3} = 0$$
- If S_n denotes, the sum of the first n terms of an A.P, Prove that $S_{12} = 3(S_8 - S_4)$.
- The sum of three numbers in A.P is 12 and sum of their cubes is 288. Find the numbers.
- Find the co-ordinate of a point P on the line segment joining A (1,2) and B (6,7) such that $AP = \frac{2}{5} AB$.
- Find the ratio in which the line segment joining the points A (3,-3) and B(-2,7) ; & divided by x axis. Also find the co-ordinate of points of division.
- If $x = -4$ is a root of equation $x^2 + 2x + 4p = 0$ find the value & of K for which the equation $x^2 + px(1+3x) + 7(3 + 2x) = 0$ has equal roots.
- A and B are two points 150 km apart on a highway. Two cars starts from A and B at the same time, If they move in the same direction they meet in 15 hours. But if they move in the opposite direction they meet in 1 hour find their speeds.
- Solve the following pair of linear equations by cross multiplication method

$$\begin{aligned} X + 2y &= 2 \\ X - 3y &= 7 \end{aligned}$$
- Verify whether 2,3 and $\frac{1}{2}$ are the zeros of polynomial $P(x) = 2x^3 - 11x^2 + 17x - 6$
- Find the mean of the data using an empirical formula when it is given that mode is 50.5 and median in 45.5.
- A paper is in the form of a Rectangle ABCD in which $AB=20\text{cm}$, $BC =14\text{cm}$, A semi circular portion with BC as diameter is cut off. Find the area of the remaining part (use $\pi=22/7$)
- Find $\operatorname{cosec} 30^\circ$ and $\cos 60^\circ$ geometrically.
- In the given figure, $OA = 3\text{cm}$, $OB = 4\text{cm}$ $\angle AOB = 90^\circ$ $Ac = 12\text{cm}$ and $BC = 13\text{cm}$ prove that $\angle CAB=90^\circ$.



- If $\tan 2A = \cot(A+60^\circ)$, find the value of A, where $2A$ is an acutangle.
- A train travelling at a uniform speed for 360km would have taken 48 minutes less to travel the same distance if it's speed were 5km/hour more. Find the original speed of the train.
- $\frac{\operatorname{cosec}^2 63^\circ + \tan^2 24^\circ}{\cot^2 66^\circ + \sec^2 27^\circ} + \frac{\sin^2 63^\circ + \cos^2 63^\circ \sin 27^\circ + \sin 27^\circ \sec 63^\circ}{2(\operatorname{cosec}^2 65^\circ - \tan^2 25^\circ)}$
- If $\sin\theta + \cos\theta = \sqrt{2}$ the evaluate $\tan\theta + \cot\theta$.
- find the mode of the following distribution of marks obtained by the students in an examination

Marks obtained	0 – 20	20 -40	40 -60	60 – 80	80 -100
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Given the mean of the above distribution is 53, sing empirical relationship estimate the value of It's median.

25. In the given figure ABPC is Quadrant of a circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of shaded region.



26. Find all the zeroes of the polynomial $3x^4 + 6x^3 - 2x^2 - 10x - 5$, If two of It's zeros are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$

27. Prove that $\frac{\cos\theta - \sin\theta + 1}{\cos\theta + \sin\theta - 1} = \operatorname{cosec}\theta + \cot\theta$

28. draw a triangle ABC with side BC = 7 cm $\angle B = 45^\circ$, $\angle A = 105^\circ$, then construct a triangle whose sides are $\frac{4}{3}$ times the corresponding sides of ΔABC .

29. An AP consists of 37 terms. The sum of the three middle most terms is 225 and sum of the last three terms is 429. Find the A.P.

30. Show that in a Right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

31. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.

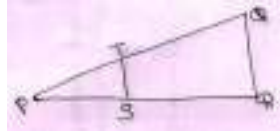
32. If (1, P/3) is the midpoint of the line segment joining the points (2,0) and (0,2/9), then show that the line $5x + 3y + 2 = 0$ passes through the point (-1, 3P).

33. Find the value of x, If the Quadratic equation $3x^2 - K\sqrt{3}x + 4 = 0$ has equal roots.

34. Find the eleventh term from the term of the A.P. 27, 23, 19, -65.

35. If $\cos A = \frac{2}{3}$, find the value of $4 + 4\tan^2 A$

36. In the given figure, $ST \parallel RQ$, $PS = 3\text{cm}$ and $SR = 4\text{cm}$, find the ratio of the area of ΔPST to the area of ΔPRQ



37. The sum of n terms of an A.P is $3x^2 + 5x$. Find the A.P. hence find the 15th term.

38. Slove for x:-

$$x^2 - (2b-1)x + (b^2 - b - 20) = 0$$

39. Solve for x and y:-

$$\frac{x+1}{2} + \frac{y-1}{3} = 9, \quad \frac{x-1}{3} + \frac{y+1}{2} = 8$$

40. If the co-ordinates of points A and B are (-2,-2) and (2, -4) respectively. Find the co-ordinates of P such that $AP = \frac{3}{7} AB$ where the plies on the line segment AB.

41. Find the point on y axis which is equidistant from the points (5, -2) and (-3,2).

42. A 73 m long flag staff is fixed on the top of a tower standing on the horizontal plane from point on the ground, the angles of elevation of the top and bottom of the flag staff are 60° and 45° respectively. Find the height of the tower correct to one place of decimal (use $\sqrt{3} = 1.73$.

43. If $\cos(40+x) = \sin 30^\circ$ find the value of x.

44. Show that:-

$$\operatorname{Cosec}^2\theta - \tan^2(90 - \theta) = \sin^2\theta + \sin(90 - \theta)$$

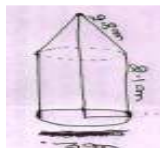
45. Find the HCF and LCM of 90 and 144 by the method of Prime factorisation.

46. If the radius of the circle is 6 cm and length of an arc is 12cm. find the area of the sector.

47. If $\sin(A+B) = 1$ and $\sin(A-B) = \frac{1}{2}$, $0 \leq A+B \leq 90$ and $A > B$ the find A and B.

48. If α and β are the zeroes of the poly nomial $6y^2 - 7y + 2$, find the quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$

49. In the given figure, a tent is in the shape of a cylinder surmounted by a conical top of same diameter, if the height and diameter of cylindrical part are 2.1 m and 3 m respectively and the slant height of conical part is 2.8 m, find the cost of canvas needed to make the tent if the canvas is available at the rate of ₹500 per m^2 (use $\pi = \frac{22}{7}$)



50. If in ΔABC , $DE \parallel BC$ find the value of :

