Topic : Locus and Construction

Q.1) N is a point on the diameter PQ of a circle with center O. RS is a chord perpendicular to PQ.
If PN = 4cm and QN=16cm; find the length of NO and RS.

Q.2) AB is a chord of a circle with center O. The tangent at B meets AO produced at P. If $\angle BAP = 25^0$, calculate $\angle BAP$.

Q.3) PQ and PR are tangents to a circle with center O at Q &R. If $\angle QPR = 60^0$, find

    a. $\angle PQO, \angle QOR, and \angle OQR$

    b. $\angle QSR,$ where S is any point on the circle.

Q.4) Draw a triangle having BC = 6cm, $\angle B = 60^0 and \angle A = 45^0$. Construct a point P in this triangle such that P is equidistant from the sides of the triangle. Name the point P. With P as center draw a circle, which will cut off 2cm chords from each side of the triangle.

Q.5) Draw the incircle and circumcircle of the triangle ABC with AB = 5cm, BC = 7cm and $\angle ABC = 45°$.

Q.6) Draw a circle with radius 3 cm. Take a point P at a distance 5 cm from the centre of the circle drawn. Draw the tangents from P to the circle.

Q.7) Draw a triangle ABC, having BC=6cm, CA=5cm, and $\angle C = 75^0$. Find a point P within the triangle equidistant from the sides AB and AC, and at a distance of 3cm from BC.

Q.8) Draw a circle with radius 3 cm. Take a point P at a distance 5 cm from the centre of the circle drawn. Draw the tangents from P to the circle.

Q.9) Draw a regular hexagon of measure 4 cm. Hence draw incircle of the hexagon.

Q.10) Draw a regular hexagon of measure 6 cm. Hence draw the circumcircle of the same.

𝕿𝖔𝖕𝖎𝖈 : 𝕽𝖊𝖋𝖑𝖊𝖈𝖙𝖎𝖔𝖓 𝖆𝖓𝖉 𝕾𝖞𝖒𝖒𝖊𝖙𝖗𝖞

Q.1) The point P (a, b) is reflected in *x*-axis to obtain a point Q (0, 5). Find a and b.

Q.2) A point is P (a, b) is reflected in the x-axis to $P'(2,-3)$. Write down the values of 'a' and 'b'. P'' is the image of P when reflected in the y-axis. Write down the co-ordinate of P''. Find the co-ordinate of P''', when P is reflected in the line x = 4.

Q.3) A (4, 6), B (0, 8) and C (0. −10) are the vertices of a triangle in coordinate plane.
   a. Write down the coordinates of A_1, the reflection of A in the x-axis,
      The coordinats of A_2 the reflection of A in the origin.
   b. Write down the coordinates of B_1 the image of B by reflection in the y-axis.
   c. Name the two points which are invariant under reflection in the y-axis.
   d. Name the image of triangle ABC by reflection in the y-axis as triangle $A_3B_3C_3$.
      Name the figure AA_3CC_3.

Q.4) Plot the points A (-4,8) B (4,2) and C (-12, 2):
   a) Draw the line of symmetry of triangle ABC
   b) Mark the point D if the line in 'a' and the line BC are both lines of symmetry of the quadrilateral ABCD; write down the coordinate of point D.
   c) What kind of quadrilateral is figure ABCD?

Q.5) The point A (3, 4) is reflected to A' in the x-axis and O' is the image of O (the origin) when reflected in the line AA'. Using graph paper, write:

   i. The coordinates of A' and O'.
   ii. The length of the segment OO'.

Q.6). You may use graph paper for this question. The points B and C have the co-ordinates (3, 2) and (0, 3) respectively. Find:

   i) The image B' of B under reflection in x-axis.
   ii) The image C' of C under reflection in the line BB'.
   iii) Calculate the length of BB' using distance formula.
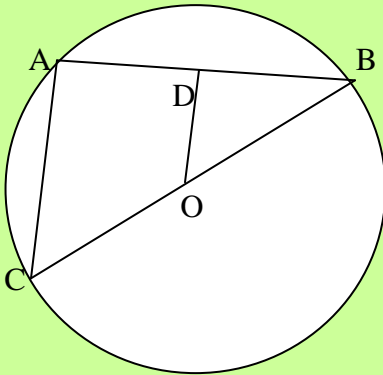
Topic : Circle

Q.1)   In a circle of radius 5 cm, AB and CD are two parallel chords of length 8 cm and 6cm respectively. Calculate the distance between the two, if they are on:
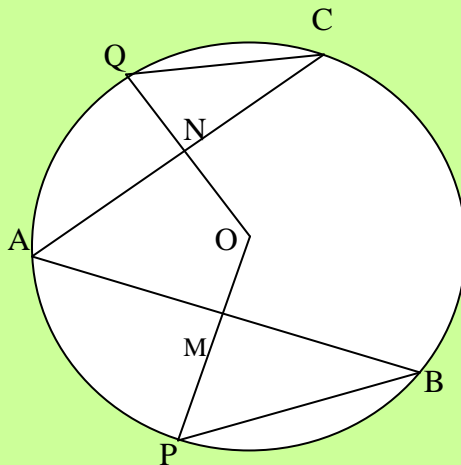
i) the same side of the centre,   ii) the opposite sides of the centre.

Q.2)

In this figure, OD is perpendicular to the chord AB of a circle whose centre is O. If BC is the diameter, show that, CA=2 OD.
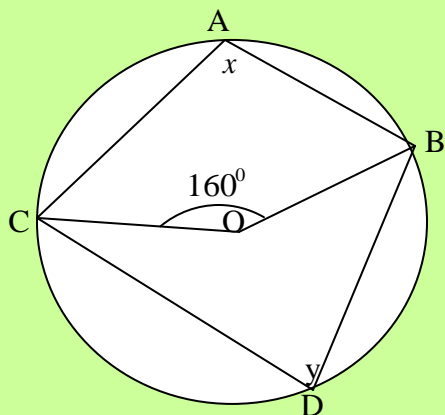
Q.3)

In this figure, O is the centre of the circle. If AB and AC are chords of the circle such that, AB=AC and OP$\perp$ AB, OQ$\perp$ AC, prove that, PB=QC.

Q.4)   ABC is an isosceles triangle inscribed in a circle. If AB=AC=$12\sqrt{5}$ cm and BC=24 cm, find the radius of the circle.

Q.5)

In the adjoining diagram, O is the centre of the circle and $\angle COB = 160^0$. Prove that, $3\angle y - 2\angle x = 140^0$

Q.6)
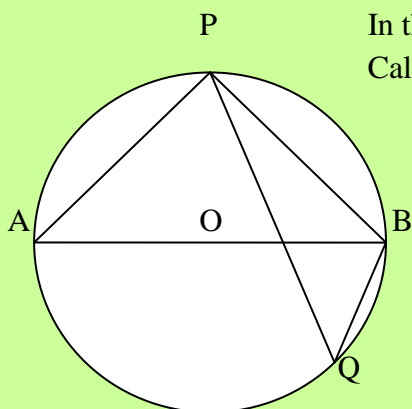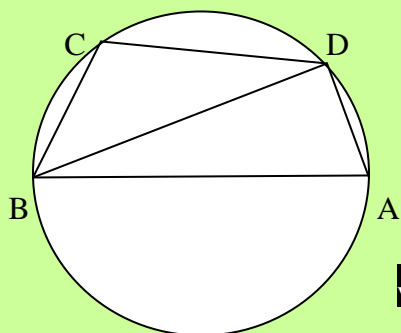
In this diagram, O is the centre of the circle and $\angle PBA = 45^0$. Calculate $\angle PQB$.

Q.7)
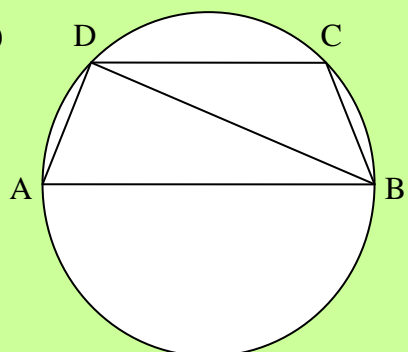
In this diagram, AB is the diameter of the circle and $\angle BCD = 120^0$. Find the value of : i) $\angle BAD$, ii) $\angle DBA$
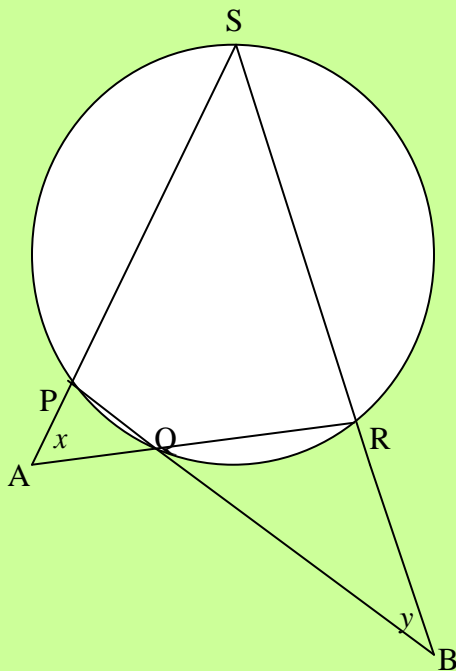
Q.8)

In this diagram, AB is the diameter. If $\angle BAD = 70^0$ and $\angle DBC = 30^0$, calculate $\angle ABD$ and $\angle BDC$.

Q.9)

In this diagram, $\angle BQR = 45^0$ and $x = 2y$.
Calculate the values of $x \, and \, y$.

Q.10) AB is a diameter of a circle with centre O. CD is a chord equal to the radius of the circle. AC and BD produced meet at P. Prove that, $\angle APB = 60^0$.

Q.11) ABCD is a cyclic quadrilateral. Prove that the quadrilateral formed by the angle bisectors of ABCD is also cyclic.
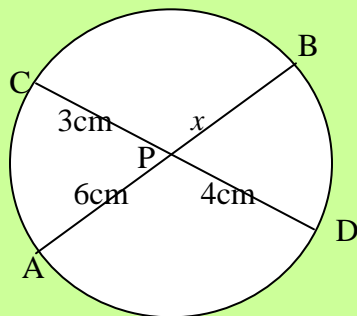
Q.12) AB is a diameter of a circle and AC is a chord of the same circle such that $\angle BAC = 30^0$. The tangent at C intersects AB produced at D. Prove that, BC=BD.
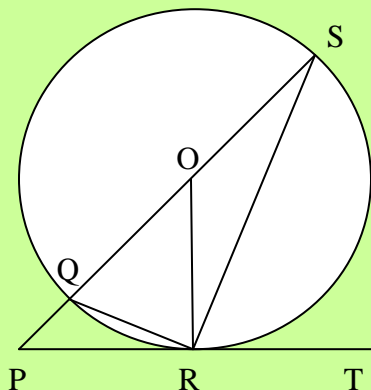
Q.13)
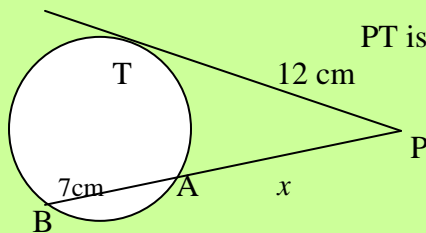
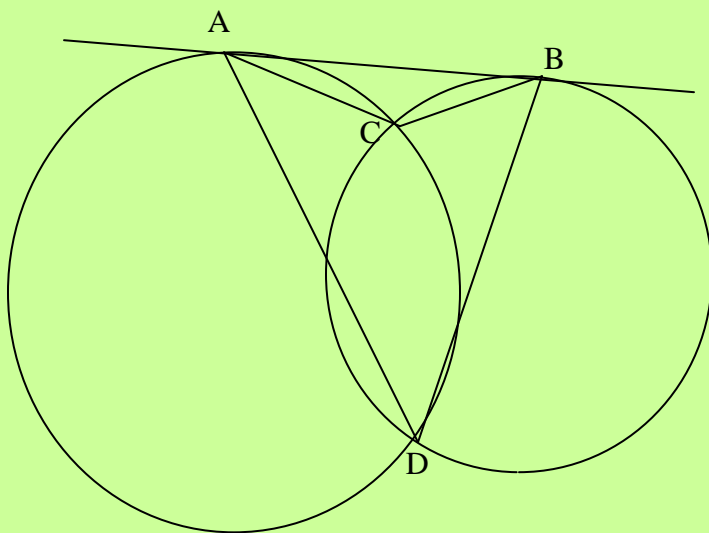PT is a tangent and PAB is a secant. Find the value of x.

12 cm

7cm

x

Q.14)

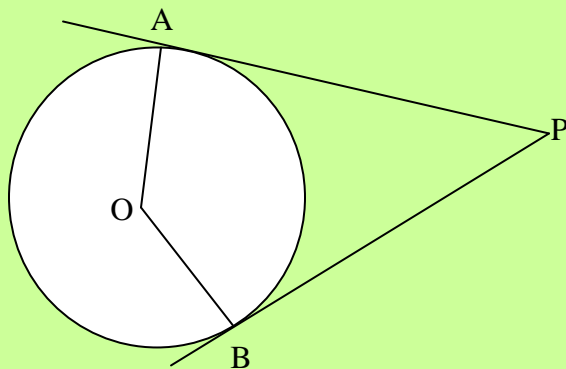Find the value of x.

3cm

x

6cm

4cm

Q.15)

In this figure, Pt touches the circle whose centre is O at R. Diameter SQ when produced meets PT at P. If $\angle SPR = x$ and $\angle QRP = y$, show that, $x + 2y = 90^0$.
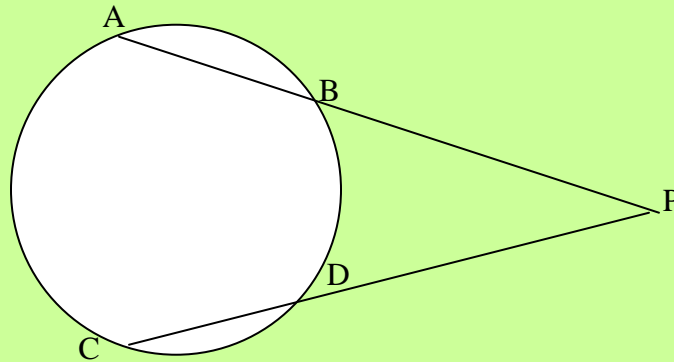
Q.16)

In the above diagram, AB is a common tangent to two circles intersecting at C and D. Write down the measurement of $\angle ACB + \angle ADB$. Justify your answer.
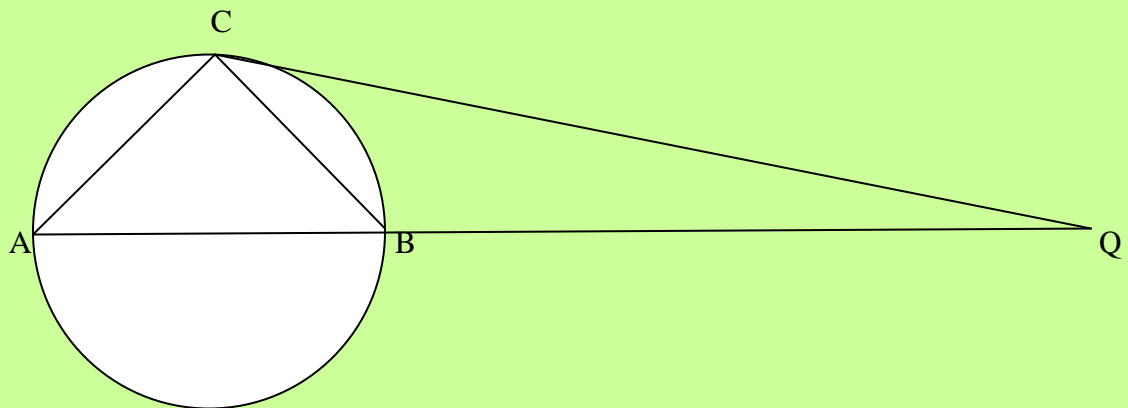
Q.17)

PA and PB are tangents to a circle with Centre O. Prove that $\angle APB \, and \, \angle AOB$ are supplementary.

Q.18)

Chords AB and CD when extended meet at P. Given, AB=4cm, BP=6cm, PD=5 cm. Calculate the length of CD.
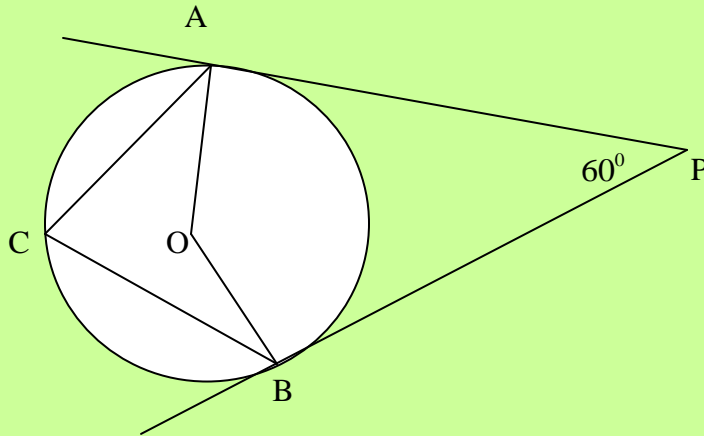
Q.19)

In this figure, AB is a diameter. The tangent at C meets AB produced at Q. If $\angle CAB = 34^0$, $find \angle CBA$ and $\angle CQA$.

Q.20)

A

60^0 P

C   O
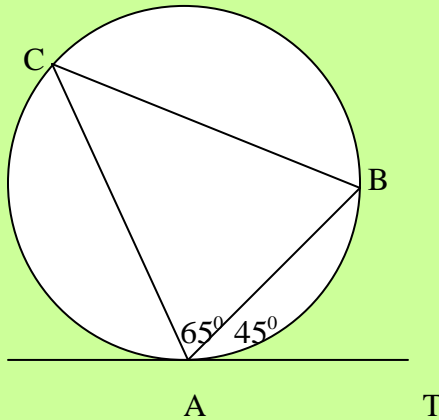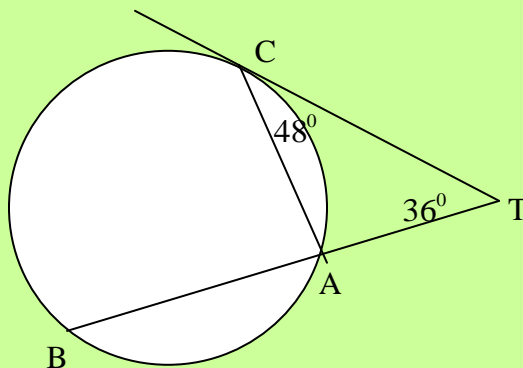
B

In the above diagram, AP and BP are tangents to the circle with centre O. Given $\angle APB = 60^0$, Calculate :   i) $\angle AOB$,   ii) $\angle OAB$, iii) $\angle ACB$.

Q.21)

In this diagram, AT is a tangent to th circle at A. If $\angle BAT = 45^0$ and $\angle BAC = 65^0$, find $\angle ABC$.

C

B

65^0 45^0

A   T

Q.22)

C

48^0

36^0 T

A
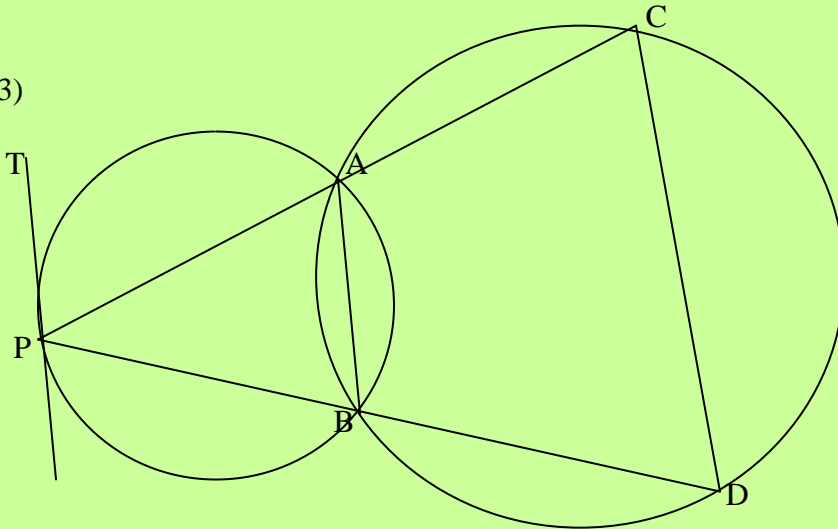
B

In this diagram, A, B and C are the three points on the circle. The tangent at C meets BA produced at T. If $\angle ATC = 36^0$ and $\angle ACT = 48^0$, calculate the angle subtended by AB at the centre.
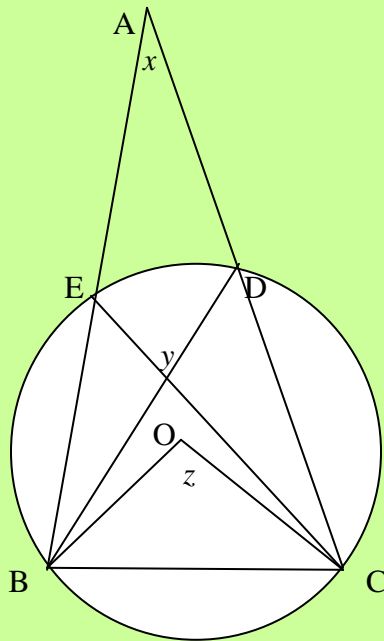
Q.23)

In the above diagram, two circles intersect at A, B. From a point P on one of these circles, two line
Line segments PAC and PBD are drawn. Prove that, CD is parallel to the tangent at P.

Q.24)

In this diagram, O is the centre of the circle.

Prove that, $x+y=z$.

Q.25) From a point outside the circle with centre O, tangents PA and PB are drawn. Prove that,
   i) $\angle AOP = \angle BOP$,   ii) OP is perpendicular to the chord AB.

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