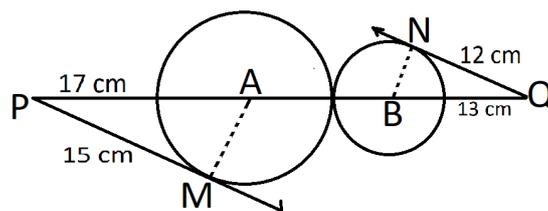
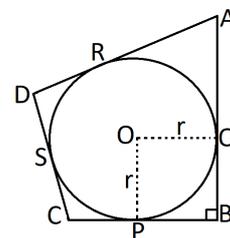


- Q. 1. From a point which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then, what will be the area of the quadrilateral PQOR?
- Q. 2. PQ is tangent to a circle with centre O at the point Q. A chord QA is drawn parallel to PO. If AOB is a diameter of the circle, prove that PB is tangent to the circle at the point B.
- Q. 3. Let s denote the semi-perimeter of a triangle ABC in which $BC = a$, $CA = b$ and $AB = c$. If a circle touches the sides BC, CA, AB at the points D, E, F respectively, prove that $BD = s - b$.

- Q. 4. In the figure given below, two circles with centres A and B touch externally. PM is a tangent to the circle A and QN is a tangent to the circle with centre B. If $PM = 15$ cm, $QN = 12$ cm, $PA = 17$ cm and $QB = 13$ cm, then find the distance between the centres A and B of the circles.



- Q. 5. AB is a diameter and AC is a chord of a circle with centre O such that $\angle BAC = 30^\circ$. The tangent at C intersects extended AB at D. Prove that $BC = BD$.
- Q. 6. In two concentric circles, prove that all chords of the outer circle which touch the inner circle are equal.
- Q. 7. In the adjoining figure, a circle with centre O is inscribed in a quadrilateral ABCD such that it touches sides BC, AB, AD and CD at points P, Q, R and S respectively. If $AB = 29$ cm, $AD = 23$ cm, $\angle B = 90^\circ$ and $DS = 5$ cm, then what will be the length of radius r of the circle in (cm)?



- Q. 8. Prove that the line segment joining the points of contact of two parallel tangents passes through the centre.
- Q. 9. If a , b , c are the sides of a right triangle where c is the hypotenuse, prove that the radius r of the circle which touches the sides of the triangle is given by $r = \frac{a + b - c}{2}$.
- Q. 10. If from an external point B of a circle with centre O, two tangents BC and BD are drawn such that $\angle DBC = 120^\circ$, prove that $BC + BD = BO$, i.e. $BO = 2BC$
- Q. 11. Find the distance of the point P(2,3) from the X-axis.
- Q. 12. Find the coordinates of the point, where the line $x - y = 5$ cuts Y-axis.
- Q. 13. What will be value of y , if the point $(23/5, y)$ divides the line segment joining the points (5,7) and (4,5) in the ratio 2:3 internally.
- Q. 14. The vertices of a triangle are $(a, b - c)$, $(b, c - a)$ and $(c, a - b)$. Prove that its centroid lies on X-axis.
- Q. 15. The line segment joining the points A (2, 1) and B(5, -8) is trisected at the points P and Q such that P is nearer to A. If P also lies on the line given by $2x - y + k = 0$, then find the value of k .
- Q. 16. If (a, b) is the mid-point of the line segment joining the points A(10, -6) and B(k , 4) lies on $a - 2b = 18$. Find the value of k and the distance AB.

- Q. 17. If the centroid of the triangle formed by the points $A(a, b)$, $B(b, c)$ and $C(c, a)$ is at the origin. What is the value of $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab}$?
- Q. 18. Points P, Q, R, S and T divide the line segment joining the points $A(1,2)$ and $B(6,7)$ in 6 equal parts. Find coordinates of the points P,Q,R,S and T.
- Q. 19. The points $(3, -4)$ and $(-6, 5)$ are the end points of a diagonal of a parallelogram. If one of the end points of the second diagonal is $(-2, 1)$, then find the other end point.
- Q. 20. $A(6, 1)$, $B(8, 2)$ and $C(9,4)$ are three vertices of a parallelogram ABCD. If E is the mid-point of DC. Find the area of the ΔADE .
- Q. 21. The HCF and LCM of two numbers are 33 and 264 respectively. When the first number is completely divided by 2, the quotient is 33. Find the other number.
- Q. 22. Using Euclid's division algorithm, find whether the pair of numbers 847,2160 are co-primes or not.
- Q. 23. If the HCF of 152 and 272 is expressible in the form $272 \times 8 + 152x$, then find x
- Q. 24. Show that p^2 will leave remainder 1 when divided by 8, if p is an odd positive integer.
- Q. 25. Two alarm clock ring their alarms at regular intervals of 50 seconds and 48 seconds if they first beep together at 12noon, at what time will they beep again for the first time?
- Q. 26. Two equilateral triangles have the sides of length 34cm and 85cm respectively. Find the greatest length of tape that can measure the sides of both of them exactly.
- Q. 27. Find the LCM of 2.5, 0.5 and 0.175.
- Q. 28. If a and b are two positive integers such that $a = 4b$. Find the HCF of a and b
- Q. 29. Write whether the square of any positive integer can be of the form $3m + 2$, where m is a natural number. Justify your answer.
- Q. 30. For any positive integer n , prove that $n^3 - n$ is divisible by 6.