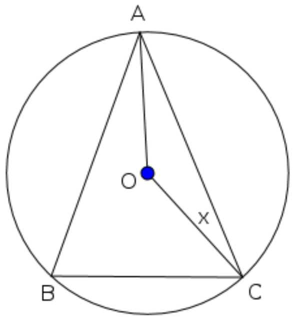
Chapter - 2:Vrithangal *Marks :(4)*

1) **Quest:**



A,B, C are points in the circle with centre O. If ∠OCA = x thenFind ∠OAC

Prove that ∠OCA + ∠ABC = 90° .

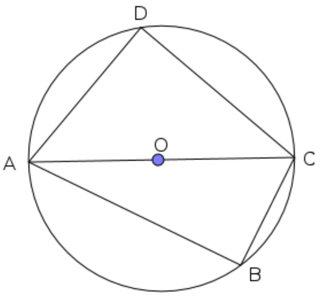
Hint: ∠OCA = x , ∠OAC = x - 1

∠AOC = 180 – 2x - 1

∠B = 90 – x - 1

∠OCA + ∠ABC = 90 – x + x = 90^0 - 1

2) In the circle with centre O , ∠ CAD= 40° then Find ∠B, and ∠ACD?



Hint:

∠B = ∠D= 90° - 1

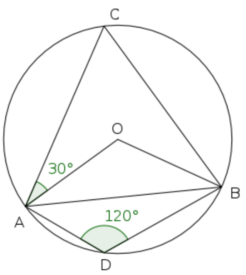
∠ACD = 50° - 1

3) In the figure O is the centre of the circle. And ∠ADB=120° ,∠OAC=30° , Then

Find ∠ACB

Find ∠OAB

Justify that ABC is an equilateral Triangle.



Hint:

∠C=180-120=60° - 1

∠AOB =120° ∠OAB =30° - 1

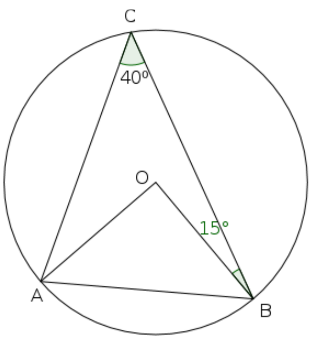
∠A=60° , ∠B =60° ABC is equilateral - 2

4) In the figure ∠C= 40°,∠OBC=15°

Find ∠AOB

Find ∠OAB

Find all angles of triangle ABC



Hint:

a) ∠AOB = 80^0 - 1

b) ∠OAB = $\dfrac{(180 - 80)}{2} = 50^0$ - 1

c) ∠B=65°, ∠A=75° - 2

5) Draw a rectangle of length 6cm and breadth 4cm

Construct a square having same area of the rectangle.

Hint:

For Drawing the rectangle - 1

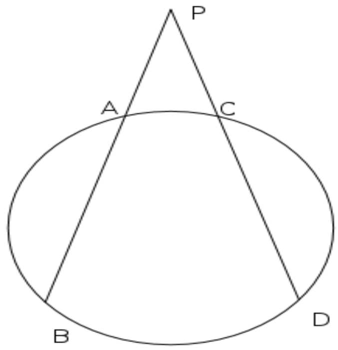
For extending length by adding the breadth with length - 1

For drawing the perpendicular bisector of this line - 1

Drawing the Square - 2

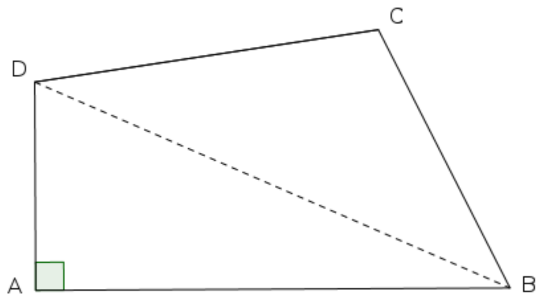
6) In the figure PA=PC, Which are the triangles formed when AC and BD are joined ?

Prove that ABDC is an isosceles trapezium?



Hint:
a) ΔPAC, ΔPBD - 1
b) PB = PD (PA = PC , PA x PB = PC x PD) - 1
AB = CD - 1
(AC and BD are parallel (∠PAC = ∠ PBD) - 1
ABDC is an isosceles trapezium - 1

7)



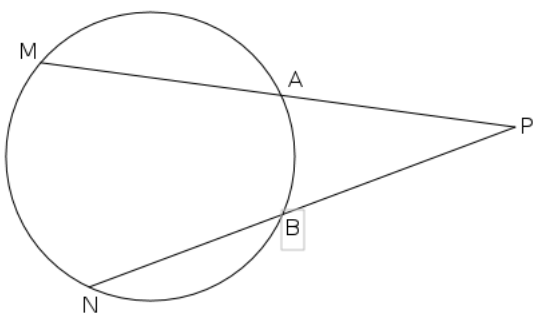
In the figure if we draw a circle with diagonal BD of the quadrilateral ABCD as diameter , where will be the positions of the vertices A and C (∠ C = 100^0)?

Hint:
A is on the circle and C is in the circle -- 2

8) Draw a circle with radius 3 cm .Construct a triangle with vertices on the circle and having angles 50° , 60° , 70°

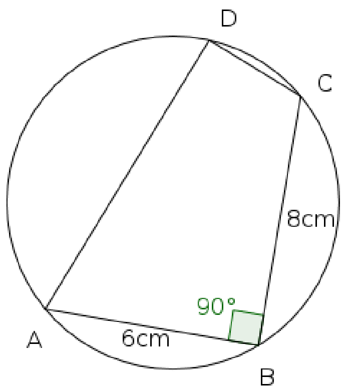
Hint:
For Drawing the circle - 1
For drawing angles 100° , 120° , 140°at the centre -2
For drawing the triangle - 1

9) In the figure the chords MA and NB extended and met at P. MA=5cm , PA=7cm and PB=6cm.Calculate the length of NB?



Hint:
MP=12 cm - 1
PA xPM= PB xPN - 1
PN=14cm - 1
NB=8 cm - 1

10) a) What is the measure of ∠ADC ?
b) Find the radius of the circle.



Hint:a) ∠ADC=90° - b) diameter = 10 cm - 1
radius = 5cm - 1

11) In the figure ΔABC is equilateral. BD=CD, AC=12cm and

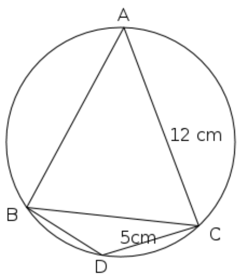
CD=5cm.Then

Find the measure of ∠ACB

Find the measure of ∠D

Find the measure of ∠BCD

Calculate the diameter of the circle



Hint:

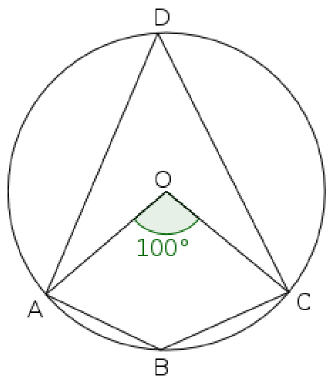
a) ∠ACB =60° - 1

b) ∠D =120° - 1

c) ∠BCD =30° - 1

d) ∠ACD=90 ° - 1 AD=13cm 1

12)



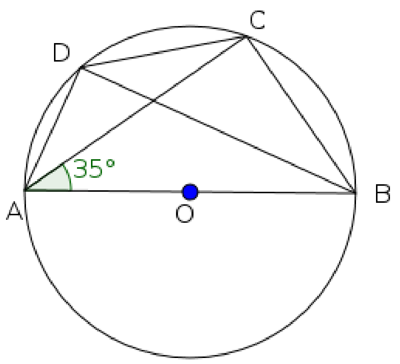
In the figure O is the centre of the circle. If ∠AOC=100°find ∠ABC ?

Hint:

∠ADC= $\frac{1}{2}$ x ∠AOC= $\frac{1}{2}$ x 100° = 50° 1

∠ABC =180° - 50° =130° 1

13)



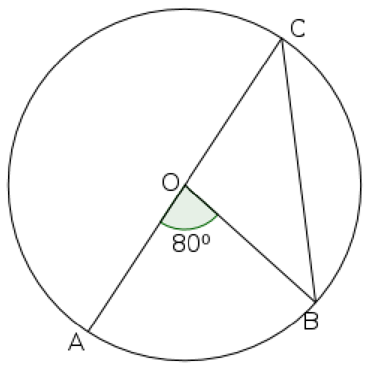
In the figure ∠BAC = 35° find the measures of ∠BDC and ∠ADC?

Hint:

∠BDC = 35° - 1

∠ADC = ∠ADB + ∠BDC = 90 + 35 = 125° - 1

14)the figure O is the centre of the circle. If ∠ AOB = 80° Find the measures of ∠ OCB and ∠ OBC



Hint:∠ OCB= $\frac{1}{2}$ X ∠ AOB = $\frac{1}{2}$ X 80° = 40 ° - 1

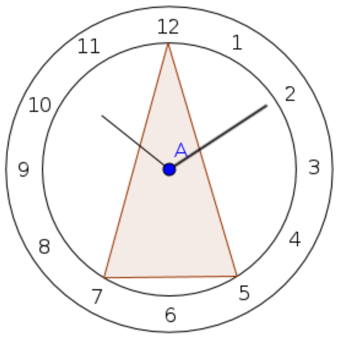
ΔOBC is isosceles, so ∠ OBC= 40° - 1

15)the figure of a clock , numbers 12 , 7 , and 5 are joined to form a triangle.

(a) What are the measure of the angles of this triangle ?

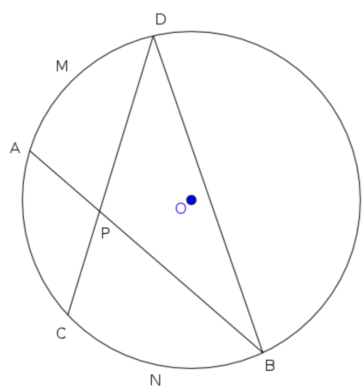
(b) Give a suitable name for this triangle.

(c) Howmany such triangles can be drawn in this clock ?



Hint:

- Angles are 75° , 75° , 30° -- 2
- Isosceles triangle -- 1
- 12 -- 2



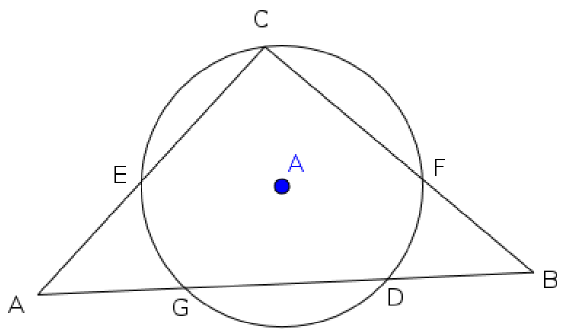
I6)he figure the length of the arc CNB is $\frac{1}{5}$ of the perimetre of the circle and the length of the arc AMD is $\frac{1}{6}$ of the perimetre of the circle.

(a) What is the measure of centre angle of the arc CNB ?
(b) Find the measure of ∠ CDB ?
(c) Find the measurement of ∠ ABD.
(d) Write the measurement of ∠ APD.**Hint:**

- Centre angle of arc CNB = 72° -- 1
- ∠ CDB = 36° -- 1
- ∠ ABD = 30° -- 1
- ∠ APD = 66° - 2

17)the figure chords CE , GD , CF are extended to meet outside the circle at A and B. The lengths AG and BD are equal.

If AE x AC = AG x AD
(a) Write the product equal to BF x BC?
(b) Prove that AE x AC = BF x BC



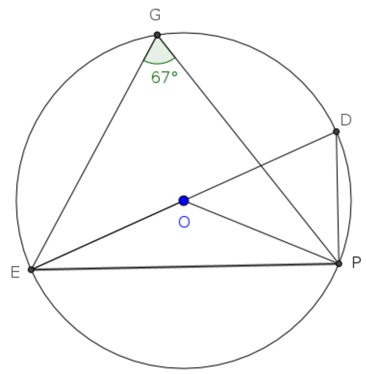
Hint:

- BD x BG -- 1
- AG x AD = BD x BG -- 1
- BF x BC = AG x AD -- 1

BF x BC = AE x AC -- 1

18) In the figure O is the centre of the circle and ED is its diametre. If ∠EGP = 67°

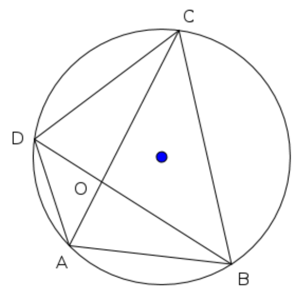
(a) What is the measure of ∠ EDP.
(b) Find other two angles of Δ ODP ?



Hint:

- a) ∠ EDP= 67° -- 1
- b) ∠ DOP = 46° , ∠ OPD = 67° -- 2

19)



Based on the figure find the angles from Part 2 which is equal to the angles in Part 1

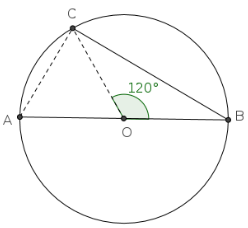
Part 1	Part 2
∠ACB	∠BDC
∠ABD	∠AOD

$\angle BAC$ $\angle ADB$

$\angle ACD$

Hint:
$\angle ACB = \angle ADB$ - 1
$\angle ABD = \angle ACD$ - 1
$\angle BAC = \angle BDC$ - 1

20)

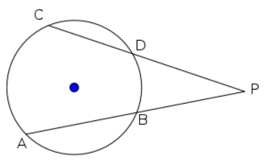


In the figure O is the centre of the circle and AB is the diametre. If $\angle BOC = 120°$, Find $\angle$ OCA and $\angle$ OAC ?

$\angle OCA = \angle OAC = 60°$ - 2

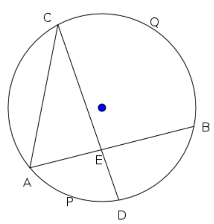
21) In the figure O is the centre of the circle. ΔABC is equilateral .Find the measures of
a) $\angle A$ b) $\angle BOC$ **Hint:** a) $\angle A = 60°$ -1 , b) $\angle BOC = 120°$ -1

22) In the figure PC=10 cm,CD=4cm, and PB:PA=2:3. Then



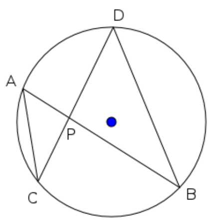
a) Find the length of PD
b) Find the length of AB
Hint: a) PD = 6cm 1b) PA x PB = PC x PD,
PB : PA= 2 : 3, PB = 2x, PA = 3x 1
$3x \times 2x = 10 \times 6$, $x^2 = \frac{60}{6} = 10$, $x = \sqrt{10}$
AB = PA- PB = 3x – 2x = x = $\sqrt{10}$ 1

23) In the circle the chords AB and CD intersect at E. The central angle of arc BQC is 130°. The central angle of arc APD is 40° . Find a) $\angle ACE$ b) $\angle CAE$ c) $\angle BEC$



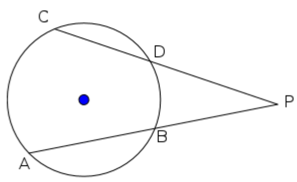
a) $\angle ACE = 20°$ -1
b) $\angle CAE = 65°$ - 1
c) $\angle BEC = 85°$ - 1

24) Based on the figure write the angles from Δ BPD equal to the following angles in Δ APC



a) $\angle ACP$ b) $\angle CAP$
Hint:
a) $\angle ACP = \angle PBD$ - 1
b) $\angle CAP = \angle PDB$ - 1

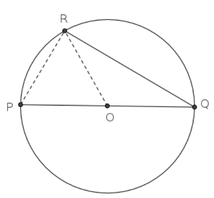
25) In the figure PA=9cm, PB=4cm, and PC is 9cm more than PD
(a) If PD = x find the length of PC ?



(b) Find the length of PD ?
Hint: (a) PD=x , PC= x+9 1
(b) PA x PB = PC x PD
9 x 4 = (x + 9)x 1
$x^2 + 9x = 36$, x= 3 1
PC = 12
PD =3 1

26)

- In the figure O is the centre of the circle and PQ is its diametre.



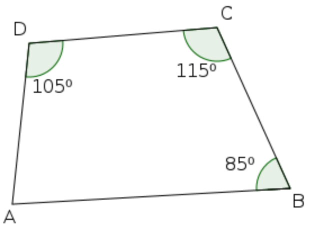
If PR = OR(a) Prove that Δ OPR is an equilateral triangle.

(b) Find all the angles of Δ OQR.

Hint: For finding the angles of ΔOPR are 60° -- 1

- For finding the angles of Δ OQR -- 2

27) In the figure ABCD is a quadrilateral .If a circle is drawn through A,B,and D state the position of the point C as Outside the circle,Inside the circle,or On the circle? Justify your answer.



Hint:

∠A=55° - 1

∠A + ∠C < 180 - 1

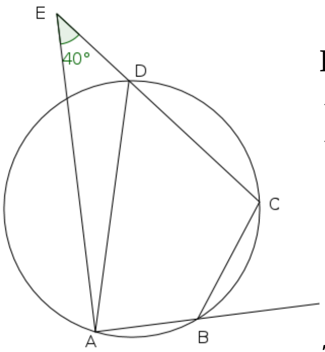
C is outside the circle - 1

28) In the figure ∠ AED=40° then

Which of the following can be the measure of ∠ABC?

(140°, 130° , 150°, 180°)

Using the above measure of ∠ABC , find the measures of angels of ΔEAD



Hint:

∠ ABC=130° (∠ABC + ∠E < 180) - 1

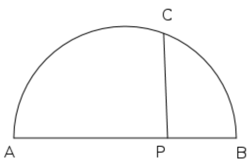
∠ EDA=130° ,<EAD =10° - 2

29) In the figure AB is the diameter of the semicircle. IF AB = 9 cm, PB = 3 cm then

a) find PA ?

b) find PC^2 ?

c) Draw a square of area $18cm^2$?



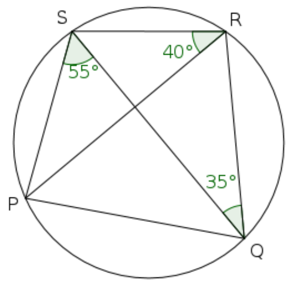
Hint:

a) PA = 6 cm - 1

b) $PC^2 = PA \times PB = 6 \times 3 = 18$ - 1

c) For Drawing the square by copying the figure - 3

30) In the figure P,Q,R,S are points on a circle. Find all angles of quadrilateral PQRS?



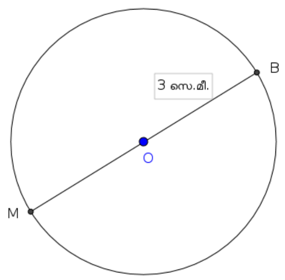
Hint:

∠PSR = 105° 1

∠ SPQ =85° - 1

∠PQR=75° - 1

∠QRS=95° - 1



31) Draw the figure in your paper.

(a) Mark a point C on the circle with ∠ MBC = 30°

(b) Join M , B , C to get a triangle .

(c) Find other two angles of the triangle MBC

(d) Write the ratio of the smallest side to the radius of this triangle.

Hint: (a) For Drawing $\angle$ MBC = 30° -- 1

- (b) Joining the points M , B , C and making triangle -- 1
- (c) For finding other angles of Δ MBC -- 2
- (d) For finding the ratio as 1 : 1 -- 1

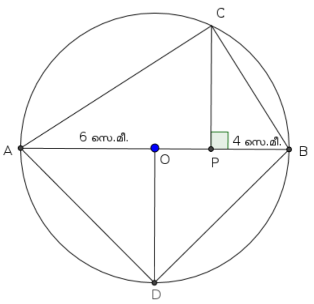
32) In the figure O is the centre and AB is the diametre of the circle. PC is perpendicular to AB. If $PA \times PB = PC^2$

(a) What is the length of OP ?

(b) Find the length of PC .

(c) Write the ratio of the areas of Δ PBC and Δ APC ?

(d) Find the area of quadrilateral ACBD.



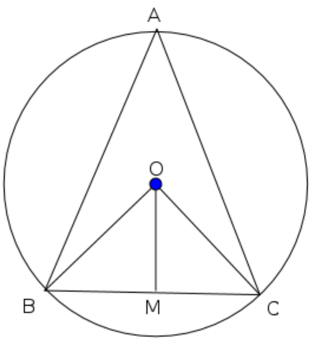
Hint:

- (a) OP = 2cm. . -- 1
- (b) PC = √32 -- 1
- (c) For finding the ratio as 1 : 2 -- 1
- (d) 36 + 6 √32 -- 2

33) A, B, and C are points on the circle with centre O . If $\angle$A = 60° , BC = 4cm then Find $\angle$BOC

(1) Find the circumradius

(2) When $\angle$A = 30°, Prove that BC is equal to circumradius.



Hint:

(a) $\angle$BOC = 120° - 1

(b) $\angle$CBO = 30° (30, 60, 90) (1: $\sqrt{3}$: 2) - 1

OB = $2\times\frac{2}{\sqrt{3}} = \frac{4}{\sqrt{3}}$ - 1

(c) When $\angle$A= 30° Triangle OBC becomes equilateral - 1

OB=BC - 1

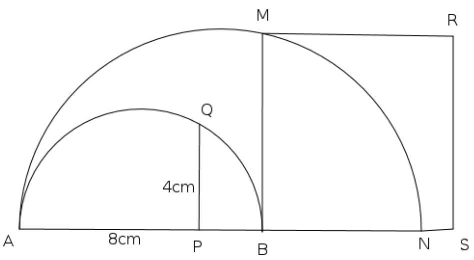
34) In the figure the diameter of the larger semi circle is 13 cm AP=8cm, PQ = 4 cm.

(a) Then PA x PB =.............

(b) PB = ...

(c) Find the radius of the smaller semicircle?

(d) What is the area of the square BMRS?



Hint:

(a0 PA xPB=PQ² = 16 - 1

(b) PB=2 - 1

(c) Radius of the small semicircle =5 cm - 1

BM²=10 x3 - 1

(d) Area of the square BMRS = 30 - 1