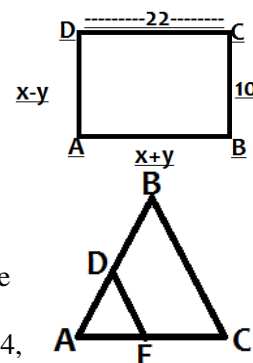


- Use Euclid's division algorithm to find the HCF of 105 and 120 (Ans.15)
- Find the prime factorization of 234. (Ans $2 \times 3^2 \times 13$)
- Find the LCM and HCF of the pair of integers 13,11 (Ans. 1, 143)
- If the LCM (91, 26) =182, then find the HCF (91, 26). (Ans. 13)
- Find the LCM (96,408) if the HCF is 24. (Ans.1632)
- Find LCM of 72, 80, and 120. (Ans.720 ,)
- If d is the HCF of 45 and 27 find x and y satisfying $d=27x+45y$. (Ans: $x=2,y=-1$)
- What is the smallest number which when divided by 35, 56, 91, leaves the remainder 7 in each case.(Ans: 3647)
- The decimal expansion of a real number is 23.123456. If it is expressed as a rational number in the form of $\frac{p}{q}$, write the prime factors of q. (Ans: $2^6 \cdot 5^6$)
- After how many decimal places the decimal expansion of the rational number $\frac{11}{2^3 \cdot 5^2}$ will terminate. (Ans 3)
- If $p(x) = 2x^2 - 3x + 5$, then find $p(-1)$. (ans :10)
- Find the zeroes of the polynomial $2x^2 + 25$ (Ans: $\pm \frac{5}{\sqrt{2}}$)
- Find the quadratic polynomial whose roots are $3 + \sqrt{5}$ and $3 - \sqrt{5}$ (Ans: $X^2 - 6X + 7$)
- If one zero of $2x^2 - 3x + k$ is reciprocal to the other, then find the value of k (ans: $k=2$)
- Find a quadratic polynomial whose sum and product of roots are $2, \frac{-3}{5}$. (Ans : $(5x^2 - 10x - 3)$)
- If α, β are the zeroes of the quadratic polynomial $x^2 - 6x + a$, find the value of a If $3\alpha + 2\beta = 20$ (Ans: -16)
- If $\alpha, \frac{1}{\alpha}$ are the zeroes of the polynomial $4 - 2x + (k-4)$ find the value of k. (Ans: $k=8$)
- If $(x + a)$ is a factor of $2x^2 + 2ax + 5x + 10$, find a. (ans: $a=2$)
- If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 5x + 6$ then find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ (Ans : -31)
- Find all the zeroes of the polynomial $2x^4 - 3x^3 - 3x^2 + 6x - 2$,if two of its zeroes are $\sqrt{2}, -\sqrt{2}$. (Ans. $1, \frac{1}{2}$)
- Is the pair of equations : $x+2y-4=0, 2x+4y-2=0$ consistent.
- Solve algebraically the pair of equations: $2x-y=5, 3x+2y=11$.(Ans . $x=3, y=1$)
- For what value of k, $2x+3y=4, (k+2)x+6y=3k+2$ will have infinitely many solutions. (Ans. $k=2$)
- The sum of the digits of a two digit number is 12. The number obtained by interchanging the two digits exceeds the given number by 18. Find the number. (Ans : 57)
- Father's age is 3 times the sum of ages of his two children. After 5 years his age will be twice the sum of ages of the two children. Find the age of father (Ans: 45)
- In the figure, ABCD is a rectangle. Find the values of x and y. (Ans: $x=16,y=6$)
- A boat goes 12 km upstream and 40 km downstream in 8 hours. It goes 16 km upstream and 32 km downstream in the same time. Find the speed of the boat in still water and the speed of the stream. (Ans: 6km/hr, 2km/hr)
- In fig.1 , DE|| BC, if BD = 3cm, AD = 2 cm, AE = 4 cm, then find the value of EC
- In ΔABC , a line PQ parallel to BC intersect AB at P and AC at Q, If $AP:PB = 1:2$, the find the $area(\Delta APQ) : area(\Delta ABC)$
- The length of the diagonals of a rhombus are 24 cm and 32 cm. Then find the length of the side of the rhombus.
- In ΔABC DE parallel to BC, where D and E are on the side AB and AC respectively, if $AD: DB = 5:4$, find $Area (\Delta DEF): Area (\Delta ABC)$
- If $\sec \theta - \tan \theta = 1/3$, then find the value of $(\sec \theta + \tan \theta)$. (Ans. 3)
- Find the value of $\tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \dots \tan 89^\circ$. (Ans. 1)
- If $\sec \theta = \frac{5}{4}$, then evaluate $\frac{\tan \theta}{1 + \tan^2 \theta}$. (Ans. $\frac{12}{25}$,)
- If $4 \tan \theta = 3$, then evaluate $\left[\frac{(4 \sin \theta - \cos \theta)}{(4 \sin \theta + \cos \theta)} \right]$
- If $\tan(A+B)=\sqrt{3}$ and $\tan(A-B) = \frac{1}{\sqrt{3}}$ and $0 < A+B < 90^\circ, A > B$, Find A and B
- If $\sec \theta - \tan \theta = 4$, then prove that $\cos \theta = \frac{8}{17}$
- Evaluate $3 \sin^2 45^\circ + 2 \cos^2 30^\circ - \cot^2 30^\circ$
- If $\tan 2A = \cot (A - 18^\circ)$. Find the value of A.
- Evaluate $\tan 7^\circ \tan 23^\circ \tan 60^\circ \tan 67^\circ \tan 83^\circ$
- If A, B and C are interior angles of ΔABC then show that $\sin \frac{B+C}{2} = \cos \frac{A}{2}$
- Prove that $(1 + \cot \theta - \operatorname{cosec} \theta) (1 + \tan \theta + \sec \theta) = 2$
- Prove that $\tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \dots \tan 89^\circ = 1$
- If $\sec \theta + \tan \theta = P$, prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$
- What is the mean of 1st ten prime numbers ? (Ans: 12.9)



46. If the mode of a data is 45 and mean is 27, then median is _____.(Ans:33)

47. Find the mode of the following

X_i	: 35	38	40	42	44
F_i	: 5	9	10	7	2

(Ans: Mode=40)

48. If the mean distribution is 25

Class	: 0-10	10-20	20-30	30-40	40-50
Frequency	: 5	18	15	P	6

Then find p.

(Ans: P=16)

49. Find the mode of the following frequency distribution

Marks	: 10-20	20-30	30-40	40-50	50-60
No. of students	12	35	45	25	13

(Ans: 33.33)

50. Find the median of the following distribution

Class-interval:	0-10	10-20	20-30	30-40	40-50	50-60
Frequency:	5	8	20	15	7	5

(Ans:28.5)

51. The mean of the following frequency distribution is 57.6 and the sum of the observations is 50. Find the missing frequencies f_1 and f_2 .

Class:	0-20	20-40	40-60	60-80	80-100	100-120	Total
Frequency	7	f_1	12	f_2	8	5	50

(Ans: $f_1 = 8$ and $f_2=10$)

52. If mean =60 and median =50, then find mode using empirical relationship (3 Median = Mode + 2 Mean)

53. Find the value of p, if the mean of the following distribution is 18.

(x_i)	13	15	17	19	20+p	23
(f_i)	8	2	3	4	5p	6

(Ans: $\frac{1}{2}$)

54. IF $\frac{1}{2}$ is a root of the equation $x^2+kx-5/4=0$, then find the value of K.

(Ans: 5)

55. Find the Discriminate of: $x^2+4x-32=0$

(Ans: -4)

56. The product of roots of a quadratic equation: $2x^2+7x-4=0$

(Ans: -2)

57. Find Values of K for which the equation: $9x^2+2kx-1=0$ has real roots

(Ans: +3,-3)

58. Find the roots of the quadratic equation: $3x^2-2\sqrt{6}x+2=0$

[Ans- $x=\frac{2\sqrt{6}}{6}, \frac{2\sqrt{6}}{6}$]

59. For what value of k does $(k-12)x^2+2(k-12)x+2=0$ has equal roots?

[Ans- $k=14$]

60. The sum of the squares of two consecutive odd numbers is 394. Find the numbers.

[Ans- 13,15 or -15,13]

61. Solve for x: $\frac{x-1}{x-2} + \frac{x-3}{x-4} = 3\frac{1}{3}$, ($x \neq 2,4$)

[Ans $5/2,5$]

62. The sum or the areas of two squares is $640m^2$. If the difference of their perimeters is 64m .Find the sides of the two squares.

[Ans $24m,8m$]

63. An airplane left 30 minutes later than its scheduled time and in order to reach its destination 1500 km away in time, it has to increase its speed by 250 km/hr from its usual speed. Determine its usual speed.

[Ans 750 km/hr]

64. Find the first term and common difference of the A.P. 1,5,9,13,17.

Ans : $a=1, d=4$

65. Find the 10th term of the A.P. 63,58,53,48

Ans : 18

66. Find the 8th term from the end of the A.P. 7, 10, 13.....184.

Ans : 163

67. In the given A.P. find the missing term: $\sqrt{2}, [], 5\sqrt{2} \dots$

Ans : $3\sqrt{2}$

68. Find the sum of first 24th terms of the A.P.: 5, 8, 11, 14,

Ans : 948

69. Which term of the A.P. 84,80,76,..... is zero.

Ans : $n=22$

70. Find the sum of odd numbers between 0 and 50.

Ans : 625

71. Which term of the sequence 48,43,38,33.....is the first -ve term.

Ans: 11th

72. If the no. $4p+1,26,10p-5$ are in A.P. .Find the value of p.

Ans : $p=4$

73. If 9th term of an A.P. is zero, prove that its 29th term is double the 19th term.

74. The 7th term of an A.P. is 32 and its 13th term is 62. Find the A.P.

Ans : 2, 7,12,.....

75. Find the sum of first 25th term of an A.P. whose nth term is given by $T_n = 2-3n$.

Ans : -925

76. Which term of the A.P. 3,10,17,.....will be 84 more than its 13th term.

Ans : 25th

77. How many multiple of 4 lie between 10 and 250? Also find their sum.

Ans : $n=60, S_{60}=7800$

78. The first and last term of an A.P. is 8 and 350 respectively. If its common difference is 9, how many terms are there and what is their sum?

Ans : $n=39, S_{39}=6981$

79. Which term of the A.P. 4,9,14 is 89? Also find the sum.

80. If m times the mth term of an A.P. is equal to n times its nth term; find $(m+n)$ th term.

Ans: 0

81. Find the distance of the points (6,-6) from origin.

Ans- $6\sqrt{2}$ units

82. Show that the point (1,1)(-2,7) and (3,-3) are collinear.

83. Find the distance between the points R(a+b, a-b)and S(a-b, -1-b)

Ans- $2\sqrt{a^2+b^2}$ units

84. Find the point on x-axis which is equidistant from (2,-5) and (-2,9).

Ans- $x=-7$

85. Find the area of the triangle whose vertices(-5,-1),(3,-5)(5,2)

Ans-32 sq units

86. Show that the points (-2,5), (3,-4) and (7,10) are the vertices of a right angled isosceles triangle.

87. Find a relation between x and y if the points (x,y),(1,2) and (7,0) are collinear.

Ans : $x+3y =7$

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

Ans-(0,-2)

89. If the points A(4,3) and B(x,5) are on the circle with the centre O(2,3) find the value of x.

Ans-2

90. Find the value of 'k' for which the points (7,-2),(5;1) and (3,k) are collinear.

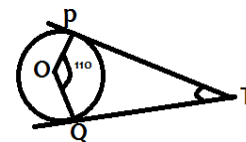
Ans-k=4

Ans-12sq.units

92. Find the area of triangle whose vertices are (2,-4),(-1,0) and (2,4)
93. Find the ratio in which line segment joining the points (6,4) and (1,-7) is divided by x-axis also find the coordinates of the points of division. Ans 7:4 and (46/11, 0)
94. In what ratio does the line $x-y-2=0$ divide the line segment joining (3,-1) and (8,9)? Also find the coordinates of the point of intersection. Ans-(2:3)(5,3)
95. Three consecutive vertices of a parallelogram are (-2,-1),(1,0) and (4,3). Find the coordinates of the fourth vertex. Ans(1,2)
96. A bridge across a river makes an angle of 45° with the river bank. If the length of the bridge across the river is 150m, then find the width of the river. Ans : $75\sqrt{2}$ m
97. A 6m tall tree casts a shadow of length 4m. If at the same time a flagpole casts a shadow 50m in length, then find the length of the flagpole. Ans: 75m
98. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle of 30° with the ground. The distance between the foot of the tree to the point where the top touches the ground is 8m. Find the height of the tree. [Ans- $8\sqrt{3}$ m]
99. A kite is flying at a height of 60m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string to the ground is 60° . Find the length of the string assuming that there is no slack in the string. [Ans- $40\sqrt{3}$ m]
100. The angle of elevation of the top of a hill at the foot of the tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30° . If the tower is 50m high, find the height of the hill. [Ans-150m]
101. From the top of a 7m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of the foot of the tower is 30° . Find the height of the tower .[Ans-28m]
102. The angle of elevation of an airplane from a point on the ground is 45° . After flight for 15 seconds the elevation changes to 30° . If the airplane is flying at a height of 3000m. Find the speed of the airplane. [Ans-527.4km/h]
103. A man standing on the deck of a ship which is 10m above the water level observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill is 30° . Calculate the distance of the hill from the ship and the height of the hill.
104. A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60° . When he moves 40m away from the bank, he finds that angle of elevation to be 30° . Find the height of the tree and the width of the river. [use $\sqrt{3}=1.732$].

105. Find the length of the tangent from T which is at a distance of 13 cm from the centre of a circle of radius 5cm. Ans : 12cm.

106. In the adjoining figure TP&TQ are two tangents to a circle with centre o .if $\angle POQ=110^\circ$ then find the angle PTQ.



107. Two concentric circles are of radii 5cm. and 3cm. Find the length of the chord of the longer circle which touches the smaller circle.

108. Draw a line segment AB=8cm and divide it in the ratio 4:3.

109. Divide a line segment of 7cm internally in the ratio 2:3.

110. Draw a circle of radius 4 cm. Take a point P on it. Draw tangent to the given circle at p.

111. Construct an isosceles triangle whose base 7.5 cm and altitude is 4.2 cm.

112. Construct a triangle of sides 4cm , 5cm and 6cm and then triangle similar to it whose side are $\frac{2}{3}$ of corresponding sides of the first triangle.

113. Construct a triangle similar to a given ΔABC such that each of its sides is $\frac{2}{3}$ rd of the corresponding sides of ΔABC . It is given that AB=4cm BC=5cm and AC=6cm also write the steps of construction.

114. Draw a right triangle ABC in which $\angle B=90^\circ$ AB=5cm, BC=4cm then construct another triangle ABC whose sides are $\frac{5}{3}$ times the corresponding sides of ΔABC .

115. Draw a pair of tangents to a circle of radius 5cm which are inclined to each other at an angle of 60° .

116. Draw a circle of radius 5cm from a point 8cm away from its centre construct the pair of tangents to the circle and measure their length.

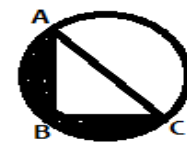
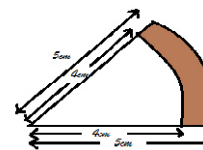
117. Construct a triangle PQR in which QR=6cm $\angle Q=60^\circ$ and $\angle R=45^\circ$. Construct another triangle similar to ΔPQR such that its sides are $\frac{5}{6}$ of the corresponding sides of ΔPQR .

118. Find the area of the shaded region in the figure if AC=24 cm ,BC=10 cm and o is the center of the circle

119 Find the area of the shaded region [Ans- 9.625 m^2]

120. An arc subtends an angle of 90° at the centre of the circle of radius 14 cm. Find the area of the minor sector thus formed in terms of π . [Ans $49\pi \text{ cm}^2$]

121. How many spherical lead shots of radius 2 cm can be made out of a solid cube of lead whose edge measures 44 cm? [Ans-2541]



122. Three cubes of metal whose edges are in the ratio 3:4:5 are melted and converted into a single cube of diagonal $24\sqrt{3}$ cm. Find the edges of the three cubes. [Ans-12cm,16cm,20cm]

123. Find the number of coins 1.5 cm in diameter and 0.2 cm thick to be melted to form a right circular cylinder of height 1cm and diameter 4.5 cm. [Ans-450]

124. The rain water from a roof 22m x 20m drains into a cylindrical vessel having diameter of base 2 m and height 3.5 of the vessel is just full . Find the rainfall in cm. [Ans 2.5 cm]

125. The radius of the base and the height of a solid right circular cylinder are in the ratio of 2:3 and its volume is 1617 cm^2 . Find the total surface area of the cylinder. [Ans -770 cm^2]

126. A semispherical bowl of internal radius 9 cm is full of liquid. The liquid is to be filled into cylindrical shaped small bottles each of diameter 3 cm and height 4 cm. How many bottles are needed to empty the bowl? [Ans-54]
127. If the radii of the ends of a bucket, 45 cm height, are 28 cm and 7 cm determine the capacity and total surface area of the bucket, [Ans -4850cm³,5616.6cm²]
128. A toy is in the form of a cone mounted on a hemisphere of common base radius 7cm. The total height of the toy is 13 cm. Find the total surface of the toy. ($\pi = 22/7$) [Ans- 858 cm²]
129. A card is drawn from a well-shuffled pack of 52 cards what is the probability that it is an ace? Ans-1/13
130. A dice is thrown once. Find the probability of getting a number greater than 3. Ans : $\frac{1}{2}$
131. What is the probability that a number selected from the number 1,2,3.....16 is prime number? Ans-3/8
132. A letter is chosen at random from the English alphabet. Find the probability that the letter chosen precedes 'g'. Ans-3/13
133. Find the probability of getting a red heart. Ans-1/4
134. A coin is tossed twice. Find the probability of getting at least one head. Ans-3/4
135. What is the probability of a sure event? Ans-1
136. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting.
i. An ace ii. A face card Ans- i- 1/13 ii- 3/13
137. A bag contains 5 red balls, 4 green ball and 7 white balls. A ball is drawn at random from the bag. Find the probability that the ball drawn is (i) White (ii) neither Red nor White. Ans- (i) 7/16, (ii) 1/4
138. The king, the queen and the jack of clubs are removed from a deck of 52 playing cards and the remaining cards are shuffled. A card is drawn from the remaining cards. Find the probability of getting a card of .
i. Heart ii. Queen iii. Clubs Ans-(i)13/49 (ii)3/49 (iii)10/49
139. A card is drawn at random from a well shuffled deck of 52 cards. What is the probability of drawing
a. King or a spade b. A non spade c. Either a king or a 10 of heart Ans-(a) 4/13 (b)3/4 (c)5/52
140. Two cubes each of volume 27 cm³ are joined end to end to form a solid. Find the surface area of the resulting cuboid.
141. A cone of height 20 cm and radius of base 5 cm is made up of modeling clay. A child reshapes it in the form of a sphere. Find the diameter of the sphere
142. Find the value of y for which the distance between the points A(3,-1) and B(11,y) is 10 units.
143. A ticket is drawn at random from a bag containing tickets numbered from 1 to 40. Find the probability that the selected ticket has a number which is a multiple of 5.
144. Find the value of m so that quadratic equation $mx(x-7) + 49 = 0$ has two equal roots
145. Find the values of k for which the equation $(k+1)x^2 - 2kx + 2x + 1 = 0$ has real & equal roots?
146. If the sum of first m terms of an A.P. is n & the sum of its first n terms is m, then find the sum of its first (m + n) terms?
147. Write the formula for sum of first n terms of an A.P. whose first term is a & the last is l?
148. Find the sum of first 15 terms of an A.P. whose nth term is $9 - 5n$
149. A point T is 13 cm away from the centre of a circle. The length of the tangent drawn from T to the circle is 12 cm. Find the radius of the circle.
150. Find the length of the tangent drawn from a point P whose distance from the centre of the circle is 25cm. It is given that radius of the circle is 7cm.

