(10th) CIRCLES. (TERM-2)

Important Questions

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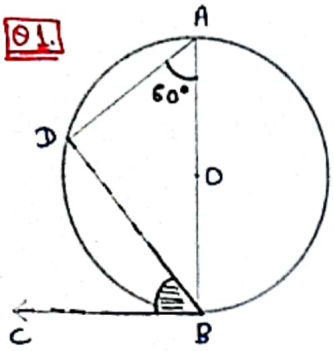
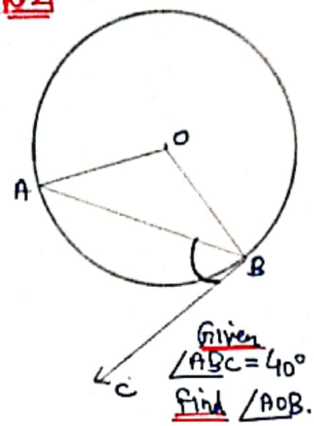
Q1.



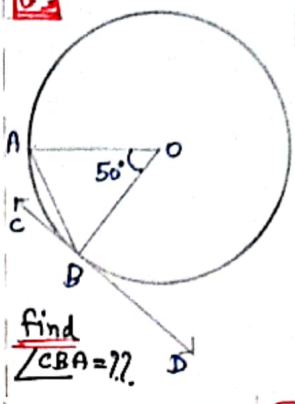
Find $\angle DBC = ??$

Q2



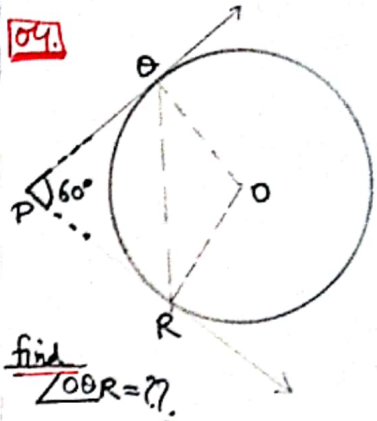
Given $\angle ABC = 40°$
Find $\angle AOB$.

Q3



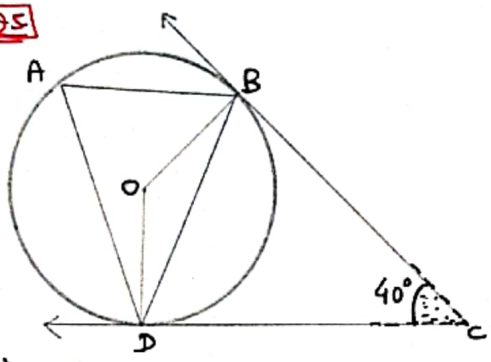
Find $\angle CBA = ??$

Q4.



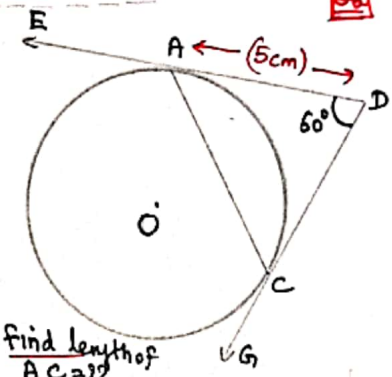
Find $\angle QOR = ??$

Q5



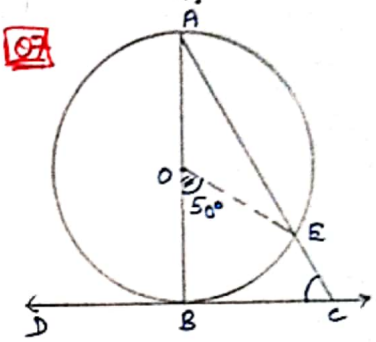
Find $\angle BDC$, $\angle DOB$, $\angle DAB$, $\angle OBC$

Q6



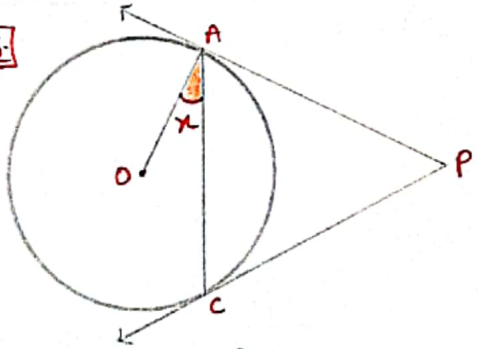
Find length of AC = ??

Q7



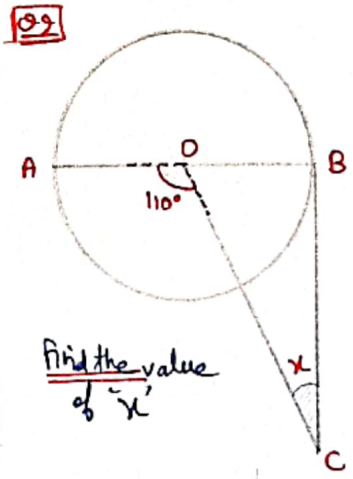
Find $\angle ECB = ??$

Q8.



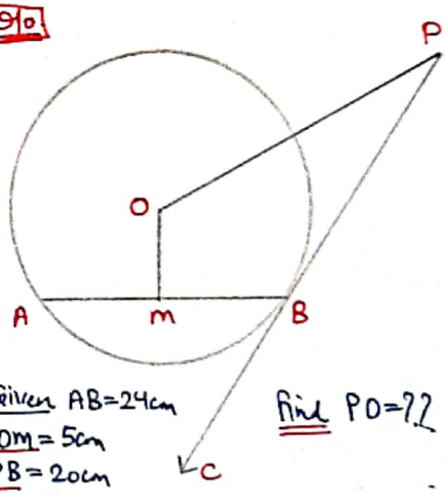
Given $\angle OAC = x°$ Find $\angle APC = ??$

Q9



Find the value of 'x'

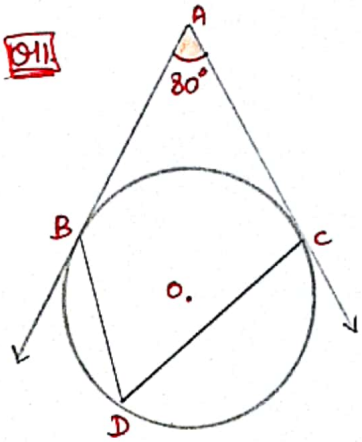
Q10



Given AB = 24cm
OM = 5cm
PB = 20cm

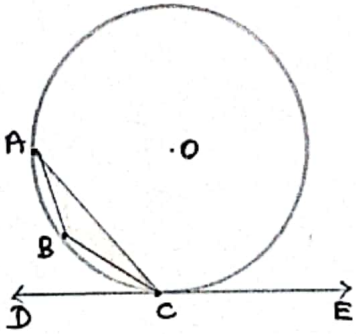
Find PO = ??

Q11



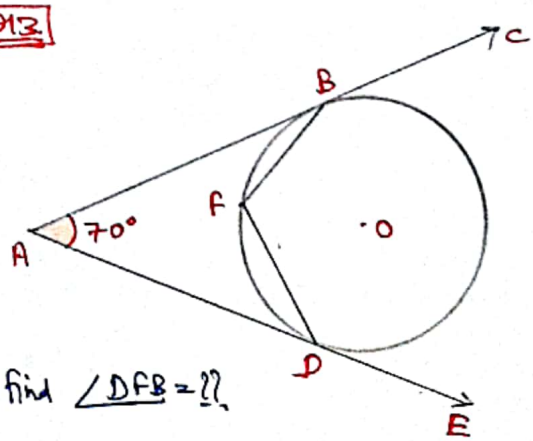
Find $\angle BDC = ??$

Q12



Given $\angle ACD = 70°$,
Find $\angle ABC = ??$

Q13



Find $\angle DFB = ??$

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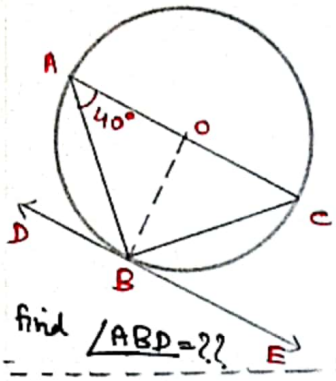
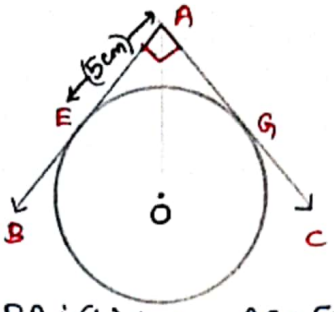
Q14.



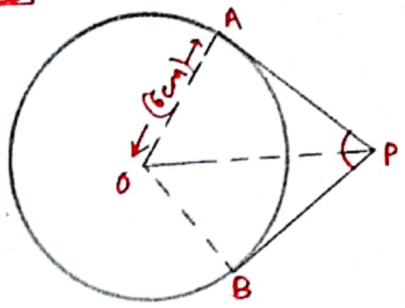
find $\angle ABD = ??$

Q15.



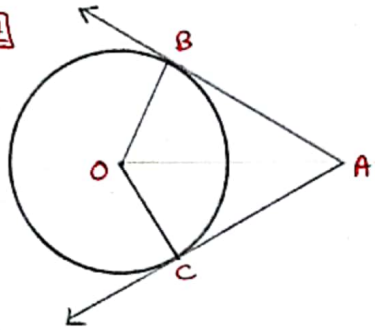
BA is (⊥) to AC, AE = 5cm
find radius of circle

Q16



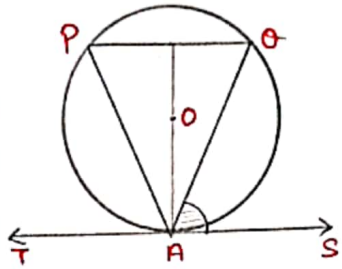
find PA, BP if $\angle APB = 120°$

Q17



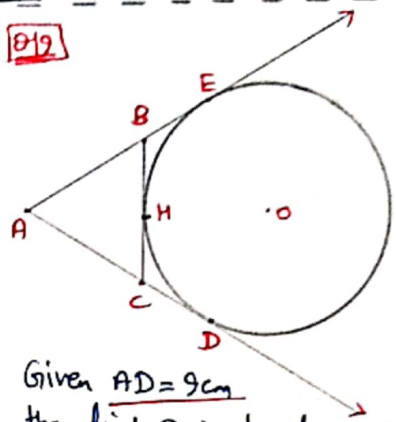
Given radius = 5cm
and OA = 13cm.
find area of Qud. OBAC.

Q18.



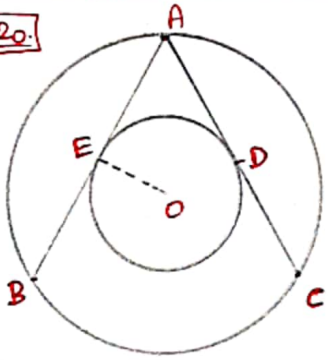
Given $\angle QAS = 75°$
PQ is parallel to TS.
find $\angle PAQ = ??$

Q19



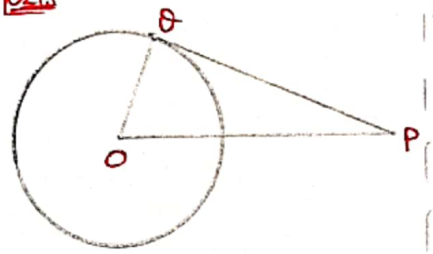
Given AD = 9cm
then find Perimeter of ΔABC

Q20.



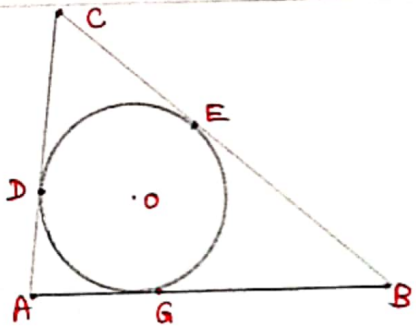
Given AD = 6cm
find length of AB, AC

Q21.



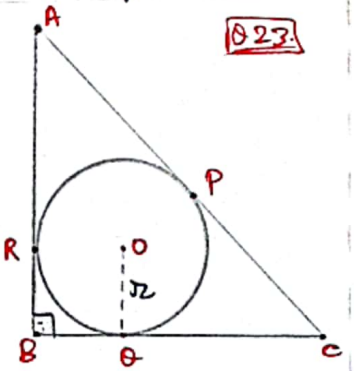
Find $\angle POQ + \angle OPQ = ??$

Q22



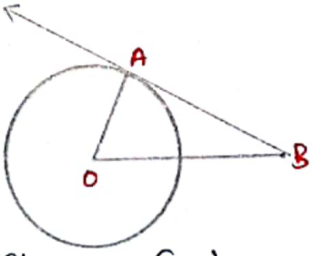
Find AG, BE and CD. if AB = 12cm, BC = 8cm, AC = 10cm.

Q23.



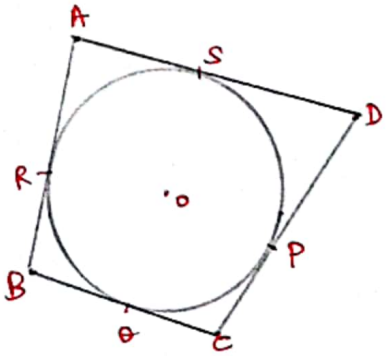
Given AB = 48cm, BC = 14cm
$\angle B = 90°$, find OQ = ??

Q24.



Given OB = (x+1) cm,
OA = (x−1) cm,
AB = (x−3) cm
find Radius, length of tangent. and distance of point B from the centre.

Q25.



Given
BC = 6cm, CD = 9cm, AD = 8cm
find the length of the tangent AB.

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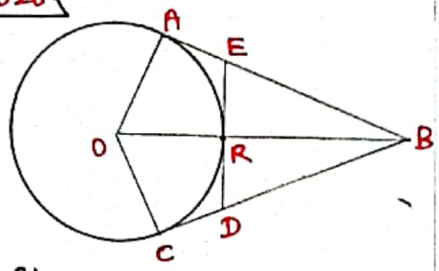
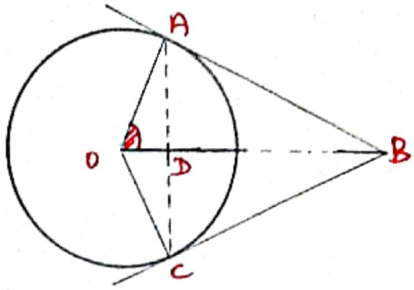
026



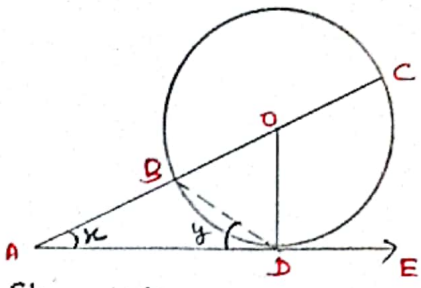
Given radius = 5cm,
OB = 13cm,
find Perimeter & Area of ΔBDE.

027



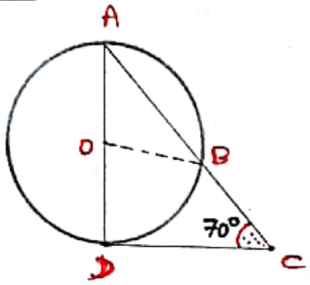
Given $\angle AOD = \alpha$
$OA = R$, $OB = 2R$
Find $\angle OCD = ??$

028.



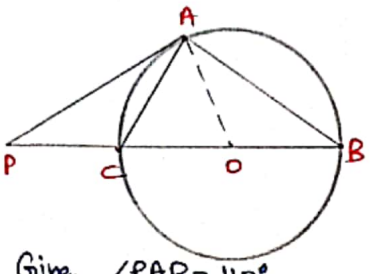
Given $\angle CAD = x$, $\angle BDA = y$
find $x + 2y = ??$

029



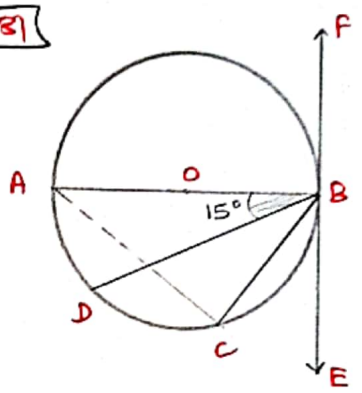
Find $\angle DAC = ??$

030



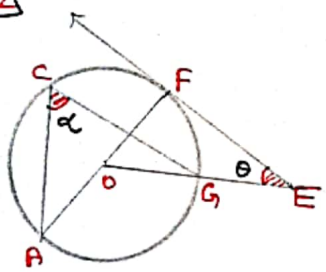
Given $\angle PAB = 110°$
Find $\angle OCA = ??$

031



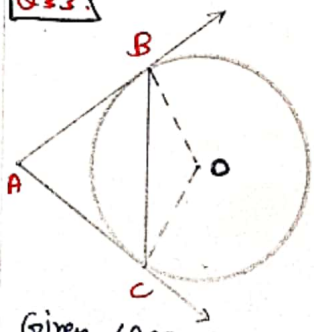
Given
$\angle ABD = 15°$
$AC = BC$,
Find $\angle DBC$
and
$\angle CBE = ??$

032



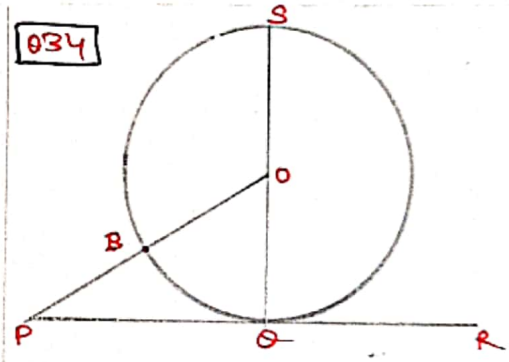
Given $\angle AOE = 130°$
find the value of $(\alpha + \theta) = ??$

033.



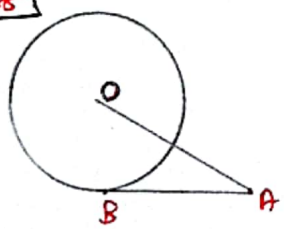
Given $\angle ACB = 60°$
Find $\angle OBC = ??$

034



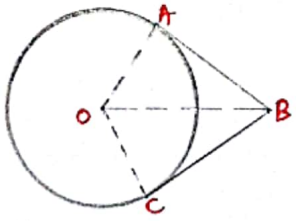
Given $OP = 10cm$, $\angle SOP = 120°$
find the diameter of circle.

035



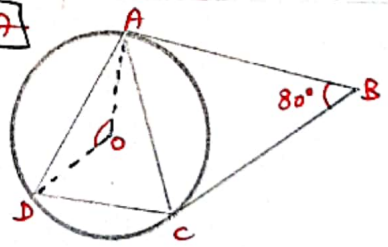
Given $\angle OAB = 45°$,
$BA = 6cm$, find $OA = ??$
also find Radius.

036



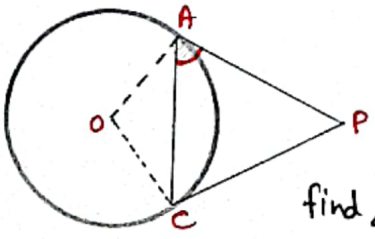
Given $\angle ABC = 80°$
find $\angle BOA = ??$

037



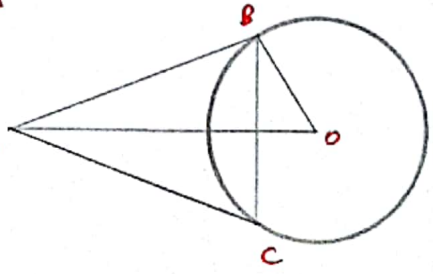
Given $\angle AOD = 140°$, $\angle ABC = 80°$,
find the $\angle CAD = ??$

038.



find $\angle AOC = ??$
If $\angle CAP = 50°$

039.



Given $OB = R$
and $OA = 2R$
then determine the type of triangle BAC

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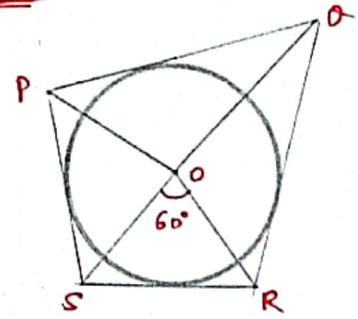
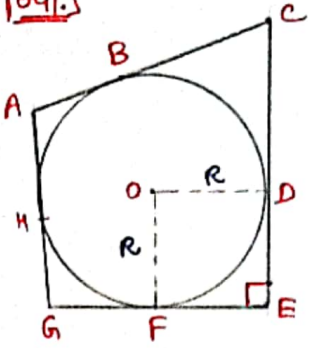
Q40.



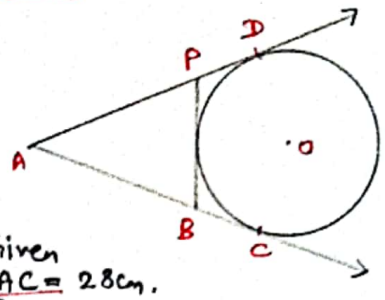
Find $\angle POQ = ??$

Q41.



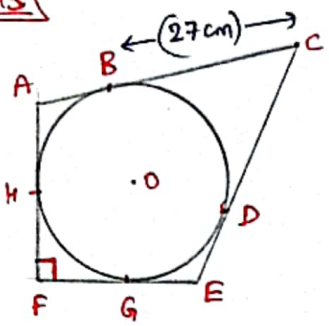
Given
$AC = 23cm$
$AH = 5cm$
$CE = 29cm$
Find the diameter of the circle

Q42.



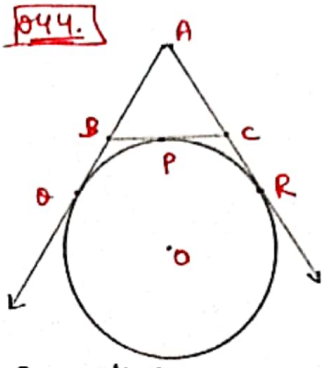
Given
$AC = 28cm$.
find Perimeter of ΔAPB.

Q43



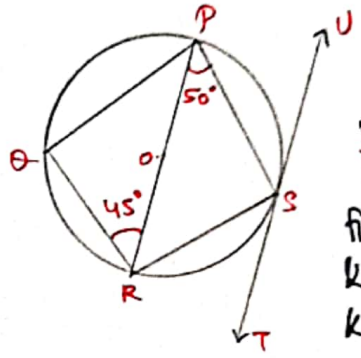
Given $BC = 27cm$, $EC = 38cm$
Radius $= 10cm$, find $FE = ??$

Q44.



Prove that $AQ = \frac{1}{2} \times$ (Perimeter of ΔABC)

Q45



Given
Diameter is parallel to TU,
find $\angle RQP$
& $\angle PSU$
& $\angle RST$

Q46 from a point 'A' which is at a distance of 10cm from the centre of circle 'O'. The pair of tangents AP & AQ are drawn. Then find the area of quadrilateral APOQ, Given that radius of a circle is 6cm., Also find the perimeter of APOQ.

Q47 Two tangents making an angle of 60° with each other are drawn to a circle of radius 6cm, then determine the length of each tangent.

Q48 From an external point P, 2 tangents PA & PB are drawn to a circle with centre 'O'. If $\angle PAB = 50°$, then find $\angle AOB = ??$

Q49 2 concentric circles of radii a & b. $(a > b)$. find the length of the chord of the larger circle which touches the smaller circle.

Q50. Given that a triangle OAB is an isosceles Δ & AB is a tangent to the circle with centre 'O'. Find the measure of $\angle ABO$.

Q51. 2 Concentric circles with centre 'O' are of radii 5cm & 3cm. From an external point P, 2 tangents PA & PB are drawn to these circles. If $PA = 12cm$, then find the length of $PB = ??$

Q52. 2 tangents OA & OB are drawn to a circle such that $\angle AOB = 120°$. Show that $OO = 2AO$.

Q54. AB is a diameter of a circle with centre 'O' & AC is a chord such that $\angle BAC = 30°$, The tangent at 'C' intersects extended AB at a point D. Prove that $BC = BD$.

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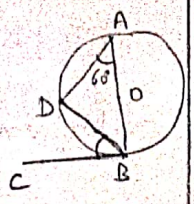
ANSWERS

Q1 Am



$\angle DBC = ??$

$\angle ADB = 90°$ (Reason....)

In $\triangle ABD$.

$60° + 90° + \angle ABD = 180°$ (Reason...)

$\angle ABD = 30°$

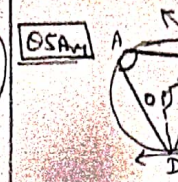
$\angle ABC = 90°$ (Reason...)

$\angle ABC = \angle ABD + \angle DBC$

$90° = 30° + \angle DBC$

$\therefore \boxed{\angle DBC = 60°}$

Q2 Am



$\boxed{\angle OBC = 90°}$ (Reason,...)

Let $\angle ODB = \angle OBD = x$ (Reason...)

In $\triangle OBD$

$\angle DOB = 180 - 2x$ —(1)

Also $\angle DOB + 40° = 180°$ (Reason...)

$\boxed{\angle DOB = 140°}$

$\therefore \angle OBD = 20° = \angle ODB$ (from (1))

Also $\angle ODC = \angle ODB + \angle BDC$

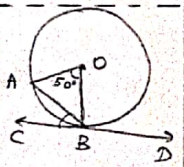
$90° = 20° + \angle BDC$

$\therefore \boxed{\angle BDC = 70°}$

If $\angle DOB = 140°$ then

$\boxed{\angle DAB = 70°}$ (Reason...)

Q3 Am



$\angle CBA = ??$

In $\triangle OAB$,

$\angle OAB + \angle OBA + 50° = 180°$

Here $\angle OAB = \angle OBA = x$ (Reason)

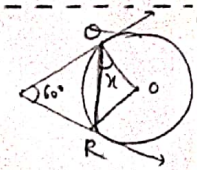
$2x + 50° = 180°$

$\boxed{x = 65°}$

Also $\angle OBC = 90°$ (Reason...)

$\therefore \angle OBA = 90° - 65° = \boxed{25°}$

Q4 Am



$\angle OQR = ?$

$\angle ORQ = x$ (Reason...)

In $\triangle OQR$, $\angle OQR = (180 - 2x)$ —(1)

Now $60° + \angle OQR = 180°$ (Reason....)

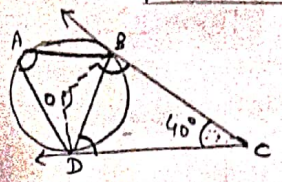
$\angle OQR = \angle ROQ = 120°$ (put in (1))

$120° = 180 - 2x$

$\Rightarrow 2x = 180 - 120 = 60°$

$\boxed{x = 30°}$

Q5 Am



$\boxed{\angle OBC = 90°}$ (Reason,...)

Let $\angle ODB = \angle OBD = x$ (Reason)

In $\triangle OBD$

$\angle DOB = 180 - 2x$ —(1)

Also $\angle DOB + 40° = 180°$ (Reason...)

$\boxed{\angle DOB = 140°}$

$\therefore \angle OBD = 20° = \angle ODB$ (from (1))

Also $\angle ODC = \angle ODB + \angle BDC$

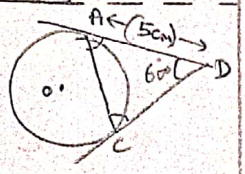
$90° = 20° + \angle BDC$

$\therefore \boxed{\angle BDC = 70°}$

If $\angle DOB = 140°$ then

$\boxed{\angle DAB = 70°}$ (Reason...)

Q6 Am



Here $\angle DAC = \angle DCA = x$ (Reason...)

In $\triangle DAC$, $x + x + 60° = 180°$

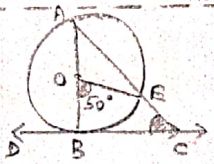
$\boxed{x = 60°}$

Hence $\triangle DAC$ is equilateral $\triangle$.

In which $AD = DC = CA = 5cm$.

$\therefore \boxed{\text{Chord } AC = 5cm}$

Q7 Am



$\angle ECB = ??$

$\Rightarrow \angle OBC = 90°$ (Reason)

$\angle EOA = 130°$ (Reason...)

$\angle OEA = \angle OAE = 25°$ (Reason...)

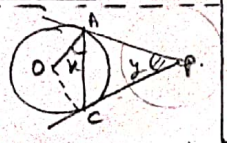
$\angle OEC = 180 - 25° = 155°$ (Reason...)

In Quadrilateral OECB.

$50° + 90° + 155° + \angle ECB = 360°$ (Reason)

$\boxed{\angle ECB = 65°}$

Q8.



Let $\angle APC = y$

$\angle OCA = x$ (Reason...)

$\angle AOC = 180 - 2x$ (Reason...)

$\angle AOC + \angle y = 180°$ (Reason...)

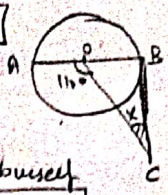
$\angle y = 180 - \angle AOC$

$\angle y = 180 - (180 - 2x)$

$\boxed{\angle y = 2x}$ (OR)

$\boxed{\angle APC = 2\angle OAC}$

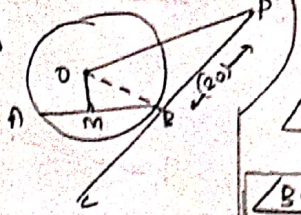
Q9 Am



Do it yourself

$\boxed{\angle OCB = 20°}$

Q10 Am



$AB = 24$

Then $AM = MB = 12$ (Reason....)

$OM = 5$, $PB = 20$

In $\triangle OMB$

$OB^2 = OM^2 + MB^2$

$OB^2 = 25 + 144$

$OB = 13$

Also $\angle OBP = 90°$ (Reason...)

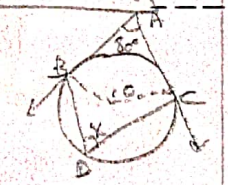
In $\triangle OBP$

$OP^2 = BP^2 + OB^2$

$OP^2 = 400 + 169 = 569$

$\boxed{OP = \sqrt{569}\ cm}$

Q11 Am



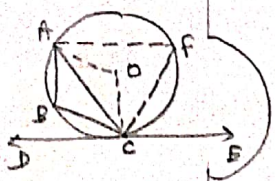
Join OB, OC

$\angle BOC + \angle BAC = 180°$ (Reason)

$\angle BOC = 100°$

$\therefore \angle BDC = x = 50°$ (Reason...)

Q12.



$\angle ACD = 70°$

Also $\angle OCD = 90°$ (Reason...)

$\angle OCD = \angle OCA + \angle ACD$

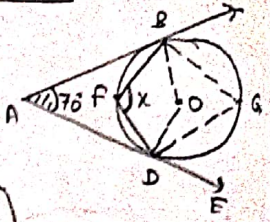
$\angle OCA = 20°$

Hence $\angle AOC = 140°$ (Reason)

Now $\angle AFC = 70°$ (Reason...)

$\boxed{\angle ABC = 110°}$ (Reason...)

Q13 Am



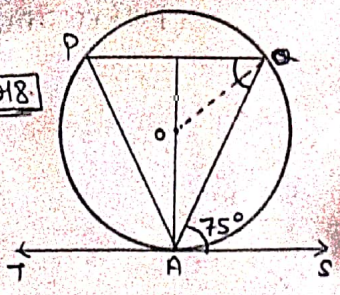
$\angle BOD = 110°$ (Reason...)

$\angle BGD = 55°$ (Reason...)

$\boxed{\angle BFD = x = 125°}$ (Reason...)

ANSWERS.

Q18.



$\angle PAO = ?$

$\angle PQA = 75°$ (alternate interior angles)

Join OQ Now $OQ = OA$ (Radii of same circle)

$\angle OQA = \angle OAQ$

$\angle OAS = 90°$ (Reason...)

$\angle OAQ = 15°$

$\therefore \angle OQA = 15°$.

So $\angle AOQ = 180 - (15+15)$

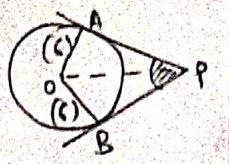
$\angle AOQ = 150°$.

$\therefore \angle APQ = 75°$ (Reason...)

In $\triangle PAQ$, $75° + 75° + (\angle PAQ) = 180°$ (Reason)

$\therefore \boxed{\angle PAQ = 30°}$

Q16.



$\angle APB = 120°$

$\angle APO = \angle BPO = 60°$ (Reason...)

$\angle OAP = 90°$ (Reason...)

$\angle AOP = 180° - (90+60°)$

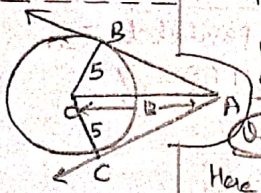
$\angle AOP = 30°$ (Reason...)

$\tan 60° = \frac{P}{B} = \frac{x}{6}$

$\frac{1}{\sqrt{3}} = \frac{x}{6}$ OR $\boxed{x = 2\sqrt{3}}$

$\therefore \boxed{PA = PB = 2\sqrt{3}\ cm}$

Q17.



$BA = 12\ cm$ (By Pythagoras)

$BA = AC = 12$ (Reason)

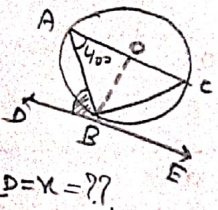
Area of Quad. $OBAC$ = Area of $\triangle OAB$ + Area of $\triangle OAC$

Area of $\triangle OAB = \frac{1}{2} \times 5 \times 12 = 30$

Similarly Area of $\triangle OAC = 30$

$\therefore \boxed{\text{Area of Quad.} = 60\ cm^2}$

Q14.



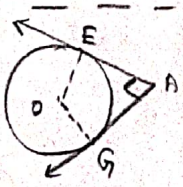
Let $\angle ABD = x = ??$

$\angle OBA = 40°$ (Reason...)

$\angle OBD = 90°$ (Reason)

$\therefore \boxed{\angle ABD = x = 50°}$

Q15.



Given $\angle EAG = 90°$

Also. $\angle OEA = \angle OGA = 90°$ (Reason.....)

Hence $\angle EOG = 90°$ (Reason.....)

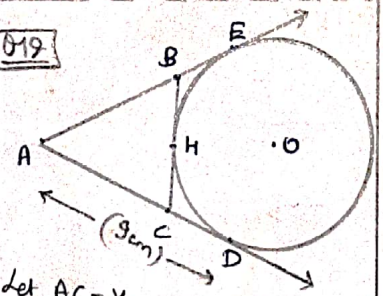
Also $EA = AG = 5cm$ (Reason)

$\therefore$ Quad. EAGO is a Square

Hence $EA = AG = GO = OE = 5cm$

$\therefore OE = OG =$ Radius $= \boxed{5cm}$

Q19



Let $AC = x$, $CD = (9-x)$

$CD = CH = (9-x)$ (Reason)

Similarly $AE = 9cm = AD$ (Reason)

$AB = y$, $BE = (9-y)$, $BH = (9-y)$

$BC = BH + HC = (9-x) + (9-y)$

$BC = 18 - (x+y)$

Now perimeter $\triangle ABC =$ $AB + BC + CA$

$y + (18 - x - y) + x = \boxed{18\ cm}$

Q20.

Given $AD = 6$,

then $DC = 6$ (Reason...)

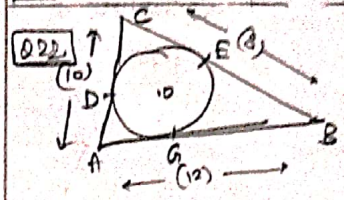
$AC = 12$

Also $AB = AC$ (Reason...)

$\therefore \boxed{AB = AC = 12}$

Q21. $\angle POQ + \angle QPO = 90°$

Q22.



Let $AG = x$

$GB = (12-x)$

$GB = EB = (12-x)$

Now $CE = 8 - (12-x)$

$CE = 8 - 12 + x$

$CE = x - 4$.

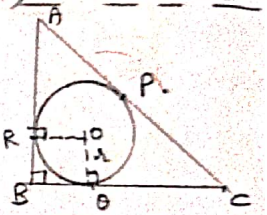
$\therefore CD = (x-4)$ — (1),

$AG = DA = x$, Now $CA = CD + DA$

$10 = (x-4) + x$ OR $14 = 2x$; $\boxed{x = 7}$

$\boxed{AG = 7}$ $\boxed{BE = 12 - 7 = 5}$ $\boxed{CD = x - 4 = 3cm}$

Q23.



Here OQBR is a square

(Reason.....)

$OQ = BQ = BR = RO = 12cm$

In $\triangle ABC$ $AC^2 = AB^2 + BC^2 \Rightarrow (AR+12)^2 + (14)^2 = 2500$

$\boxed{AC = 50cm}$, Now $BQ = x$, $BC = (14-x) = PC$.

Also $BR = 12$, $RA = (48-12) = AP$.

Now $AC = AP + PC$ $\Rightarrow 50 = 14 - x + 48 - x$

$50 = -2x + 62$ OR $2x = 62 - 50 = 12$

$\boxed{x = 6cm}$ $\therefore \boxed{OQ = 6cm}$

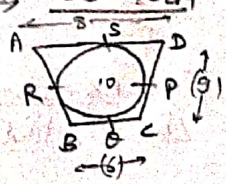
Q24. $\angle OAB = 90°$ (Reason....) Now using Pythagoras. when $OB^2 = OA^2 + AB^2 \Rightarrow (x+1)^2 = (x-7)^2 + (x-3)^2$

on solving we get $x = 1, 9$ ($x = 1$ is rejected)

Hence $\boxed{x = 9}$ is the answer.

Radius $= 8cm$, $AB = 6cm$, $OB = 10cm$

Q25. $AB = ?$



Let $RB = x = BQ$.

$QC = (6-x) = CP$.

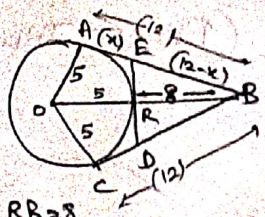
$PD = 9 - 6 + x = (3+x)$

$SD = (x+3)$, $AS = 8 - x - 3 = (5-x) = AR$

$\therefore AR = (5-x)cm$, $RB = x$

$\therefore AB = 5 - x + x = \boxed{5cm}$

026



$OB=13$, $RB=8$

$OA=OC=OR=5cm$ (Radius)

In ΔAOB, $AB=12$ (using Pythagoras theorem)

Now $AB=CB=12$ (Reason...)

Let $AE=x$, $EB=(12-x)$

$ER=x$

Similarly $CD=x$, $RD=x$, $DB=(12-x)$

$ED=ER+RD=x+x=(2x)cm$.

Perimeter $=EB+BD+DE$

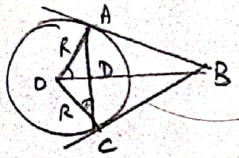
$=(12-x)+(12-x)+2x$

$=24cm$

Area of $\Delta BED=\frac{1}{2}\times ED\times RB$.

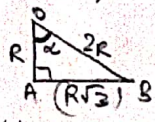
$\frac{1}{2}\times(2x)\times(8)=(8x)cm^2$.

027



$\angle OCD=\pi$.

$OA=R$, $OB=2R$, $\angle AOD=\alpha$



$(AB=R\sqrt{3}cm)$

Now $\angle OCD=\angle OAD$ (Reason...)

Now $\sin\alpha=\frac{R\sqrt{3}}{2R}=\frac{\sqrt{3}}{2}$

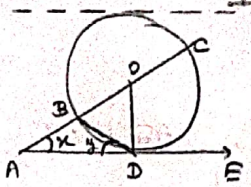
$\alpha=60°$

In ΔADO, $\angle ADO=90°$, $\angle AOD=60°$.

$\therefore \angle OAD=30°$ hence $\angle OCD=30°$

028

$x+2y=??$



$\angle ODA=90°$ (Reason)

$\angle ABD=180-(x+y)$

$\angle OBD=(x+y)$ (linear pair)

$\angle ODB=(x+y)$ (Reason....)

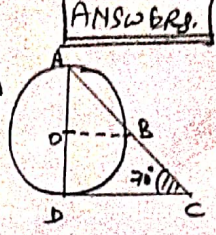
Now $\angle ODA=\angle ODB+\angle BDA$

$90°=(x+y)+y$

$90=x+2y$

ANSWERS.

029



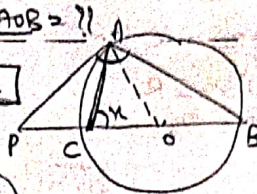
$\angle DAC=20°$

(Do it yourself)

If ask $\angle OBA=??$

$\angle AOB=??$

030.



$\angle PAB=110°$ $\angle OCA=x$

Given $\angle OAP$ or $\angle PAO=90°$

(Reason,...)

$\angle PAB=\angle PAO+\angle OAB$.

$110°=90°+\angle OAB$

$\angle OAB=20°$.

$\angle OAB=\angle OBA$ (Reason...)

$\therefore \angle AOB=140°$ (Reason....)

$\angle AOC=40°$ (Reason...)

In ΔAOC

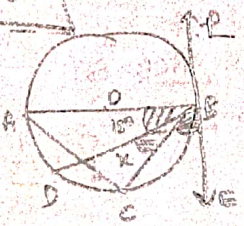
$\angle x+\angle OAC+\angle AOC=180°$

$\angle x+\angle x+40°=180°$

$2x=140$

$x=70°$

031.



$AC=BC$, given.

Then $\angle CAB=\angle CBA$

(Isosceles Δ property)

$\angle CBA=(15+x)°=\angle CAB$.

& $\angle ACB=90°$ (Reason....)

In ΔACB.

$\angle CAB+\angle ABC+\angle ACB=180°$

$(15+x)+(15+x)+90°=180°$

$2x+30=90°$

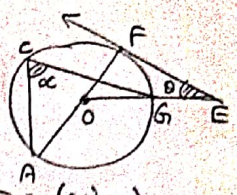
$2x=60$ $\therefore x=15°$

Also $\angle OBE=15°+x+\angle CBE=90°$

$15+15+\angle CBE=90°$

$\angle CBE=60°$

032.



$\angle AOE=130°$ (given)

$\alpha+\theta=??$

If $\angle AOE=180°$, then $\alpha=65°$ (Reason...)

$\angle FOG=180°-130°=50°$ (linear pair)

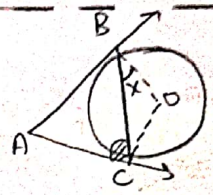
$\angle OFE=90°$ (Reason,...)

In ΔFOE, $90°+\theta+50°=180°$

$\theta=40°$

$\therefore \alpha+\theta=65+40°=105°$

033.



Given $\angle ACB=60°$.

Now $\angle ABC=60°$

(Reason....)

In ΔABC, $\angle BAC+60°+60°=180°$

$\therefore \angle BAC=60°$ Now $\angle BOC=180-60°$

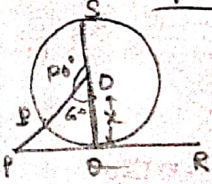
(Reason...)

In ΔOBC, $\angle OBC+\angle OCB+\angle BOC=180°$

$x+x+120°=180°$ (Reason....)

$2x=60°$ $\therefore x=30°$

034.



Let $OO=x$

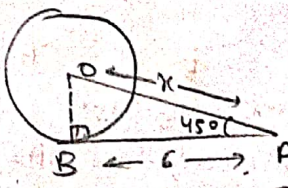
If $\angle SOP=120°$

then $\angle POO=60°$ (linear pair)

$\cos 60°=\frac{B}{H}$ OR $\frac{1}{2}=\frac{x}{10}$ OR $x=5$

Then diameter of circle is $10cm$

035



$\cos 45°=\frac{6}{x}$ OR $\frac{1}{\sqrt{2}}=\frac{6}{x}$ OR $x=6\sqrt{2}cm$

Now Radius $OB=??$

$x^2=OB^2+6^2$

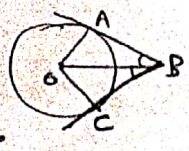
$(6\sqrt{2})^2=OB^2+36$

$\sqrt{72-36}=OB$

$\sqrt{36}=OB$ Hence $OB=6cm$

ANSWERS

036.



Given $\angle ABC = 80°$

then $\angle ABO = \angle CBO = 40°$ (Reason....)

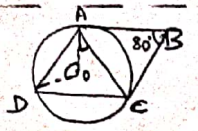
Also $\angle OAB = 90°$ (Reason)

In $\triangle OAB$

$\angle BOA + 90° + 40° = 180°$

$\angle BOA = 50°$

037.



$\angle AOD = 140°$, $\angle ABC = 80°$.

$\angle ACD = 70°$ (Reason....)

$\angle BAC = \angle BCA$ (Since $AB = BC$)

So $\angle BAC = 50°$.

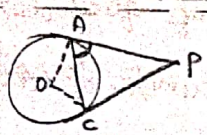
Also $\angle OAB = 90°$

So $\angle OAC = 40°$ — (1)

Also. $\angle OAD = 20°$ (Reason)

$\therefore \angle CAD = 40 + 20 = 60°$

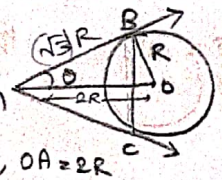
038.



$\angle OAC = 40° = \angle OCA$

$\therefore \angle AOC = 100°$

039



$OB = R$, $OA = 2R$

$(2R)^2 = R^2 + AB^2$

$AB = \sqrt{3}R$

Now $\sin\theta = \frac{P}{H}$, $\frac{R}{2R} = \frac{1}{2}$

$\theta = 30°$

$\therefore \angle BAD = \angle CAD = 30°$

So $\angle BAC = 60°$

Also $\angle ABC = \angle ACB$ (Since $AB = AC$)

So $\angle BAC = \angle ABC = \angle ACB = 60°$

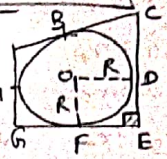
Hence $\triangle BAC$ is an Equilateral $\triangle$

040

$\angle POQ + \angle SQR = 180°$

$\angle POQ = 120°$

041.



$AC = 23cm$, $AH = 5cm$

$CE = 29cm$. find 'R'

Here ODEF is the square (Reason....)

If $AH = 5cm$, then $AB = 5cm$

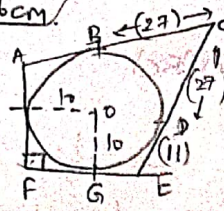
Then $BC = 18 = CD$

$CE = 29$, $DE = 11 = Radius$

Diameter $= 22cm$

042 Perimeter of $\triangle APB$ $= 56cm$.

043.



Here HOGF is a square

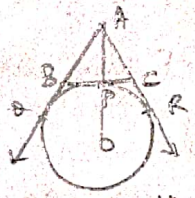
$FG = 10cm = Hf = 10cm$

$FE = FG + GE$

$FE = 10 + 11$

$FE = 21cm$

044.



To prove: $AD = \frac{1}{2}$ (Perimeter $\triangle ABC$)

Let $AB = x$, $BD = y$, (Reason)

Now $AB = AC$ (Reason)

Also $BQ = BP$, $CP = CR$.

$AB = AC = x$

$BQ = BP = y$, & $CP = CR = y$

$\triangle ABC$ perimeter

$AB + BC + CA$

$x + (y + y) + x$

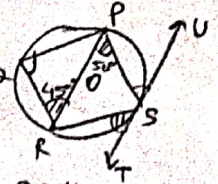
$2(x + y)$.

$= 2(AB + BQ)$

$= 2(AD)$

Hence proved

045



Given RP ∥ TU

$\angle RPS = \angle PSU = 50°$ (Reason....)

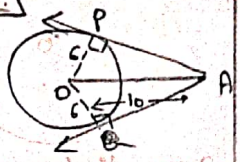
$\angle PSR = 90°$ (Reason....)

$\angle RQP = 90°$ (Reason....)

$\angle SRP = 40° = \angle RST$ (Reason....)

$\angle RST = 40°$

046.



Area of Quad APOB

$= 2 \times (\frac{1}{2} \times 6 \times 8)$

$= 48cm^2$

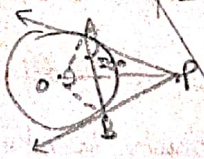
047

$\tan 60° = \frac{PA}{6}$

$\sqrt{3} = \frac{PA}{6}$

or $PA = PB = 6\sqrt{3}$

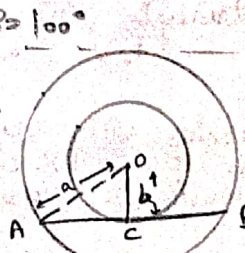
048.



$\angle AOB = x$

$\angle APB = 100°$

049.

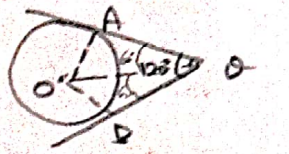


Here $AC = \sqrt{a^2 - b^2}$

Also $AC = CB$ (Reason....)

$AB = 2\sqrt{a^2 - b^2}$

050.



To prove

$OD = 2AO$

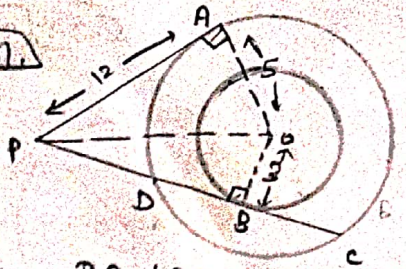
$\angle ADO = \angle BDO = 60°$ (Reason....)

In $\triangle OAD$ $\cos 60° = \frac{B}{H} = \frac{AO}{OD}$

$\frac{1}{2} = \frac{AO}{OD}$

$OD = 2AO$

051.



Here $PA \neq PB$

Remember this thing.

Now $PO = \sqrt{144 + 25} = 13cm$

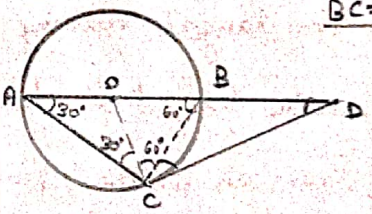
and $PB = \sqrt{13^2 - 5^2} = \sqrt{169 - 25}$

$PB = \sqrt{159}\ cm$

052

To prove:

$BC = BD$



Proof: $\angle OAC = \angle OCA = 30°$ (Reason....)

$\angle ACB = 90°$ (Reason...)

$\angle OCB = 60° = \angle OBC$ (Reason)

$\angle CBD = 120°$ (Reason....)

Here $\angle OCD = 90°$ (Reason)

Then $\angle BCD = 30°$.

Now in $\triangle BCD$

$\angle CBD + \angle BDC + \angle BCD = 180°$. (Reason...)

$120° + \angle BDC + 30° = 180°$

$\angle BDC = 30°$

Hence $\angle BCD = \angle BDC = 30°$

So $BC = BD$

(Isosceles $\triangle$ property)