



The Indian Academy  
Nehrugram DEHRADUN  
Question Bank – 2013-14  
Subject - MATHS  
Class - X

Questions of 1 mark – (Section –A)

Q1. Is  $x^2 + \frac{1}{x^2} = 4$  a quadratic equation?

Q2. The sum of squares of two consecutive natural numbers is 313. We need to find numbers. Represent the situation in the form of a quadratic equation.

Q3. If  $x = \frac{2}{3}$  is a root of the equation  $kx^2 - x - 2 = 0$ . Find the value of K.

Q4. Find the discriminant for  $6x^2 + 7x - 10 = 0$ .

Q5. What is the value of k if  $5kx^2 - 8x + 2 = 0$  has real roots.

Q6. Find the value of K for which  $x^2 - 2(k+1)x + k^2 = 0$  has real and equal roots.

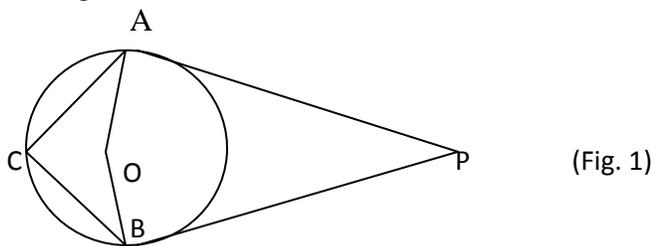
Q7. Write the discriminant for  $\sqrt{3}x^2 + 10x + \sqrt{3} = 0$ .

Q8. The area of a right-angled triangle is  $600\text{cm}^2$ . The base of the triangle exceeds the altitude by  $10\text{cm}$ . We would like to find the altitude of the triangle. Represent the situation mathematically in the form of a quadratic equation.

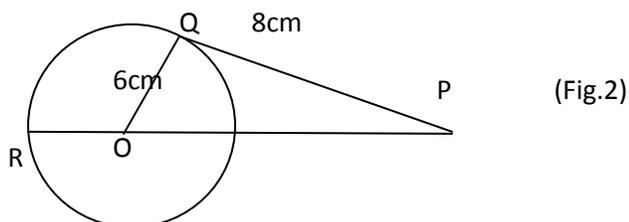
Q9. Find the nature of the roots for  $2x^2 - 6x + 3 = 0$ .

Q10. Find the discriminant of the equation  $3x^2 - 2x + \frac{1}{3} = 0$

Q11. PA and PB are tangents to the circle. If  $\angle ACB = 40^\circ$ , Find  $\angle APB$ .



Q12. In fig.2, find PR.

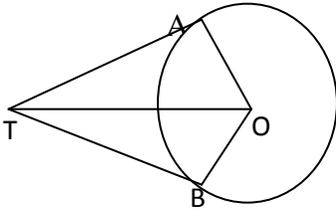


Q13. In fig.3, what is the measure of  $\angle QPT$



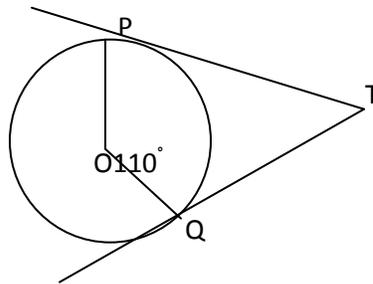
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Q14. In fig 4,  $\angle ATO = 40^\circ$ , then what is the measure of  $\angle AOB$ .



(Fig.4)

Q15. In fig.5, if TP and TQ are the two tangents to a circle with centre O. So that  $\angle POQ = 110^\circ$ , then find  $\angle PTQ$ .



Q16. How many tangents can you draw at a point lying on the circle?

Q17. How many tangents to a circle can you draw from a point lying outside the circle?

Q18. How many tangents to a circle can you draw from a point lying inside the circle?

Q19. How many tangents can a circle have?

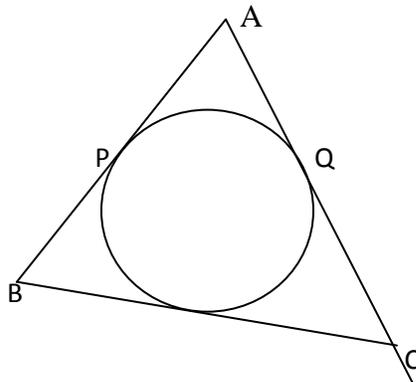
Q20. What is the relation between the lengths of tangents drawn from an external point to a circle?

Q21. The length of a tangent PQ, from an external point P is 24cm. If the distance of the point P from the centre is 25cm. Find the diameter of the circle.

Q22. A tangent PQ at point P of a circle of radius 5cm meets a line through the centre O at point Q, so that  $OQ = 12$ cm. Find the length of PQ.

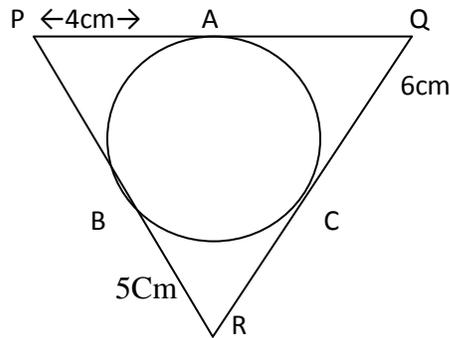
Q23. What is the distance between two parallel tangents of a circle of radius 3cm.

Q24. In the given figure 6, if  $AP = PB$ , then what is the relation between AC and BC?



(Fig.6)

Q25. What is the perimeter of  $\Delta PQR$  in figure 7.

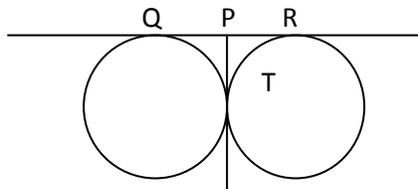


Q26. From a point  $P$ ,  $10\text{cm}$  away from the centre of a circle, a tangent  $PT$  of length  $8\text{cm}$  is drawn. Find the radius of the circle?

Q27. From a point  $Q$ , the length of the tangent to a circle is  $24\text{cm}$  and the distance of  $Q$  from the centre is  $25\text{cm}$ . Find radius of the circle.

Q28. What is the length of line segment joining the points of contact of two parallel tangents to a circle?

Q29. In figure 8, if  $QP = 4.5\text{cm}$ , then what is the measure of  $QR$ .



(Fig.8)

Q30. What is the angle between tangent at any point of a circle and the radius through the point of contact?

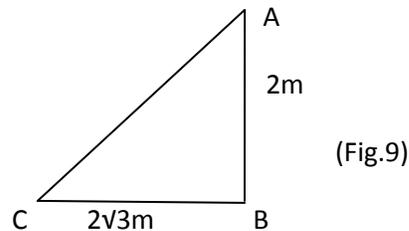
Q31. If  $\sin \theta = \frac{7}{25}$  find  $\tan \theta$

Q32. If  $\cos \theta = \frac{4}{5}$ , find  $\sin \theta$ .

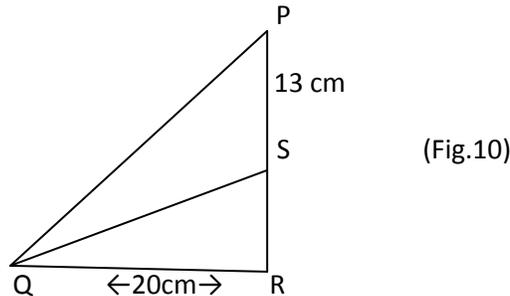
Q33. A pole  $15\text{m}$  long rests against a vertical wall at an angle of  $60^\circ$  with the ground. What is the height of the wall up to which the pole will reach?

Q34. If the length of the shadow of a vertical pole is equal to its height, then what is the angle of elevation of sun's altitude?

Q35. The figure 9, shows the observation of point C from A. What is the angle of depression from A?



Q36. In fig.10 QR=20cm, PS=13cm,  $\angle PQR = 45^\circ$ , then what is the measure of SR?



Q37. If a 1.5m tall girl stands at a distance 3m from a lamp post and casts a shadow 4.5m on the ground, then what is the height of lamp post?

Q38. The length of the string between a kite and a point on the ground is 85m. If the string makes angle  $\theta$  with the level ground such that  $\tan \theta = \frac{15}{8}$ , how high is the kite?

Q39. A kite flying at a height of 82.5m from the level ground is attached to a string inclined at  $30^\circ$  to the horizontal. What is the length of string?

Q40. If the length of the shadow of a vertical pole is  $\sqrt{3}$  times the height of the pole, then what is the angle of elevation of the sun?

Q41. If the probability of an event is P, then what is the probability of non-happening of event?

Q42. Find the probability of getting a tail when a coin is tossed once.

Q43. A die is thrown once. Find the probability of getting a prime number.

Q44. One card is drawn from a well shuffled deck of 52 cards. Find the probability of drawing a king.

Q45. One card is drawn from a well shuffled deck of 52 cards. Find the probability of drawing '2' of club.

Q46. Two coins are tossed simultaneously. Find the probability of getting two heads.

Q47. Two coins are tossed simultaneously. Find the probability of getting at most one head.

Q48. One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will be not an ace.

Q49. Savita and Hamida are friends. What is the probability that both will have different birthdays?

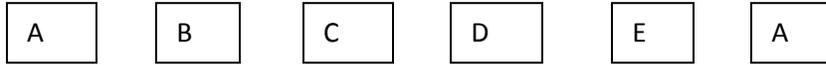
Q50. In a single throw of three dice, find the probability of getting a total of 17 or 18.

Q51. From numbers 3, 5, 5, 7, 7, 7, 9, 9, 9, 9 are no's, one number is selected at random. What is probability of selecting mean of sequence?

Q52. A pencil box contains three pencils of same size but different colours red, green and blue. Radhika takes out a pencil from the box without looking into it. What is the probability that she takes out a red pencil?

Q53. A die is thrown once. Find the probability of getting a number divisible by 2.

Q54. A child has a die whose six faces show the letters as given below-



The die is thrown once. What is the probability of getting A?

Q55. What is the sum of the probabilities of all the elementary events of an experiment?

Q56. What is the probability of impossible event?

Q57. What is the probability of sure event?

Q58. What is the minimum and maximum value of the probability  $P(E)$  of any event  $E$ ?

Q59. Find the probability of getting a number less than 4 in a single throw of a die.

Q60. If a letter is chosen at random from the English alphabet, find the probability that the letter is a vowel.

Q61. If  $P(x_1, y_1)$  and  $Q(x_2, y_2)$ . What is the length of  $PQ$ ?

Q62. Find the distance between  $(-5, 7)$ ,  $(-1, 3)$

Q63. Find the point  $x$ -axis which is equidistant from  $(2, -5)$  and  $(-2, 9)$ .

Q64. Write section formula? If point  $M$  divides the line segment joining  $P(x_1, y_1)$  &  $Q(x_2, y_2)$  internally in ratio  $m_1:m_2$ .

Q65. What is the distance of the point  $(3, 4)$  from  $x$ -axis.

Q66. What is the distance of point  $(3, -4)$  from the  $y$  axis?

Q67. To which axis  $x=5$  is parallel?

Q68. To which axis  $y=-5$  is parallel?

Q69. What is the perimeter of triangle with vertices  $(0, 0)$ ,  $(4, 0)$  and  $(0, 3)$  ?

Q70. What is the area of triangle formed by  $P(x_1, y_1)$ ,  $Q(x_2, y_2)$ ,  $R(x_3, y_3)$ ?

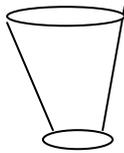
Q71. If the radius of a circle is  $r$ , what is its circumference?

Q72. If the radius of a circle of  $3.5\text{cm}$ , then what is perimeter of the semicircle?

Q73. If the diameter of a protractor is  $14\text{cm}$ , then what is its perimeter?

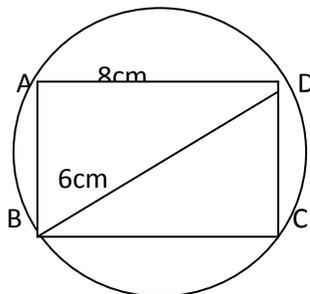
Q74. If the area and circumference of a circle are numerically equal, then what is the diameter of a circle?

Q75. What is the shape of glass (tumbler) in given fig.?

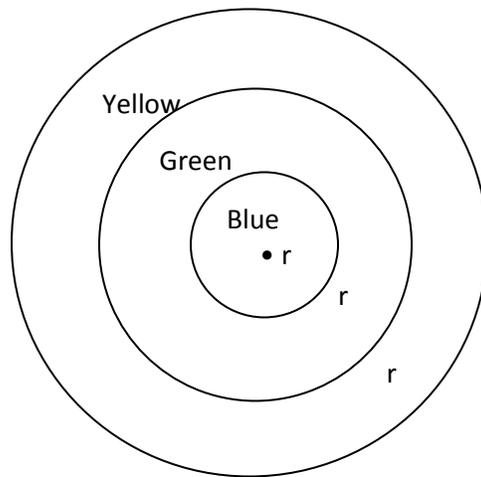


Q76. If the radius of circle is  $r$ , what is its area?

Q77. In the given fig, a circle circumscribes a rectangle. Then what is the ratio of the area of the circle to area of the rectangle?



Q78. What is the area of the yellow ring, in terms of  $\pi$  ?



Q79. What is the area of a ring shaped region enclosed between two concentric circles of radii 20cm and 15cm?

Q80. What is the circumference of circle whose area is  $38.5\text{cm}^2$ .

**2 Marks questions-**

Q81. In an A.P given  $a=-4$ ,  $d=3$ . Find its 20<sup>th</sup> term and sum of first 20 terms.

Q82. Write first four terms of the A.P having first term  $a=10$ , and common difference  $d=10$ .

Q83. Write 7<sup>th</sup> term of following A.P

3 , 1 , -1 , -3, .....

Q84. Write 10<sup>th</sup> term of following A.P

-5 , -1 , 3 , 7 , .....

Q85. The sum of the 4<sup>th</sup> and 6<sup>th</sup> term of an A.P is 46 and its 9<sup>th</sup> term is 43. Find the A.P.

Q86. Find the sum of last 12 terms of

62 , 59 , 56 , ....., 8.

Q87. In an A. P, the sum of n terms is  $\frac{3n^2}{2} + \frac{13n}{2}$ . Find its 25<sup>th</sup> term.

Q88. The 25<sup>th</sup> term, 10<sup>th</sup> term and the last term of an A. P are -67 , -22 , and -82 respectively. Find common difference and the number of terms.

Q89. Solve the equation-

$$1 + 4 + 7 + 10 + \dots + x = 590$$

Q90. How many two-digit numbers are divisible by 3?

Q91. Form the quadratic equation sum of whose roots is  $3\sqrt{3}$  and product of whose roots is  $-7\sqrt{3}$ .

Q92. Find root of  $x^2-3x-10=0$  by factorization.

Q93. Find value of K , if quadratic equation  $2x^2+ Kx+3$  has equal real roots.

Q94. Find the nature of roots of equation  $3x^2-4\sqrt{3}x+4=0$

Q95. Find the value of K, if quadratic equation  $x^2-2x(a+3K)+7(3+2K)=0$  has real and equal roots.

Q96. If  $x=2$  and  $x=3/4$  are solutions of the equation  $px^2+qx-6=0$ , then find the values of p & q.

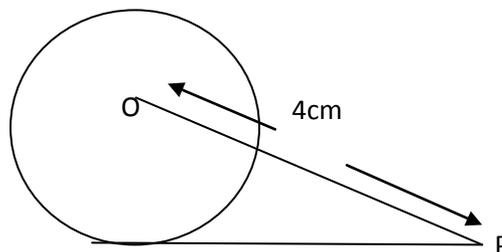
Q97. If  $x=2$  and  $x=3$  are solutions of the equation  $3x^2-2mx+2n=0$ , then find the values of m & n.

Q98. If the sum of roots of the quadratic equation  $kx^2+6x+4k=0$  is equal to the product of the roots, then find the value of K.

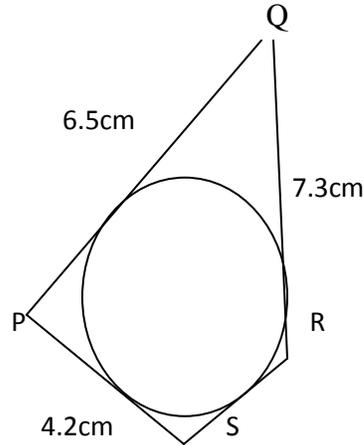
Q99. Find the value of K for which  $x=\sqrt{2}$  is a solution of equation  $kx^2+\sqrt{2}x-4=0$

Q100. If one root of the quadratic equation  $2x^2+kx-6=0$  is 2. Find the value of k.

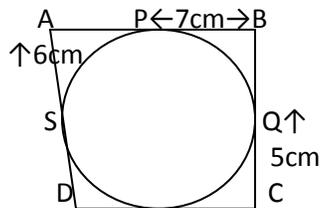
Q101. AP is a tangent to the circle with centre O such that  $OP=4\text{cm}$  and  $\angle OPA=30^\circ$ , Then, what is the value of AP?



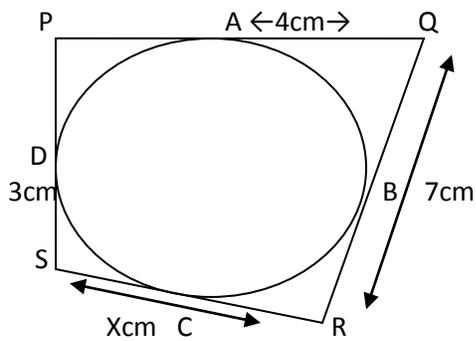
Q102. In the given figure, a circle touches all four sides of a quadrilateral PQRS, whose sides are  $PQ=6.5\text{cm}$ ,  $QR=7.3\text{cm}$ , and  $PS=4.2\text{cm}$ , then what is the value of RS.



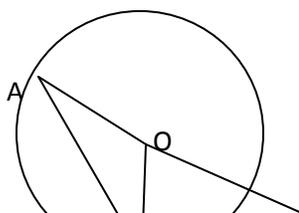
Q103. In given figure, what is the perimeter of ABCD?



Q104. If  $AQ=4\text{cm}$ ,  $QR=7\text{cm}$ ,  $DS=3\text{cm}$ , then find value of x.

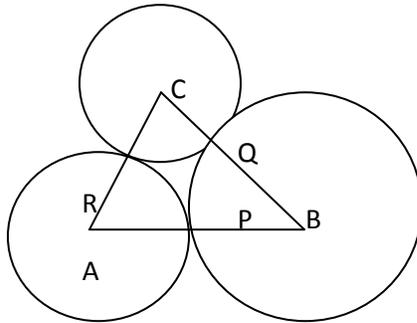


Q105. TC is a tangent drawn to the circle with centre O. If  $\angle ACS=67^\circ$ , find  $\angle TAC$ ,  $\angle TOC$  and  $\angle AOC$ .



Q106. Two concentric circles are of radii 5cm and 3cm. Find the length of the chord of the larger circle which touches the smaller circle.

Q107. In the given figure, three circles with centers A, B, C respectively touch each other externally. If  $AB=6\text{cm}$ ,  $BC=8\text{cm}$  and  $CA=7\text{cm}$ , then what is the radius of the circle with centre A?



Q108. Two parallel tangents meet third tangent at X and Y. Prove that XY subtends a right angle at the centre.

Q109. If an isosceles triangle PQR, in which  $PQ=PR=12\text{cm}$ , is inscribed in a circle of radius 18cm, find the area of the triangle.

Q110. Prove that the diameter AB of a circle bisects all those chords which are parallel to the tangent at A.

Q111. The probability of guessing the correct answer to a certain questions is  $\frac{x}{y}$ . If the probability of not guessing the correct answer to this questions is  $\frac{2}{3}$ , then what is the relation between x and y?

Q112. A girl calculated that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she bought?

Q113. A bag contains 4 red and 6 black balls. If a ball is taken out at random, find the probability of getting a black ball?

Q114. The probability of getting a bad egg in a lot of 500 is 0.028, then what is the number of good eggs in lot.

Q115. If three unbiased coins are tossed, then what is the probability of getting either three heads or three tails?

Q116. A bag contains 5 black, 4 red and 3 white balls. One ball is drawn at random. Then what is the probability that the ball drawn is neither black nor white.

Q117. If a coin is tossed three times, then what is the probability of getting at least 2 heads?

Q118. A bag contains 24 balls of which  $3x$  are blue,  $2x$  are white and  $x$  are green. If a ball is selected at random, then what is probability that it is not green?

Q119. Anjali and Malti are friends. What is the probability that both will have different birthdays?

- Q120. A die has its six faces marked 0, 1, 1, 1, 6, 6. Two such die are thrown together. What is the Probability of getting a total 7.
- Q121. Volume of two solid spheres are ratio 125:64. Determine their radii if the sum of their radii is given 45cm.
- Q122. A hollow cylindrical pipe is 21cm long. If its outer and inner diameter are 10cm and 6cm respectively, then what is the volume of the Metal used in making the pipe?
- Q123. Three cubes of a metal whose edges are in ratio 3:4:5 are melted and converted into a single cube whose diagonal is  $6\sqrt{3}$  cm. Find the edge of the three cubes.
- Q124. What is the length of largest pole that can be kept in a room (12m x 9m x 8m) ?
- Q125. The diameter of a sphere is 6cm. It is melted and drawn into a wire of diameter 2mm. What is the length of wire?
- Q126. If two solid canes with same base radius 8cm and height 15cm are joined together along their bases, then what is the surface area of shape so formed?
- Q127. If the perimeters of the boxes of two right circular canes are in the ratio 3:4 and their volumes are in the ratio 9:32, then what is the ratio of their heights?
- Q128. The diameters of the ends of a frustum of a cane are 32cm and 20cm. If its slant height is 10cm, then what is its lateral surface area?
- Q129. A medicine capsule is in the shape of a cylinder of diameter 0.5cm with two hemispheres struck to each of its ends. The length of the entire capsule is 2cm. What is the approximate capacity of the capsule?
- Q130. 15 solid spheres of same size are made by melting a solid metallic cylinder of base diameter 2cm and height 20cm. What is the diameter of each sphere?
- Q131. Which term of the progression  $19, 18\frac{1}{5}, 17\frac{2}{5}, \dots$  is the first negative term?
- Q132. How many terms of the A.P 3, 5, 7, ..... must be taken so that the sum is 120?
- Q133. What is the sum of first 25 terms of an A.P, whose nth term is  $2-3n$ ?
- Q134. Find the sum of first 21 terms of the A.P whose 2<sup>nd</sup> term is 8 and 4<sup>th</sup> term is 14.
- Q135. If the first term of an A.P is 5 and its 100<sup>th</sup> term is -292, then find 50<sup>th</sup> term of this A.P.
- Q136. Find  $-5 + (-8) + (-11) + \dots + (-230)$ .
- Q137. Find  $(3-\frac{1}{n}) + (3-\frac{2}{n}) + (3-\frac{3}{n}) + \dots$  upto n terms.

Q138. Find sum of two digit odd positive numbers.

Q139. Find sum of two digit positive numbers divisible by 3.

Q140. If  $n$ th term of an A.P is  $(2n+1)$ , then find the sum of first  $n$  terms of the A.P.

**Questions carrying 3 marks each-**

Q141. Find the numbers whose sum is 27 and product is 182.

Q142. Find two consecutive positive integers, sum of whose squares is 365.

Q143. The altitude of a right triangle is 7cm less than its base. If hypotenuse is 13cm, find the other two sides.

Q144. Find the roots of the equation  $5x^2-6x-2=0$  by the method of completing the squares.

Q145. Find the roots of the equation  $3x^2-5x+2=0$  using quadratic formula.

Q146. Find the discriminant of the quadratic equation  $2x^2-4x+3=0$  and hence find the nature of its roots.

Q147. Find the value of  $K$ , if  $kx(x-2)+6=0$  has equal and real roots.

Q148. Is it possible to design a rectangular park of perimeter 80m and area  $400m^2$ ? If so, find its length and breadth.

Q149. Is it possible to design a rectangular mango grove whose length is twice its breadth, and the area is  $800m^2$ ? If so, find its length and breadth.

Q150. Find the nature of the roots of the following quadratic equations. If the real roots exist, find them –

(i)  $2x^2-3x+5=0$

ii)  $3x^2-4\sqrt{3}x+4=0$

Q151. Find the value of  $K$  so that the quadratic equation  $x^2-2(1+3k)x+7(3+2k)=0$  has equal roots.

Q152. The age of a father is equal to the square of the age of his son. The sum of the age of the father and five times the age of his son is 66 years. Find their ages.

Q153. Find the discriminant of equation  $3x^2-2x+\frac{1}{3}=0$  and hence find the nature of the roots. Find them, if they are real.

Q154. Find the roots of the following equations-

(i)  $x-\frac{1}{x}=3, x \neq 0$

(ii)  $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}, x \neq -4, 7$

Q155. The difference of two numbers is 5 and the difference of their reciprocals is  $\frac{1}{10}$ . Find the numbers.

Q156. The difference of two numbers is 4. If the difference of their reciprocals is  $\frac{1}{10}$ . Find the numbers.

Q157. Find two natural numbers, which differ by 3 and whose squares have the sum 149.

Q158. Find two consecutive numbers whose squares have the sum 85.

Q159. The product of two successive multiples of 5 is 300. Find the multiples.

Q160. The sum of two natural numbers is 8. Determine the numbers, if the sum of their reciprocals is  $\frac{8}{15}$

Q161. The angles of elevation of a cloud from a point 200m above a lake is  $30^\circ$  and the angle of depression of the reflection of the cloud in the lake is  $60^\circ$ . Find the height of the cloud from the surface of the lake.

Q162. A tower stands vertically on the ground. From a point on the ground which is 15m away from the foot of the tower, the angle of elevation of the top of the tower is found to be  $60^\circ$ . Find height of the tower.

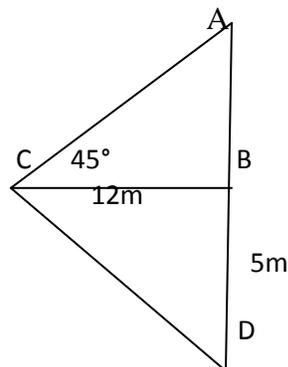
Q163. An observer 1.5m tall is 28.5m away from a chimney. The angle of elevation of the top of the chimney from her eyes is  $45^\circ$ . What is the height of the chimney?

Q164. A circus artist is climbing a 20m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole, if the angle made by the rope with the ground level is  $30^\circ$ .

Q165. a tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle  $30^\circ$  with it. 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.

Q166. Find the angle of elevation of the sun when the length of shadow of a vertical pole is equal to its height.

Q167. Find the perimeter of  $\Delta ACD$ .



Q168. The tops of two poles of height 16m and 10m are connected by a wire. If the wire makes an angle of  $30^\circ$  with the horizontal, then what is the length of the wire?

Q169. A man on the top of a cliff 'x' metres high observes that the angle of elevation of a tower is equal to the angle of depression of the foot of the tower. What is the height of the tower in mt?

Q170. From the top of a rock which rises vertically 100m out of the water, the angle of depression of a boat is  $30^\circ$ . Find the distance of the boat from the base of the rock.

Q171. Show that the points P(3,2), Q(-2,-3) and R(2,) form a right angle.

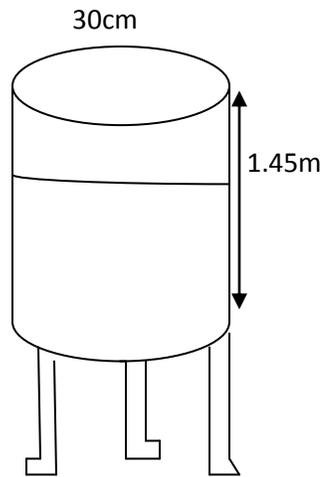
- Q172. Show that the points (1,7), (4,2), (-1,-1) and (-4,4) are the vertices of a square.
- Q173. Do the points (3,2), (-2,-3) and (2,3) form a triangle? If so, name the type of triangle formed.
- Q174. Find the relation between x and y such that the point (x,y) is equidistant from the points (7,1) and (3,5).
- Q175. Find the values of y for which the distance between the points P (2,-3) and Q (10,y) is 10 units.
- Q176. Find relation between x and y such that the point (x,y) is equidistant from the point (3,6) and (-3,4).
- Q177. Find the co-ordinates of the point which divides the join of (-1,7) and (4,-3) in the ratio 2:3.
- Q178. Find the coordinates of a points of trisection of the line segment joining (4,-1) and (-2,-3).
- Q179. Find the ration in which the line segment joining the points (-3,10) and (6,-8) is divided by (-1,6).
- Q180. If points A (6,1), B(8,2), C(9,4) & D (P,3) are the vertices of a parallelogram, taken in order, find the value of P.
- Q181. Points (-7,2) and (5,4) are the end points of the diameter of a circle. Find the ratio in which y-axis divides the diameter. Also find the co-ordinates of the centre of the circle.
- Q182. Find the coordinates of a point A, where AB is the diameter of a circle whose centre is (2,-3) and B is (1,4).
- Q183. If A and B are (-2,-2) and (2,-4) respectively. Find the coordinates of P such that  $AP = \frac{3}{7} AB$ .
- Q184. Find the area of a rhombus if its vertices are (3,0), (4,5), (-1,4) and (-2,-1) taken in order.
- Q185. Find the area of the triangle formed by the points P (-1.5, 3), Q(6,-2) and R(-3,4).
- Q186. Find the value of K if the points A (2,3), B (4,K) and C (6,-3) are collinear.
- Q187. If A (-5,7), B (-4,-5), C (-1, -6) and D (4,5) are the vertices of a quadrilateral, find the area of the quadrilateral ABCD.
- Q188. Find a relation between x and y if the points (x,y), (1,2) and (7,0) are collinear.
- Q189. A point P is at a distance  $\sqrt{10}$  from the point (2,3). Find the coordinates of the point P if its y coordinate is twice at the x coordinate.
- Q190. Find the value of x such that  $PQ=QR$  where coordinated of P,Q,R are (6,-1), (1,3), (x,8) respectively.
- Q191. The sum of the height and radius of the base of solid cylinder is 21m. IF the total surface area of cylinder is  $924m^2$ , find its height and radius of base.
- Q192. If a, b, c length, breadth and height of a cuboid such that  $a+b+c=10cm$  and  $a^2+b^2+c^2=40cm^2$ . Find the surface area of cuboid.
- Q193. A solid toy is in the form of a hemisphere surmounted by a right circular case of height 2cm with diameter of the base 4cm.If a right circular cylinder circumscribes the toy, find the difference of the volume of cylinder and the toy. ( $\pi=3.14$ )
- Q194. A juice seller was servicing his customers using glasses shown in figure. The inner diameter of the cylindrical glass was 5cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of a glass was 10cm, find the apparent capacity of the glass and its actual capacity. ( $\pi=3.14$ )

Q195. A solid sphere of radius 6cm is melted into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 5cm and its height is 32cm. Find the thickness of the hollow cylinder.

Q196. 2 cube each of volume  $64\text{cm}^3$  are joined end to end. Find the surface area of the resulting cuboid.

Q197. A cubical block of side 7cm is surmounted by a hemisphere. What is the greatest diameter the hemisphere can have? Find the surface area of the solid.

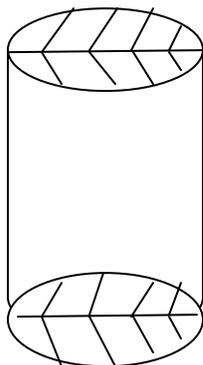
Q198. Mayank made a bird bath for his garden in the shape of a cylinder with a hemispherical depression at one end (see fig.) The height of the cylinder is 1.45m and its radius is 30cm. Find the total surface area of the bird-bath ( $\pi=22/7$ )



Q199. A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1cm and the height of the cone is equal to its radius. Find the volume of the solid in terms of  $\pi$ .

Q200. A hemispherical depression is cut out from one face of a cubical wooden block such that the diameter  $l$  of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.

Q201. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in figure. If the height of the cylinder is 10cm, and its base is of radius 3.5cm, find the surface area of the article.



- Q202. A gulab jamun, contains sugar syrup upto about 30% of its volume. Find approx how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5cm and diameter 2.8cm.
- Q203. A solid iron pole consist of a cylinder of height 220cm and base diameter 24cm, which is surmounted by another cylinder of height 60cm and radius 8cm. Find the mass of the pole, given that  $1\text{cm}^3$  of iron has approx.8gm mass. ( $\pi=3.14$ ).
- Q204. A cone of height 24cm and radius of base 6cm is made up of modeling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere.
- Q205. A hemispherical tank full of water is emptied by a pipe at the rate of  $3\frac{4}{7}$  litres per second. How much time will it take to empty half the tank, if it is 3m in diameter?
- Q206. How many silver coins, 1.75 cm in diameter and thickness 2mm, must be melted to form a cuboid of dimensions 5.5 cm X 10cm X 3.5cm?
- Q207. Water in a canal, 6m wide and 1.5 m deep, is flowing with a speed of 10km/hr. How much area will it irrigate in 30 minutes if 8cm of standing water is needed?
- Q208. A farmer connects a pipe of internal diameter 20cm from a canal into cylindrical tank in her field, which is 10m in diameter and 2m deep. If water flow through the pipe at the rate of 3km/hr, in how much time will the tank be filled?
- Q209. A metallic sphere of radius 4.2cm is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder.
- Q210. Metallic spheres of radii 6cm, 8cm and 10cm respectively, are melted to form a single solid sphere. Find the radius of the resulting sphere.
- Q211. A 20 m deep well with diameter 7m is dug and the earth from digging is evenly spread out to form a platform 2m by 14m. Find the height of the platform.
- Q212. A well of diameter 3m is dug 14m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 4m to form an embankment. Find the height of the embankment.
- Q213. A metallic sphere of radius 4.2 cm is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder.
- Q214. A container shaped like a right circular cylinder having diameter 12cm and height 15cm is full of ice cream. The ice cream is to be filled into cones of height 12cm and diameter 6cm, having a hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.
- Q215. A cylindrical bucket, 32cm high and with radius of base 18cm, is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24cm. Find the radius and slant height of the heap.
- Q216. A vessel is in form of an inverted cone. Its height is 8cm and the radius of its top, which is open, is 5cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5cm are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots

dropped in the vessel.

- Q217. A spherical glass vessel has a cylindrical neck 8cm long, 2cm in diameter, the diameter of the spherical part is 8.5cm. By measuring the amount of water it holds, a child finds its volume to be  $345\text{cm}^3$ . Check whether she is correct, taking the above as the inside measurements and  $\pi=3.14$ .
- Q218. A solid consisting of a right circular cone of height 120cm and radius 60cm standing on a hemisphere of radius 60cm is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of cylinder is 60cm and its height is 180cm.
- Q219. The diagonal of a cube is  $9\sqrt{3}$  cm. Find its surface area and volume.
- Q220. The total surface area of a right circular cylinder is  $6512\text{cm}^2$  and the circumference of its base 88cm. Find the volume of the cylinder.
- Q221. How many metres of cloth 5m wide will be required to make a conical tent, the radius of whose base is 7m and whose height is 24m.
- Q222. The surface area of a sphere is  $616\text{cm}^2$ . Find its radius.
- Q223. Find weight of a hollow sphere of copper having internal and external diameters of 11.8cm and 12cm respectively, given  $1\text{cm}^3$  of copper weights 8.88gm weight [Take  $\pi=3.14$ ]
- Q224. The internal and external diameters of a hollow hemispherical vessel are 42cm and 45.5cm respectively. Find its capacity and also its outer curved surface area.
- Q225. The radius of the base and the height of a solid right cylinder are in the ratio 2:3 and its volume is 1617 cu.cm. Find the total surface area of the cylinder.
- Q226. The difference between the outer and inner curved surface areas of a hollow right circular cylinder 14cm long is  $88\text{cm}^2$ . If the volume of metal used in making the cylinder is  $176\text{cm}^3$ , find the outer and inner diameters of the cylinder. [ $\pi=22/7$ ]
- Q227. The surface area of a sphere is 5544 sq.cm. Find its volume.
- Q228. The external radius of a hollow right circular cylindrical pipe is 9cm and its height is 14cm. The volume of the metal used to make the pipe is  $748\text{cm}^3$ . Find the thickness of the pipe.
- Q229. A cone, a hemisphere and a cylinder stand on equal bases and have the same height. Show that their volumes are in the ratio 1:2:3.
- Q230. Circumference of the edge of a hemispherical bowl is 66cm. Find the capacity of the bowl.
- Q231. In the figure common tangents AB and CD to two circles intersect at E. Prove that  $AB=CD$ .

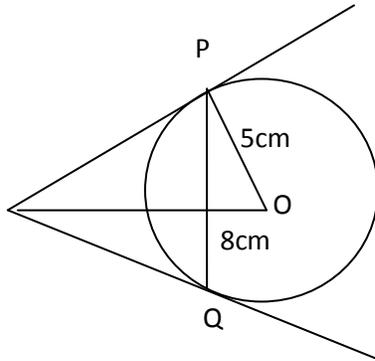


E

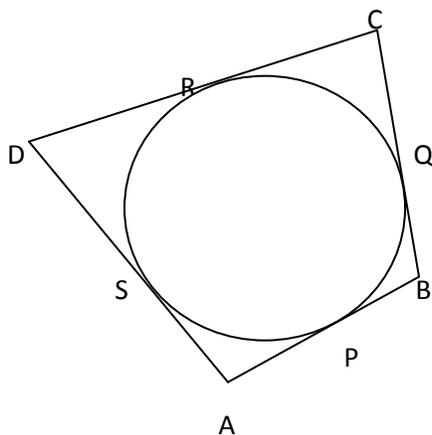
B

C

- Q232. Prove that the lengths of tangents drawn from an external point to a circle are equal.
- Q233. Prove that in two concentric circles, the chord of the larger circle, which touches the smaller circle, is bisected at the point of contact.
- Q234. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that  $\angle PTQ = 2 \angle OPQ$ .
- Q235. PQ is a chord of length 8cm of a circle of radius 5cm. The tangents at P and Q intersect at a point T. Find the length TP.



- Q236. Prove that the tangents drawn at the end of diameter of circle are parallel.
- Q237. The length of a tangent from a point A at distance 5cm from the centre of the circle is 4cm. Find the radius of the circle.
- Q238. Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.
- Q239. Prove that the parallelogram circumscribing a circle is rhombus.
- Q240. A quadrilateral ABCD is drawn to circumscribe a circle (see Fig). Prove that  $AB+CD = AD + BC$ .



**Questions of 4 marks each-**

Q241. Solve for x:  $9x^2 - 9(a+b)x + (2a^2 + 5ab + 2b^2) = 0$

Q242. The roots of the quadratic equation  $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$  are equal. Prove that  $\frac{a}{b} = \frac{c}{d}$

Q243. If the roots of the equation  $(a-b)x^2 + (b-c)x + (c-a) = 0$  are equal. Prove that  $2a = b + c$ .

Q244. If the equation  $(1 + m^2)x^2 + 2mcx + (c^2 - a^2) = 0$  has equal roots. Prove that  $c^2 - a^2 = (1 + m^2)$ .

Q245. Prove that both the roots of the equation  $(x-a)(x-b) + (x-c)(x-c)(x-a) = 0$  are equal but they are equal only when  $a = b = c$ .

Q246. Show that the equation  $2(m^2 + n^2)x^2 + 2(m+n)x + 1 = 0$  has no real roots when  $m \neq n$ .

Q247. A train travels a distance of 300 km at a constant speed. If the speed of the train is increased by 5 km an hour, the journey would take 2 hrs less. Find the speed of the train?

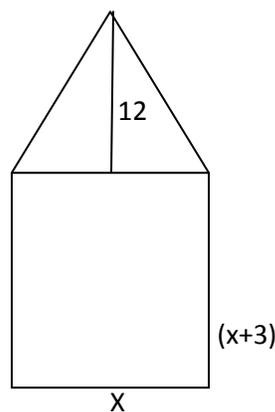
Q248. A motorboat, whose speed is 15 km/hr in still water, goes 30 km downstream and comes back in a total time of 4 hours and 30 minutes. Find the speed of the stream.

Q249. A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish it in 4 days, find the time taken by B to finish the work.

Q250. Two water taps together can fill a tank in  $9\frac{3}{8}$  hours. The tap of the larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank?

Q251. Find the roots of the equation  $5x^2 - 6x - 2 = 0$  by the method of completing the square.

Q252. A rectangular park is to be designed whose breadth is 3 m less than its length. Its area is to be 4 square metres more than the area of a park that has already been made in the shape of an isosceles triangle with its base as the breadth of the rectangular park and of altitude 12 m. Find its length and breadth?



(Fig.)

Q253. A motor boat whose speed is 18 km/hr. in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream?

Q254. In a class test, the sum of she fall's marks in Mathematics and English is 30. Had she got 2 marks

more in Mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in two subjects.

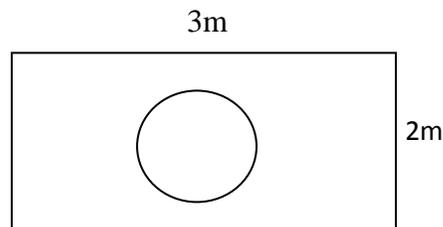
- Q255. The diagonal of a rectangular field is 60 metres more than the shorter side. If the longer side is 30 metres more than the shorter side, find the sides of the field.
- Q256. The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.
- Q257. A train travels 360 km at a uniform speed. If the speed had been 5 km/hr more, it would have taken 1 hour less for the same journey. Find the speed of the train.
- Q258. Sum of the areas of two squares is  $468\text{m}^2$ . If the difference of their perimeters is 24m, find the sides of the two squares.
- Q259. An express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore (without taking into consideration the time they stop at intermediate stations). If the average speed of the express train is 11 km/hr more than that of the passenger train, find the average speed of the two trains.
- Q260. The sum of the reciprocals of Rehman's ages (in years) 3 years ago and 5 years from now is  $\frac{1}{3}$ . Find his present age.
- Q261. Construct an isosceles  $\triangle ABC$  in which  $AB=AC=6\text{cm}$   $\angle B=60^\circ$ . Draw another triangle similar to it such that its sides are  $\frac{3}{4}$  times the side of  $\triangle ABC$ .
- Q262. Draw a right triangle in which the sides (other than hypotenuse) are of length 4 cm and 3 cm. Then construct another triangle whose sides are  $\frac{5}{3}$  times the corresponding sides of the given triangle.
- Q263. Draw a triangle ABC with side  $BC=7\text{cm}$ ,  $\angle B=45^\circ$   $\angle A=105^\circ$ . Then, construct a triangle whose sides are  $\frac{4}{3}$  times the corresponding sides of  $\triangle ABC$ .
- Q264. Construct an isosceles triangle whose base is 8 cm and altitude 4 cm and then another triangle whose sides are  $\frac{1}{2}$  times the corresponding sides of the isosceles triangles.
- Q265. Construct a triangle with sides 5 cm, 6 cm and 7 cm and then another triangle where sides are  $\frac{7}{5}$  of the corresponding sides of the first triangles.
- Q266. Construct a triangle of sides 4 cm, 5 cm and 6 cm and then a triangle similar to it whose sides are  $\frac{2}{3}$  of the corresponding side of the first triangle.
- Q267. Draw a circle of radius 6 cm. From a point 10 cm away from its centre, construct the pair of tangents to the circle and measure their lengths.
- Q268. Construct a tangent to a circle of radius 4 cm from a point on the concentric circle of radius 6 cm and measure its length. Also verify the measurement by actual calculation.
- Q269. Draw a circle of radius 3 cm. Take two points P and Q on one of its extended diameter each at a distance of 7 cm from its centre. Draw tangents to the circle from these two points P and Q.
- Q270. Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of  $60^\circ$ .

- Q271. Draw a circle of diameter 6.8cm. Construct two tangents to the circle from a point P which is at distance of 7.5cm from the centre O of the circle. Measure the two tangents.
- Q272. Draw a line segment AB of length 8cm. Taking A as centre, draw a circle of radius 4cm and taking B as centre, draw another circle of radius 3cm. Construct tangents to each circle from the centre of the other circles.
- Q273. Let ABC be a right triangle in which  $AB=6\text{cm}$ ,  $BC=8\text{cm}$  and  $\angle B=90^\circ$ . BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct the tangents from A to this circle.
- Q274. Draw a circle with the help of a bangle. Take a point outside the circle. Construct the pair of tangents from this point to the circle.
- Q275. Draw a pair of tangents to a circle of radius 4cm which are inclined to each other at an angle of  $60^\circ$ .
- Q276. Draw a line segment AB of length 6cm. Taking A as centre, draw a circle of radius 3cm and taking B as centre, draw another circle of radius 2cm. Construct tangents to each circle from one centre of the other circle.
- Q277. Let ABC be a right triangle in which  $AB=3\text{cm}$ ,  $BC=4\text{cm}$  and  $\angle B=90^\circ$ , BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct the tangents from A to this circle.
- Q278. From a point P outside a circle of radius 2cm, draw two tangents to the circle without using its centre.
- Q279. Draw a circle of radius 3.5cm. From a point P outside the circle at a distance of 6cm from its centre, draw two tangents to the circle.
- Q280. Construct a pair of tangents from a point 5cm away from the centre of a circle of radius 2cm. Measure the lengths of the tangents.
- Q281. A pole has to be erected at a point on the boundary of a circular park of diameter 13 marks in such a way that the differences of its distances from two diametrically opposite fixed gates A and B on the boundary is 7 metres. Is it possible to do so? If yes, at what distances from the two gates should the pole be erected?
- Q282. For the same amount of work, an adult takes 6 hours less than a boy. If together they complete the work in 13 hours 20 minutes. Find how much time will the boy alone take to complete the work. Also who should you hire to complete the work? Justify, keeping in mind that the adult wage per hour is triple that of the boy, but not encouraging child labour is our social responsibility.
- Q283. Out of a number of saras birds, one fourth the number are moving about in lotus plants,  $\frac{1}{9}$  coupled (along) with  $\frac{1}{4}$  as well as 7 times the square root of the number move on a hill, 56 birds remain in vakula trees. What is the total number of birds?
- Q284. The angry Arjun carried some arrows for fighting with Bheeshm. With half the arrows, he cut down the arrows thrown by Bheeshm on him and with six other arrows he killed the rath driver of Bheeshm. With one arrow each he knocked down respectively the rath, flag and the bow of Bheeshm. Finally with one more than four times the square root of arrows he laid Bheeshm unconscious on an arrow bed. Find the total number of arrows Arjun had.

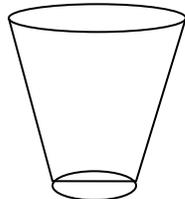
- Q285. A bus moving at its usual speed covers distance between town A and B which are 550/- km apart in 1 hour less that it takes to cover the same distance, when it raining and the bus has to reduce the speed by 5km/hr. Calculate the time taken by the bus to cover the distance between A and B when it is raining.
- Q286. In a class test, the sum of marks obtained by P in mathematics and science is 28. Had he got 3 more marks in mathematics and 4 marks less in science, the product of marks obtained in the two subjects would have been 180. Find the marks obtained in the two subjects separately.
- Q287. Two ships leave simultaneously in direction at right angles to each other. The speed of one of them exceeds the other by 1km per hour. The distance between the ships after 1 hour is 29Km. Find their speeds.
- Q288. Two trains leave a railway station at the same time. The first train travels due west and the second train due north. The first train travels 5 km/hr faster than the second train. If after two hours, they are 50km apart, find the average speed of each train.
- Q289. Natasha is  $x$  years old and her mother is  $x^2$  years old. When mother becomes 11 years old, Natasha becomes  $x^2$  years. Find their present ages.
- Q290. A bus moving at its usual speed covers distance between town A and B which are 550 km apart in 1 hour less than it takes to cover the same distance, when it is raining and bus has to reduce the speed by 5km/hr. Calculate the time take by the bus to cover the distance between A and B when it is raining.
- Q291. Some students plan a picnic. The budget for food was Rs.500/- But 5 of them failed to go and thus the cost of food for each member increased by Rs.5.How many students attended the picnic?
- Q292. In a garden, the trees are planted in horizontal and vertical row. Altogether these are 480 trees. Find the number of trees in each horizontal row.
- Q293. The sum of two number a and b is 15 and the sum of their reciprocals  $\frac{1}{a}$  and  $\frac{1}{b}$  is  $\frac{3}{10}$ . Find the numbers a & b.
- Q294. A man standing on the deck of a ship is 12m above water level. He observes that the angle of elevation of the top of a cliff is  $45^\circ$  and the angle of depression of the base of the cliff is  $30^\circ$ . Calculate the distance of the cliff from the ship and the height of the cliff. ( $\sqrt{3}=1.732$ )
- Q295. An electrician has to repair an electric fault on a pole of height 5m.She needs to reach a point 1.3m below the top of the pole to undertake the repair work. What should be the length of the ladder that she should use which, when inclined at an angle of  $60^\circ$  to the horizontal, would enable her to reach the required position? Also how far from the foot of the pole should she place the foot of the ladder?
- Q296. From a point P on the ground the angle of elevation of the top of a 10m tall building is  $30^\circ$ . A flag is hosted at the top of the building and the angle of elevation of the top of the flag staff from P is  $45^\circ$ . Find the length of the flag staff and the distance of the building from the point P.

- Q297. A 1.2m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2m from the ground. The angle of elevation of the balloon from the eyes of girl at any instant is  $60^\circ$ . After same time, the angle of elevation reduces to  $30^\circ$ . Find the distance travelled by the balloon during the interval.
- Q298. The angles of elevation of the top of a tower from two points at a distance of 4m and 9m from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6m.
- Q299. A statue, 1.6m tall, stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the stature is  $60^\circ$  and from the same point the angle of elevation of the top of the pedestal is  $45^\circ$ . Find the height of pedestal.
- Q300. As observed from the top of a 75m high light house from the sea-level, the angle of depression of two ships is  $30^\circ$  and  $45^\circ$ . If cone ship is exactly behind the other on the same side of the light house, find the distance between two ships.
- Q301. Two poles of equal heights are standing opposite each other on either side of the road, which is 80m wide. From a point between them on the road, the angles of elevation of the top of the poles are  $60^\circ$  and  $30^\circ$  respectively. Find the height of the poles and the distances of the point from the poles.
- Q302. A 1.5m tall boy is standing at some distance from a 30m tall building. The angle of elevation from his eyes to the top of the building increases from  $30^\circ$  to  $60^\circ$  as he walks towards the building. Find the distance he walked towards the building.
- Q303. From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20m high building are  $45^\circ$  and  $60^\circ$  respectively. Find the height of the tower.
- Q304. If A (3,4) , B (-2,3) and C(5,6) are the vertices of triangle ABC find the length of the median AD from A to BC. Also verify that the area of  $\triangle ABD$  is equal to area of  $\triangle ACD$ .
- Q305. Determine the ratio in which the line  $2x+y-4=0$  divides the line segment joining the points A (2,-2) & B (3,7).
- Q306. Find the centre of a circle passing through the points (6,-6), (3,-7) and (3,3).
- Q307. The two opposite vertices of a square are (-1,2) and (3,2). Find the coordinates of the other two vertices.
- Q308. Let A (4,2), B (6,5) and C(1,4) be the vertices of  $\triangle ABC$ . Find the coordinate of the point P on AD such that AP:PD= 2:1.
- Q309. Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are (0,-1) , (2,1) and (0,3). Find the ratio of this area to the area of the given triangle.

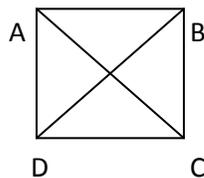
- Q310. The median of a triangle divides it into two triangles of equal areas verify this result for  $\Delta ABC$  whose vertices are A (4,-6) , B (3,-2) and C (5,2).
- Q311. If  $a$  is the length of one of the sides of an equilateral triangle ABC, base BC lies on x-axis and vertex B is at the origin. Find the coordinates of the vertices of the triangle ABC.
- Q312. Diameter of a circle which passes through (-2,3) is 10 units. If the centre of the circle is  $(3x-1,5x+1)$ , find  $x$ .
- Q313. Show that the points A (2,-2) , B (14, 10) C (11,13) and D (-1,1) are the vertices of a rectangle.
- Q314. A box contain 5blue, 3 white and 4 black marbles. If a marble is drawn as random from the box, what is the probability that it will be
- White
  - Not blue
  - Black or white
  - Neither white nor blue
- Q315. A cartoon consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Jimmy, a trader, will only accept the shirts which are good, but sujata, another trader, will only reject the shirts which have major defects. One shirt is drawn at random from the cartoon. What is the probability that
- it is acceptable to Jimmy?
  - it is acceptable to sujata?
- Q316. Two dice, one blue and one grey, are thrown at the same time, write down all the possible outcomes. What is the probability that the sum of two numbers appearing on the top of dice is-
- 8 ?
  - 13?
  - less than or equal to 12?
- Q317. A bag contain lemmon flavored candies only.Malini takes out one candy without looking into the bag. What is the probability that she takes out-
- an organed flavoured candy?
  - A lemmon flavoured candy?
- Q318. A box contains 90 discs which are numbered rom 1 to 90. If one disc is drawn at random from the box, fins the probability that it bears (i) a two digit number (ii) a perfect square number (iii) a number divisible by 5.
- Q319. Suppose you drop a die at random on the rectangular region shown in fig. What is the probability that it will land inside the circle with diameter 1m?



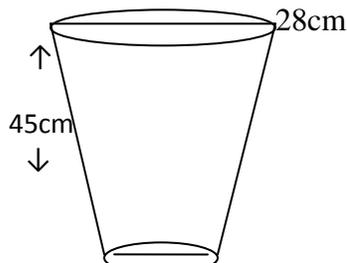
- Q320. A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Hanif wins if all the tosses given the same result i.e three heads or three tails and loses otherwise. Calculate the probability that Hanif will lose the game.
- Q321. Two customers Shyam and Ekta are visiting a particular shop in the same week (Tuesday to Saturday). Each is equally likely to visit the shop on only day as on another day. What is the probability that both will visit the shop on (i) the same day (ii) Consecutive days (iii) different days?
- Q322. A bag contain 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.
- Q323. A box contains 12 balls out of which is are black. If one ball is drawn at random from the box, what is the probability that it will be black ball? If 6 more black balls are put in the box, the probability of drawing a black ball is now double of what it was before. Find x.
- Q324. A shuttle cock used for playing badminton has the shape of a frustum of a cone mounted on a hemisphere as given in the fig. If the external diameters of the circular ends of the frustum are 6cm and 2cm and the height of the entire shuttle cock is 7cm, find its external surface area.



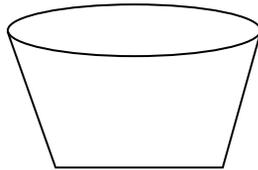
- Q325. Two circular flower bed have been shown in the following fig.on two sides of a square lawn ABCD of side 56m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the total area of the lawn and flower beds. ( $\pi = 22/7$ )



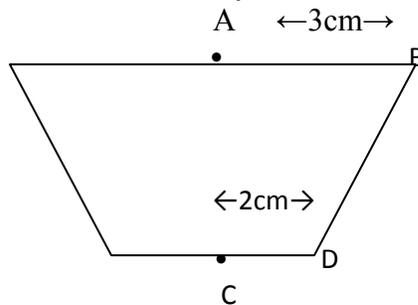
- Q326. The radii of the ends of a frustum of a cone 45cm high are 28 cm and 7cm (see fig.). Find its volume, the curved surface area and the total surface area. ( $\pi = 22/7$ )



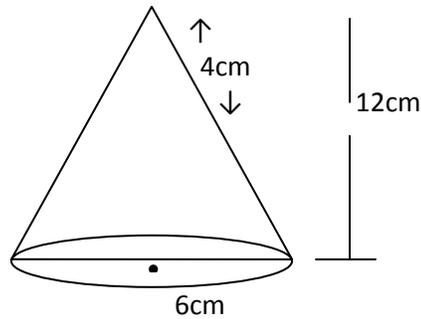
- Q327. A drinking glass is in the shape of frustum of a cone of height 14cm. The diameter of its two circular ends are 4cm and 2cm. Find the capacity of the glass.
- Q328. A fez, the cap used by the Turks, is shaped like the frustum of a cone. If its radius on the open side is 10cm, radius at the upper base is 4cm and its slant height is 15cm, find the area of material used for making it.
- Q329. A metallic right circular cone 20cm high and whose angle is  $60^\circ$  is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter  $1/16$  cm, find the length of the wire.
- Q330. A container, opened from the top and made up of metal sheet, is in the form of a frustum of a cone of height 16cm with radii of its lower and upper ends as 8cm and 20cm respectively. Find the cost of the milk which can completely fill the container, at the rate of Rs.20 per litre. Also find the cost of metal sheet used to make the container, if it costs Rs.8 per  $100\text{cm}^3$ ? (Take  $\pi=3.14$ )
- Q331. Hanumappa and his wife Gangamma are busy making jiggery out of sugarcane juice. They have processed the sugarcane juice to make the molasses, which is passed into moulds in the shape of a frustum of a cone having the diameters of its two circular faces as 30 cm and 35 cm and vertical height of the mould is 14cm (see fig.). If each  $\text{cm}^3$  of molasses has mass about 1.2g, find the mass of the molasses that can be poured into each mould.



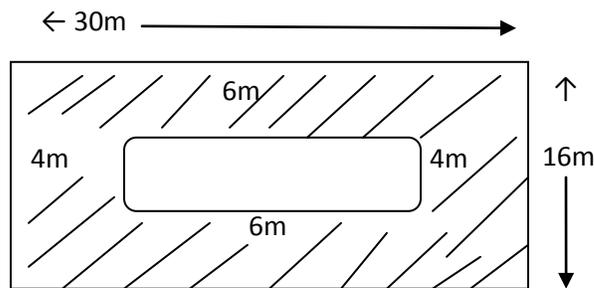
- Q332. The lower portion of a haystack in an inverted cone frustum and upper part is a cone, as shown in the fig. Find the total volume of haystack.  $AB=3\text{cm}$  and  $CD=2\text{cm}$ .



Q333. A solid cone of height 12cm and base radius 6cm has the top 4cm removed as shown in the adjoining figure. Find the whole surface area of remaining frustum of the cone.



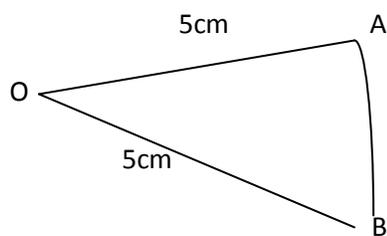
Q334. Find the area of shaded region-



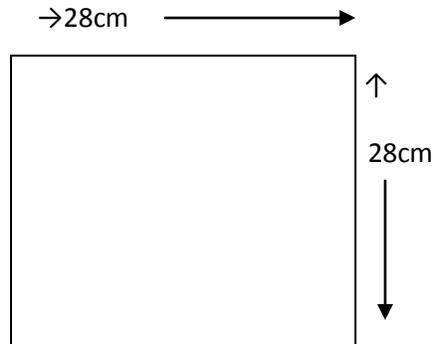
Q335. The given fig. consists of rectangle and a semicircle. Find its area and perimeter.

Fig.

Q336. In the given fig, of AOB is a sector of radius 5cm and perimeter of sector AOB is 50cm, then find its area.



Q337. Find the area of the shaded region.....



Q338. All the vertices of a rhombus lie on a circle. Find the area of the rhombus, if the area of the circle is  $1256\text{cm}^2$  ( $\pi=3.14$ )

Q339. Two circles touch internally. The sum of their areas is  $116\pi\text{ cm}^2$  and the distance between their centres is 6cm. Find the radii of the two given circles.

Q340. A circle is inscribed in a square of side 14cm and another circle circumscribes the square. Determine the relationship between the areas of the outer circle and inner circle.

Q341. The floor of a room is of dimensions 6mX4m and it is covered with circular tiles of diameters 50cm each. Find the area of floor that remains uncovered. ( $\pi=3.14$ )

Q342. In the given fig. OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is  $32\sqrt{3}\text{ cm}^2$ , find the radius of the circle.

Q343. The wheel of a bicycle is of diameter 70cm. How many revolutions must the wheel make in every 10 seconds, so as to keep a speed of 19.8km/hr?