

MATHEMATICS
FINAL TOUCH

1. Consider the arithmetic sequence: 12,22,32,.....
 - a) What is the common difference?
 - b) What is the 9th term?
 - c) Is 200 a term of this sequence? why?
 - d) What is the first three digit term of this sequence?
2. Consider the arithmetic sequence : 10,14,18,....
 - a) What is the common difference?
 - b) Find the 21st term?
 - c) Find the algebraic form of this sequence.
 - d) Which term of this sequence is 66?
3. Algebraic form of an arithmetic sequence $3n+5$.
 - a) Find the first term and common difference.
 - b) Find the 15th term.
 - c) Does the difference of any two terms of this sequence is 200? why?
4.
 - a) What is the 8th term of the arithmetic sequence 11,14,17,.....?
 - b) What is the common difference of the arithmetic sequence: $\frac{11}{8}, \frac{14}{8}, \frac{17}{8}, \dots$?
 - c) What is the first integer term of the arithmetic sequence: $\frac{11}{8}, \frac{14}{8}, \frac{17}{8}, \dots$?
5. 8th term of an arithmetic sequence is 30 and its 11th term is 42.
 - a) What is the common difference?
 - b) What is the first term?
Find the algebraic term of this sequence?
6. For arithmetic sequence, 9th term is 16 and 16th term is 9.
 - a) What is the common difference?
 - b) What is the 25th term?
 - c) What is the sum of first 49 terms?
7. Sum of first 9 terms of an arithmetic sequence is 225.
 - a) What is the 5th term?
 - b) What is the sum of 4th and 6th terms?
 - c) If the first term is 6 then, what is its 9th term?
 - d) What is the common difference of this sequence?
8.
 - a) Write an arithmetic sequence with sum of first 6 terms is 120.
 - b) If the first term of an arithmetic sequence with sum of first 6 terms 120 is 10, write this sequence.
9.
 - a) Find $1+2+3+\dots+20$
 - b) Find $6+12+18+\dots+120$
 - c) Find $8+14+20+\dots+122$
 - d) Find $14+26+38+\dots+242$.
10.
 - a) What is 20th term of the arithmetic sequence: 1,3,5,.....
 - b) Find $1+3+5+\dots+39$.
 - c) Find $3+9+15+\dots+117$.
 - d) What is the sum of first 20 terms of the arithmetic sequence:7,13,19,....

11. Consider the arithmetic sequence: 9,15,21,....
- What is the common difference?
 - Find its 11th term.
 - What is the sum of first 21 terms?
 - What is the difference between the sum of first 10 terms and next 10 terms of the arithmetic sequence: 3,9,15,....
12. Consider the arithmetic sequence: 8,11,14,...
- Find the common difference.
 - Find the 25th term.
 - Find the sum of first 25 terms.
13. a) Write the sequence of 3 digit multiples of 5.
 b) Write the sequence of 3 digit numbers which leaves 2 as remainder on dividing by 5
 c) Which is the largest 3 digit number which leaves 2 as remainder on dividing by 5
 d) What is the sum of all 3 digit number which leaves 2 as remainder on dividing by 5.
14. For an arithmetic sequence, 7th term is 15 and 13th term is 25.
- Find 10th and 16th terms.
 - Find the sum of first 31 terms.

15. a) Find $1+3+5+\dots+19$.
- b) Find $\frac{1}{2} + 1\frac{1}{2} + 2\frac{1}{2} + \dots + 9\frac{1}{2}$
- c) Find $\frac{1}{10} + \frac{3}{10} + \frac{5}{10} + \dots + \frac{19}{10}$

16. 1
 2 3
 4 5 6
 7 8 9 10

.....

.....

- Write next two lines of this pattern
- Find the first and last term of 20th line of this pattern.
- Find the sum of all terms of 20th line.

17. 1
 2 3 4
 5 6 7 8 9

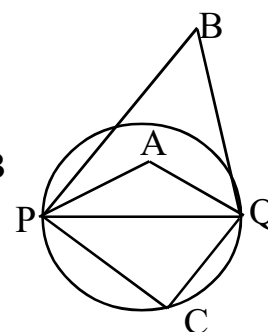
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- Write next two lines of this pattern.
- Write the sequence of last terms of this pattern
- Find the last term of 9th line.
- Find the first and last term of 10th line.

18. In the figure, PQ is a diameter of the circle.

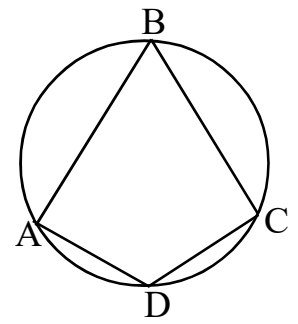
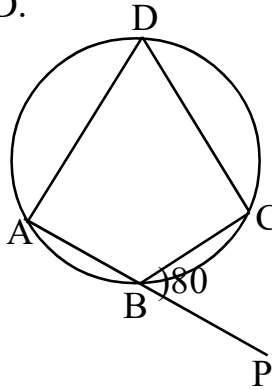
- What is $\angle C$?
- If $\angle A, \angle B$ and $\angle C$ are three consecutive terms of an arithmetic sequence with common difference 10. Find the measures of $\angle A$ and $\angle B$



19. In the figure, A, B, C and D are points on a circle.

a) Find $\angle A + \angle C$.

b) $\angle D$ is double of $\angle B$. Find $\angle B$ and $\angle D$.

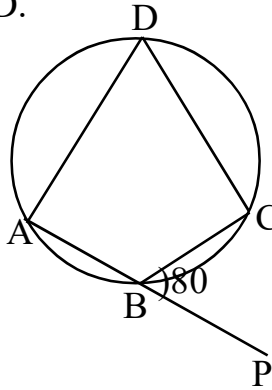


20. In the figure, $\angle CBP = 80^\circ$.

a) What is $\angle D$?

b) Find $\angle ABC$.

c) Find $\angle A + \angle C$.

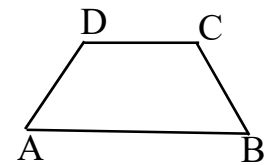


21. In the figure, ABCD is an isosceles trapezium and $\angle A = 70^\circ$.

a) Find $\angle B$ and $\angle C$.

b) Is this trapezium ABCD cyclic? why?

c) If we draw a circle with AB as diameter, Where is the position of the point C? why?



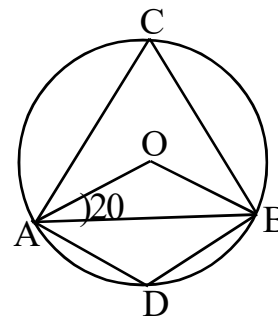
22. In the figure, O is the centre, $\angle OAB = 20^\circ$.

a) Find $\angle OBA$.

b) Find $\angle ACB$.

c) Find $\angle ADB$.

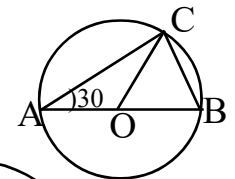
d) If $\angle OAB = x$ and $\angle ADB = y$ then, prove that $y - x = 90^\circ$.



23. In the figure, O is the centre and $\angle OAC = 30^\circ$.

a) Find $\angle OCA$ and $\angle ACB$.

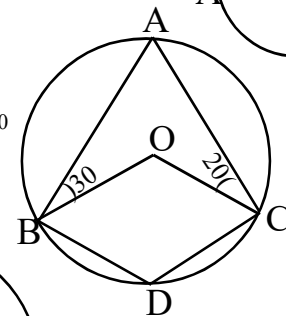
b) Find all angles of triangle OBC.



24. In the figure, O is the centre and $\angle ABO = 30^\circ$ and $\angle OCA = 20^\circ$

a) Find $\angle A$.

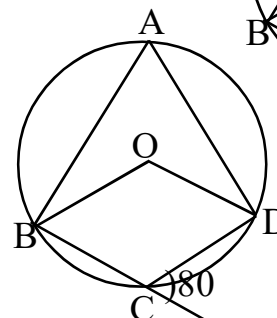
b) Find $\angle BOC$ and $\angle BDC$.



25. In the figure, O is the centre and $\angle DCE = 80^\circ$

a) Find $\angle BOD$.

b) Find $\angle A$ and $\angle BCD$.

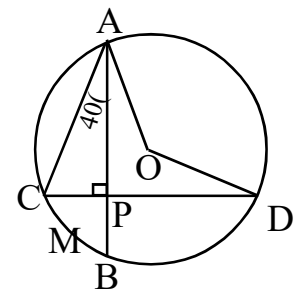


26. In the figure, O is the centre and $\angle CAP = 40^\circ$

a) Find $\angle ACP$.

b) Find $\angle AOD$.

c) What is the central angle of the arc BMC.

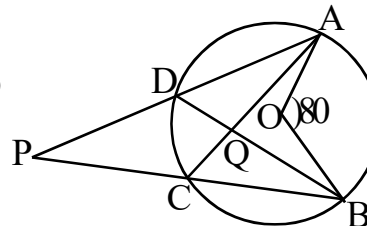


27. In the figure, O is the centre and $\angle AOB = 80^\circ$

a) Find $\angle ACB$ and $\angle ADB$.

b) Find $\angle ACP$

c) Prove that $\angle P + \angle CQD = \angle AOB$.



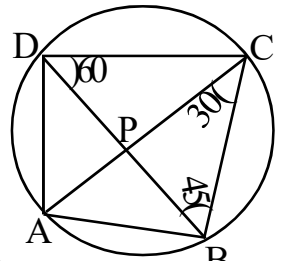
28. In the quadrilateral ABCD, $\angle A = 100^\circ$, $\angle B = 70^\circ$ and $\angle C = 70^\circ$,

a) Find $\angle D$.

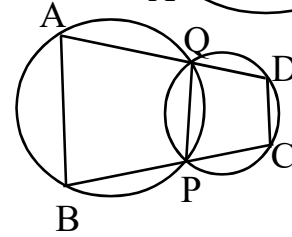
b) Is this quadrilateral ABCD cyclic? why?

29. In the figure, $\angle BDC=60^\circ$, $\angle ACB=30^\circ$ and $\angle CBD=45^\circ$.

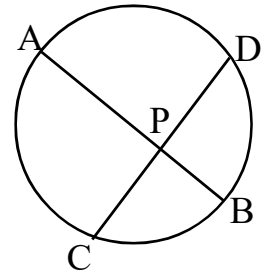
- Find $\angle BAC$ and $\angle BAD$.
- Find $\angle ABC$ and $\angle ADC$.
- Find $\angle BPC$.



- In the figure, $\angle A=80^\circ$ then, check whether quadrilateral ABCD is cyclic.
- If $\angle A=\angle B$ then, prove that quadrilateral ABCD is cyclic.

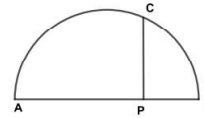


- In the figure, the chords AB and CD are intersect at P. $PA=10\text{cm}$, $AB=14\text{cm}$ and $PC=5\text{cm}$.
 - What is the length of PB?
 - Find the lengths of PD and CD.



32. In the figure, AB is a diameter of the semicircle.

- Prove that $PA \times PB=PC^2$
- If $PA=18\text{cm}$ and $PC=12\text{cm}$ then, find PB.

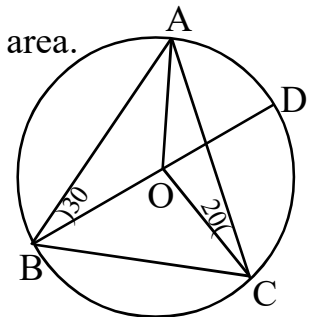


33. Draw a triangle with two angles 50° , 60° and circum radius 3cm.

34. Draw a rectangle of sides 4cm and 6cm then draw a square of equal area.

35. In the figure, O is the centre, $\angle ABO=30^\circ$ and $\angle ACO=20^\circ$.

- Find $\angle BAO$ and $\angle BAC$.
- Find $\angle AOD$.
- Find $\angle COD$.
- Prove that triangle OAD is equilateral.



36. What is the probability of 5 sundays in month January?

37. A box containing some red and some white balls. A ball is drawn without looking, the probability of that ball is red is $\frac{2}{3}$. What is the probability of that ball is white?

38. A bag contains 10 red and 8 blue balls. A ball is drawn without looking.

- What is the probability of that ball is red?
- What is the probability of that ball is blue?
- If you put one red and one blue balls to the bag then, the probability of getting a red ball is increased or not? why?

39. A dice numbered 1 to 6 on faces rolled then, What the probability of the number on the top face is a prime?

40. A box contains paper slips numbered 1 to 30. A slip is drawn from this box without looking.

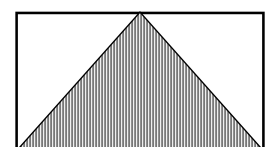
- What is the probability of that number is odd?
- What is the probability of that number is even?
- What is the probability of that number is prime?

41. A box contain paper slip numbered all two digit numbers. A slip is drawn from this box without looking.

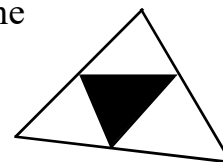
- What is the probability of the digits are equal?
- What is the probability of product of the digits is a perfect square?

42. In the figure, ABCD is a rectangle. A point is marked without looking,

- What is the probability of that point is inside the triangle?
- What is the probability of that point is outside the triangle?

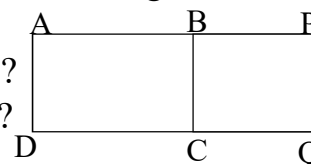


43. In the figure the shaded triangle is drawn by joining the mid point of the sides of large triangle. A dot is put on the figure without looking.



- a) What is the probability of that dot is inside the shaded triangle?
 b) What is the probability of that dot is outside the shaded triangle?

44. Ratio of areas of the rectangles ABCD and BPQC is 3:2. A dot is put on the figure without looking.



- a) What is the probability of that point is inside the small rectangle ?
 b) What is the probability of that point is inside the large rectangle ?

45. Sum of first 'n' odd numbers is 400. Find 'n' .

46. When all the side of a square decreased by 5cm, the area became 625cm²,

- a) What is the side of the small square?
 b) What is the side of the large square?
 c) Find the area of the large square.

47. 4 is added to the sum of area and perimeter of a rectangle gives 900.

- a) If the side of the square is x, Write its area and perimeter.
 b) Form a second degree equation.
 c) Find the side of the square.

48. x is a number.

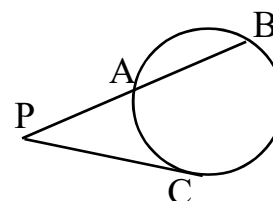
- a) Which number is added to x^2+6x , for which this become a perfect square?
 b) If $x^2+6x=135$ then, find x.

49. If the product of two consecutive multiples of 8 is 384 , find the numbers.

50. The perimeter of a rectangle is 40 cm and its area is 64 sq.cm.

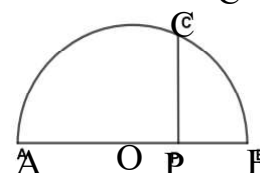
- a) What is the sum of length and breadth?
 b) Find the length and breadth.

51. In the figure, PC is a tangent, PC=12cm and AB=10cm.



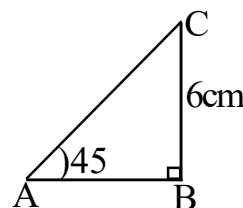
- a) If PA=x then, find PB.
 b) Find the length of PA and PB.

52. AB is the diameter of the semicircle and O is the centre. PC is perpendicular to AB. Length of CP is 12cm and AB=26cm



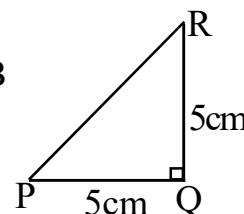
- a) If OP=x then, find AP and PB.
 b) Find the length of AP.

53. In the figure, $\angle B=90^\circ$, $\angle A=45^\circ$ and BC=6cm



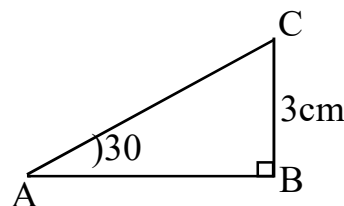
- a) Find $\angle C$.
 b) Find the length of AB and AC.

54. In ΔPQR , $\angle Q=90^\circ$ and PQ=QR=5cm



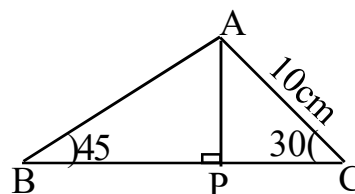
- a) Find $\angle P$.
 b) Find PR.

55. In the figure, $\angle B=90^\circ$, $\angle A=30^\circ$ and BC=3cm.



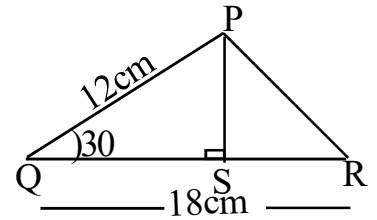
- a) Find $\angle C$
 b) Find the length of AB and AC.

56. In the figure, AC=10cm.

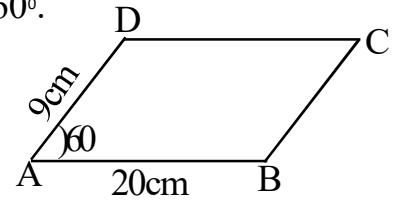


- a) Find the lengths of AP and PC.
 b) Find the length of BP and AB.

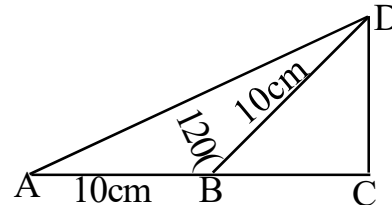
57. In the figure, $PQ=12\text{cm}$, $QR=18\text{cm}$ and $\angle Q=30^\circ$
- Find PS .
 - What is the area of ΔPQR ?
 - If $\angle Q=150^\circ$ then, What is the area of ΔPQR ?



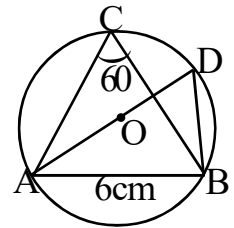
58. In the parallelogram $ABCD$, $AD=9\text{cm}$, $AB=20\text{cm}$ and $\angle A=60^\circ$.
- What is the perpendicular distance from D to AB ?
 - What is the area of the parallelogram.



59. In the figure, $AB=BD=10\text{cm}$ and $\angle ABD=120^\circ$.
- What is $\angle CBD$.
 - Find BC and CD .
 - Find the area and perimeter of ΔACD



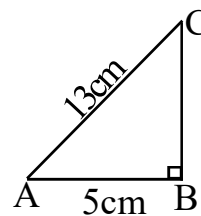
60. In the figure, O is the centre, $\angle ACB=60^\circ$ and $AB=6\text{cm}$.
- Find $\angle ADB$.
 - Find $\angle ABD$.
 - What is the radius of the circle?



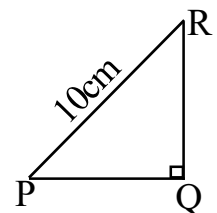
61. A ladder of length 12m is leaned against a vertical wall. Foot of the ladder make an angle 30° with the earth.
- What is the height of the wall?
 - What is the distance between the foot of the ladder and the wall?

62. A man standing some distance away from the foot of a building sees the top at angle of elevation 30° . After walking 40m towards the building, he sees the top at angle 60°
- Draw a rough figure.
 - Find the height of the building.

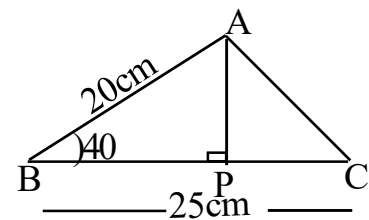
63. In the figure, $\angle B=90^\circ$, $AB=5\text{cm}$ and $AC=13\text{cm}$.
- Find the length of BC .
 - Find $\sin A$ and $\cos A$
 - Prove that $\sin A = \cos C$



64. In the figure, $\angle Q=90^\circ$, $\sin P=4/5$ and $PR=10\text{cm}$.
- Find the length of PQ and QR .
 - Find $\cos P$ and $\cos R$
 - Prove that $(\sin P / \cos R)=1$

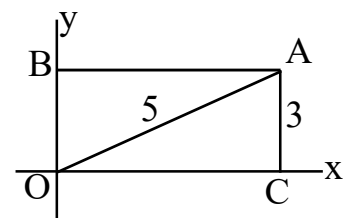


65. In the figure, $\angle B=40^\circ$, $AB=20\text{cm}$ and $BC=25\text{cm}$
- Find the length of AP .
 - Find the area of ΔABC .
 - If $\angle B=140^\circ$, then What is the area of ΔABC
 - Find the area of ΔAPC
- [$\sin 40=0.64$, $\cos 40=0.77$]



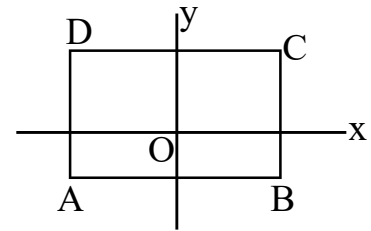
66. Write points belonged 'x' axis and 'y' axis.
 [(2, 2), (0, 3), (4, 0), (-5, 0), (1, 4)]

67. In the figure, $OACB$ is a rectangle, $AC=3$ unit and $OA=5$ unit.
- What is the coordinates of the point O ?
 - Find the coordinates of the points C , A and B .

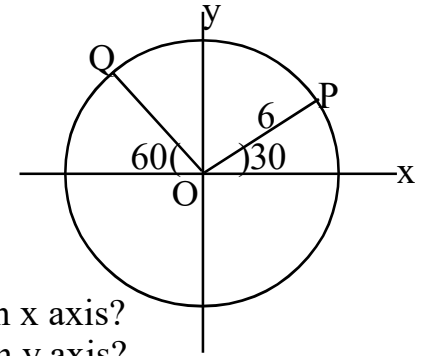


68. a) Draw x,y axis and mark the following points. A(1, 0), B(7, 0), C(6, 4), D(2, 4).
 b) Draw the quadrilateral ABCD.
 c) Write the suitable name of this quadrilateral.
 d) Find the area of the quadrilateral ABCD.

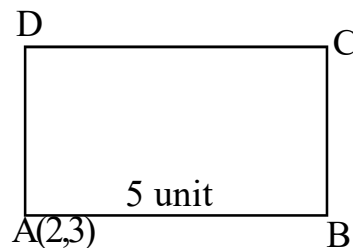
69. Sides of the rectangle ABCD is parallel to the axes.
 B(5, -2), D(-5, 1) are two vertices. Find the coordinates of the vertices A and C.



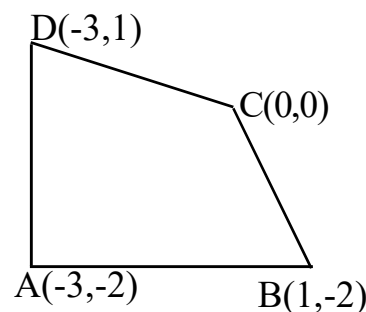
70. In the figure, centre of the circle is origin and radius 6 unit.
 Find the coordinates of P and Q.



71. Consider the point A(1, 4)
 a) What is the coordinates of the point 4 unit away from A on x axis?
 b) What is the coordinates of the point 1 unit away from A on y axis?
 c) Find the coordinates of points 5 units away from A on x axis.
72. Centre of a circle with radius 4 unit is (6,8). Check whether the following points inside or outside the circle.
 (10, 8), (6, 13), (0, 0), (1, -9)
73. A circle of radius 5 unit is origin. Write coordinates of 4 points on this circle.
74. Centre of a circle is (6, 8) and a point on this circle is (16,8).
 a) Find the radius of this circle,
 b) Find the coordinates of the points at which this circle cuts the x axis.
75. Sides of the rectangle are parallel to the axes. Coordinates of opposite vertices are (4, 8), (12,11) a) Find the coordinates of other vertices .
 b) Find the perimeter of this rectangle.
76. Sides of a square ABCD are parallel to the axes. A(2, 3), and AB =5 unit. Find the coordinates of the points B,C and D .



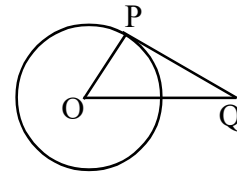
77. Find the length of sides and diagonals using the figure.



80. PQ is a tangent to the circle with centre O.

a) Find $\angle P$.

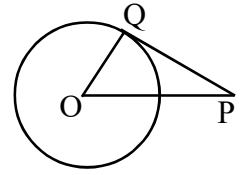
b) If $\angle O = 42^\circ$, What is $\angle Q$?



81. In the figure, O is the centre and PQ is a tangent. $OP = 13\text{cm}$, $OQ = 5\text{cm}$.

a) What is the measure of $\angle PQO$?

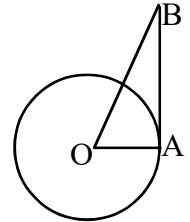
b) What is the length of the tangent PQ?



82. In the figure, O is the centre and AB is a tangent. $\angle B = 30^\circ$ and radius of the circle is 6cm.

a) What is $\angle OAB$?

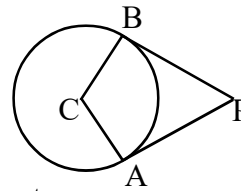
b) Find the length of OB and AB.



83. In the figure, C is the centre and PA, PB are tangents. Radius of the circle is 6cm and $PA = 8\text{cm}$.

a) What is the length of PB?

b) What is the length of PC?



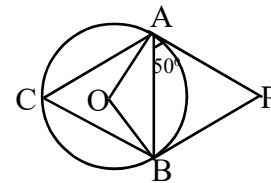
84. In the figure, O is the centre and PA, PB are tangents.

If $\angle PAB = 50^\circ$ then,

a) What is $\angle C$?

b) What is $\angle PBA$?

c) Find $\angle P$.



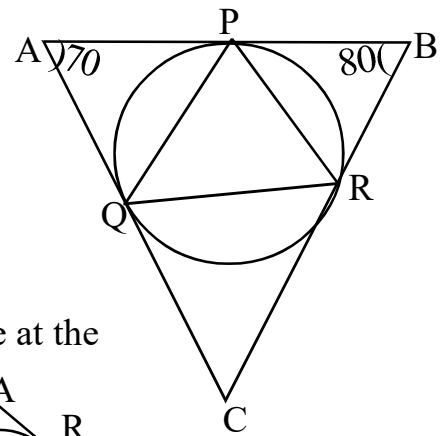
85. In the figure, sides of triangle $\triangle ABC$ are touches the circle at the points P, Q and R.

If $\angle A = 70^\circ$ and $\angle B = 80^\circ$ then,

a) Find all angles of $\triangle AQP$.

b) Find all angles of $\triangle PQR$.

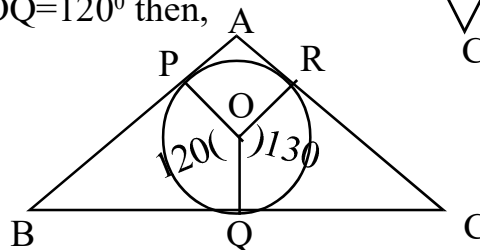
c) Find all angles of $\triangle QRC$.



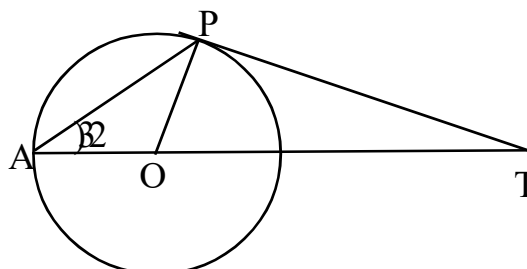
86. In the figure, sides of triangle $\triangle ABC$ are touches the circle at the points P, Q and R. If $\angle ROQ = 130^\circ$ and $\angle POQ = 120^\circ$ then,

a) Find all angles of $\triangle APR$.

b) Find all angles of $\triangle ABC$.

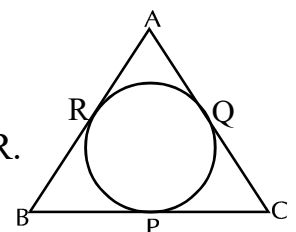


87. In the figure, O is the centre. Find all angles of $\triangle AOP$, $\triangle OPT$ and $\triangle APT$



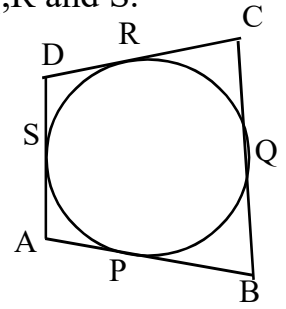
88. In the figure, sides of $\triangle ABC$ touches the circle at the points P, Q and R.

$AB = 8\text{cm}$, $QC = 7\text{cm}$ and $AC = 11\text{cm}$. Find the lengths of BP, PC and AR.



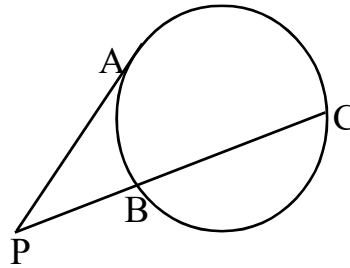
89. In the figure, sides of the quadrilateral ABCD touches the circles P,Q,R and S.

- Prove that $AB+CD=BC+AD$.
- If $AP=2\text{cm}$, $BQ=5\text{cm}$, $CR=3\text{cm}$ and $DS=4\text{cm}$ then, Find the perimeter of the quadrilateral ABCD.
- If $AB+CD=20\text{cm}$ then What is $AD+BC$?
What is the perimeter ABCD?



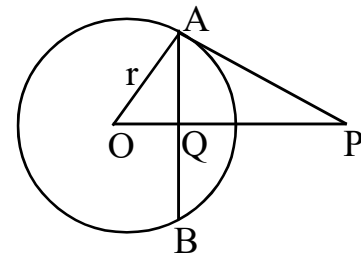
90. In the figure, PA is a tangent. If $BC=9\text{cm}$ and $PB=3\text{cm}$, then

- Find the length of PC.
- Find the length of PA.



91. In the figure, O is the centre, PA is a tangent and Q is the midpoint of AB. If the radius of the circle is r, then

- What is $\angle OAP$?
- Write a pair of equal angles $\triangle OQA$ and $\triangle PQA$.
- Prove that $OP \times OQ = r^2$



92. Draw a circle of radius 3cm. Mark a point P on the circle. Draw a tangent through the point P.

93. Draw a circle of radius 3.5 cm. Mark a point A, 7cm apart from the centre. Draw tangents from A to the circle. Measure its length.

94. Draw a circle of radius 2.5cm. Draw a triangle with two angles 50° , 60° and sides touches the circle.

95. A cone is made by bending a semicircle of radius 10cm.

- Find the slant height and radius of this cone?
- What is the curved surface area?
- What is the total surface area of this cone?

96. A cone is made by bending a sector of radius 12cm and central angle 120° .

- What is the slant height of the cone?
- What is the radius of the cone?

97. A sector of central angle 216° is cut out from a circle of radius 10cm and bend to form a cone.

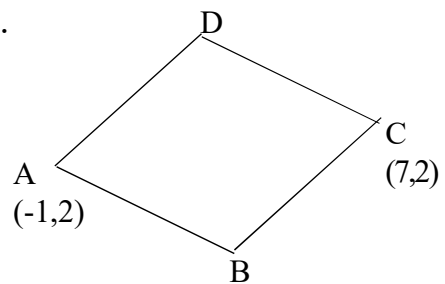
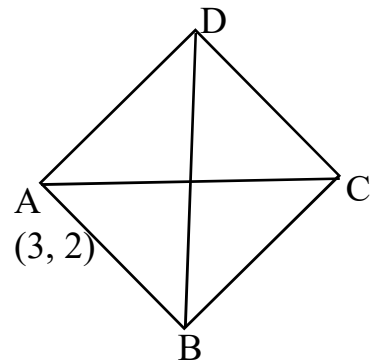
- Find the slant height and radius of the cone.
- What is the curved surface area and total surface area?
- What is the height of the cone?
- Find the volume of the cone.

98. What is the radius and central angle of a sector needed to make a cone of radius 18cm and height 24cm?

99. a) What is the relation between the radius and slant height of cone made by bending a semicircle?

- What is the radius and slant height of cone made by bending a semicircle of radius 10cm?

100. Base radius of a cone is 12cm and its height 16cm.
 a) What is the slant height?
 b) What is the curved surface area of the cone?
 c) What is the total surface area of the cone? d) Find the volume of the cone.
100. Base area of a cone is $64\pi\text{cm}^2$ and slant height is 20cm.
 a) What is the height of the cone?
 b) What is the total surface area of the cone? c) What is the volume of the cone?
101. Base area of a cone is $576\pi\text{cm}^2$ and volume is $1920\pi\text{cm}^3$.
 a) What is the height of the cone?
 b) What is the curved surface area of the cone?
101. Ratio of radii of two cones is 2:3 and ratio of their heights is 5:4.
 a) What is the ratio of their perimeters?
 b) What is the ratio of their volumes?
 c) If the volume of the first cone is 500cm^3 then, what is the volume of the second cone?
102. Radius of a metallic cylinder is 12cm and height is 18cm.
 a) A cone is made by melting this cylinder with radius 9cm. What is the height of this cone?
103. a) What is the volume of a metallic cylinder of radius 10cm and height 24cm?
 b) What is the volume of cone of maximum size is carved from this cylinder?
 c) What is the curved surface area of this cone?
104. Find the coordinates of the mid point of the line AB
 a) (14,5), (20, 7). b) A(6,2), B(12,2)
105. A circle is drawn with the line joining the points (2, 3), (6,5) as diameter.
 a) What is the coordinates of centre of the circle?
 b) What is the radius of the circle?
106. A(1, 1), B(7, 1), C(8, 6), D(2, 6) are the vertices of the quadrilateral ABCD.
 a) Find the coordinates of midpoints the diagonals
 b) Prove that ABCD is a parallelogram.
107. In the figure, ABCD is a square. Its diagonals are parallel to the axes.
 AC=6 and the coordinates of A is (3,2),
 write the coordinates of the vertices C,B and D
108. In the figure, coordinates of two vertices of a rhombus are A(-1,2) and C(7,2).
 a) Write the coordinates of midpoint of the diagonal AC.
 b) If the length of diagonal BD is 6. Write the coordinates of other two vertices.
 c) Calculate the length of one side of the rhombus.
109. A(2,4), B(4,3), C(8,8), and ABCD is a parallelogram
 a) Find the coordinates of D.
 b) A(2,0), B(8,0) and ABC is an equilateral triangle. Find the coordinates of C.
 c) Prove that A(4,5), B(8,8),C(16,14) are the points of a line.
110. a) What is the slope of the line joining the points (2, 4), (5, 8)?
 b) Write the coordinates of other two points on this line.



111. A(1, 4), B(3, 7), C(9, 16) are three points.
 a) Find the slope of the line AB.
 b) Check whether A,B,C are points on a line.
112. a) Find the slope of the line joining (1, 5), (5, 8).
 b) Can you draw a triangle by joining the points (1, 5), (5, 8), (13, 14).
113. (5, 6) is a point on the line with slope $\frac{3}{4}$.
 a) Find the coordinates other two points on this line.
 b) What is the slope of a line parallel to this line?
114. a) What is the slope of the line joining the points (-1, 3) and (3, 6).
 b) Write the coordinates any other point on this line.
 c) If (x, y) is a point on this line then, prove that (x+4, y+3) also point on this line.
115. If $P(x)=2x^2-5x+2$, then
 a) What number is P(2)?
 b) Write a first degree polynomial which is a factor of P(x).
116. If x-1 is a factor of $5x^3-4x^2+x+k$, then find k.
117. If $P(x) = 2x^2 - 3x + 1$ then,
 Find P (1), P (2), P (-3)
118. If $P(x)=2x^2-5x+1$,
 a) Find P(3).
 b) Does x-3 a factor of this polynomial.
 c) If not which number is subtracted from P(x) for which x-3 is a factor?
119. Write the following polynomial as the product of two first degree polynomials.
 a) $x^2 - 1$ (b) $x^2 - 9$ (c) $x^2 - 4$ (d) $x^2 - 100$
120. If $P(x) = x^2 - 5x + 7$ then,
 a) Find P (3) , b) Find P (x) - P (3)
 c) Write P (x) - P (3) as the product of two first degree polynomials.
121. a) If $P(x) = x^2 - 7x + 13$ then, find P (3)
 b) Find P (x) - P (3) .
 c) Write P (x) - P (3) as the product of two first degree polynomials.
 d) What are the solutions of the equation $P(x) - P(3) = 0$?
122. Scores awarded to 9 students for one subjects are given below. Find the mean and median.
 15, 12, 25, 10, 3, 18, 17, 20, 6
123. Weights of students school cricket club are given below. Find the mean and median.
 35,39,32,36,40,30,34,37,38,33
124. Find mean and median of first 25 natural numbers.
125. Monthly earnings of 25 households are given below.
 a) What is the monthly earning of 13th family, if the families are arranged according to the monthly incomes?
 b) What is the median?
- | | | | | | |
|--------------------|------|------|------|------|------|
| Monthly earning | 4000 | 5000 | 6000 | 7000 | 8000 |
| Number of families | 3 | 7 | 8 | 6 | 1 |
126. The following table shows that classification of workers in a factory according to their daily wages
- | | | | | | |
|-------------|-----|-----|-----|-----|-----|
| daily wages | 400 | 500 | 600 | 700 | 800 |
| Number | 2 | 4 | 5 | 7 | 3 |
- a) Howmany workers are there?
 b) Workers are arranged according to their wages, What is the wage of 11th worker?
 c) What is the median wage?

127. Consider an arithmetic sequence whose 6th term is 40 and 9th term is 58

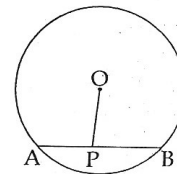
- Find the common difference and first term
- Find the sum of first 'n' terms of the sequence
- Find the sum of first 25th term.

128. a) What is the algebra of sum of terms of the arithmetic sequence 15,33,51

- Prove that the sum of any number of terms of the arithmetic sequence 15, 33, 51, ... starting from the first, added to 1 gives a perfect square.

129. In the figure 'O' is the centre of circle and radius 6cm.

If PA=4cm, PB=5cm. Find the length of OP



130. There are 30 scouts and 20 guides in a school. In another school there are 20 scouts and 15 guides. From each school, one student among them is to be selected for participation in a seminar

- What is the total number of possible selections ?
- What is the probability of both being Scouts?
- What is the probability of both being Guides ?
- What is the probability of one Scout and one Guide ?

131. A box contain 6 red balls and 5 white balls. Another box contains 8 red and 4 white balls. One ball is drawn each box without looking .

- What is the number of possible pairs ?
- What is the probability of both balls are red?
- What is the probability of both balls are white?
- What is the probability of atleast one is red?

132. Algebraic form of sum of an arithmetic sequence is n^2+8n . Sum of first some terms is 240.

- Form a second degree using the given data.
- How much terms should be added to get the sum 240?

133. While writing the equation to construct a rectangle of specified perimeter and area, perimeter was wrongly written as 46 instead of 64. One side of the rectangle was then computed as 20 metres.

- What is the length of the other side?
- What is the area of the rectangle?
- Find the sides of the rectangle in the original problem.

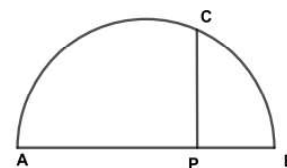
134. Wants to construct a rectangular play ground with perimeter 28m. The distance between the opposite corners should be 10m.

- What is the sum of two sides of the rectangle?
- If the length is x, then what is its breadth?
- Find the length and breadth.

135. AB is the diameter of the semicircle. PQ is perpendicular to AB.

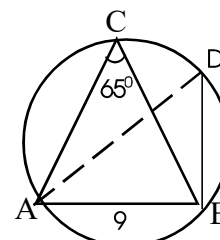
Length of AP is 10cm more than the length of PB.

- If PB=x then, find AP.
- If PQ=12cm then, find the diameter of the semicircle.

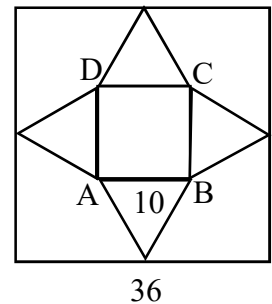
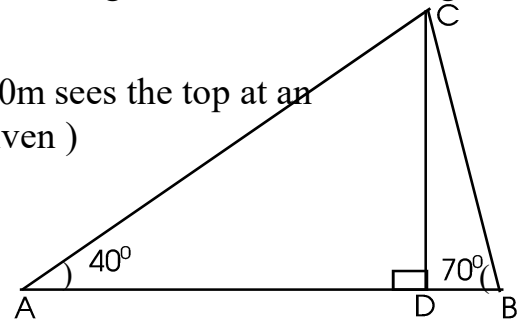


136. In $\triangle ABC$, AB=9cm and AD is a diameter of the circle.

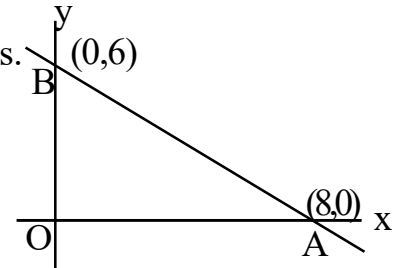
- What is the measure of $\angle ADB$?
 - What is the circum diameter of the triangle ABC?
- [$\sin 65=0.90$, $\cos 65=0.42$, $\tan 65=2.14$]



137. A boy standing on the bank of a river sees the top of a tree on the other bank at an angle of elevation 54° . Stepping 20 metres back, he sees it at an angle of elevation 27° . Find the height of the tree.
($\sin 27 = 0.45$, $\cos 27 = 0.89$, $\tan 27 = 0.51$, $\sin 54 = 0.80$, $\cos 54 = 0.59$, $\tan 54 = 1.38$)
138. A man stands some distance away from the foot of a tower sees the top at an angle of 40° . After walking 10m towards the tower, he sees the top at an angle of 70° . Find the height of the tower?
($\tan 40 = 0.8$, $\tan 80 = 2.8$)
139. Two men standing either sides of a tree at a distance 20m sees the top at an angles of elevations 40° and 70° . (a rough figure is given)
(a) Find the measure of $\angle ACB$.
(b) What is the height of the tree?
(c) What is the distance from A and B to D?
($\sin 40 = 0.64$, $\cos 40 = 0.80$, $\tan 40 = 0.84$)
140. The figure of a square sheet of paper is shown below, Length of one side of the paper sheet is 36 cm and $AB = 10$ cm. The shaded portion is cut out and folded into a square pyramid.
(a) What is the length of the base edge of the pyramid ?
(b) What is the slant height of the pyramid ?
(c) Find the lateral surface area of the pyramid.
141. The length of base edge of a square pyramid is 12cm and slant height is 10cm.
a) What is the height of the pyramid?
b) Calculate the volume of the pyramid?
142. All the edges of a square pyramid are equal to 12cm.
a) What is the lateral surface area?
b) What is total surface area?
143. Ratio of radii of two sphere is 1:2
a) What is the ratio of their volumes?
b) What is the ratio of their total surface areas?
144. The coordinates of the end points of diameter of a circle are (3,4) and (-3, -4).
a) Write the coordinates of the centre of the circle?
b) What is the radius of the circle?
c) Write equation of the circle.
145. The chords AB and CD of a circle intersect inside a point M. If $MA = 6$ cm, $MB = 8$ cm and $CD = 16$ cm, Find MC and MD.
146. Equation of a circle is $x^2 + y^2 = 25$
a) What is the radius of the circle?
b) Write the equation of the circle whose centre is at the origin and radius is 3.
147. a) What is the slope of the line passing through the points (5,0) and (3,2)? Write the equation of the line?
b) The x coordinate of a point on the line $x - y = 5$ is 5. What is the y coordinate of that point?
c) Write the coordinates of the point of intersection of the lines $x + y = 5$ and $x - y = 5$.
148. In triangle ABC, $AB = 5$ cm, $\angle A = 65^\circ$, $\angle B = 55^\circ$. Draw the triangle ABC and draw the incircle. Measure the radius of the incircle.
149. A circle is drawn with (5,3) as centre. (5,6) is a point on the circle.
a) What is the radius of the circle?
b) Write the equation of the circle.
c) What is the distance from the centre of the circle to the axis?
d) What is the length of the tangents from the origin to the circle?



150. A circle of radius 4 is drawn with origin centre.
- Write the coordinates of a point on this circle.
 - Does the coordinates of any point on this circle is (3,0)? Why?
 - Write the coordinates of a point inside and outside of this circle.
151. A line is drawn by joining the points A(1,2) and B(5,10)
- What is the slope of AB?
 - What is the equation of the line AB?
 - Write the equation a line passing through the origin and slope -2.
152. Write the coordinates of the point which divides the line joining points A(2,5) and B(7,10) in the ratio 3;2
153. In the figure, O is the origin and A(8,0), B(0,6) are two points.
- Write the coordinates of centre of the circle with AB as diameter.
 - Write the equation of the circle.
 - If one end of the diameter of this circle is the origin, write the coordinates of the other end of this diameter.
154. a) What is radius of the largest sphere that can be carved from a cube of edge 12cm
- Find the surface area and volume of the sphere.
155. (5,5) is a point on a circle with centre (1,2)
- Find the radius of the circle
 - Find the equation of the circle.
 - Find the radius and centre of the circle $(x-2)^2+(y-3)^2=81$
156. The table shows the details daily wages of workers in a factory



Daily Wages	Number of Workers
100-300	5
300-500	7
500-700	8
700-900	10
900-1100	13
1100-1300	7
1300-1500	3
Total	53

- Workers are lined up according to their wages, which persons wage is assumed as median?
- What is the wage of 21st person?
- Find the median of the wages.