PARISHRAM PUBLICATIONS

Std.: X (English) | Mathematics Part - II | Marks: 40

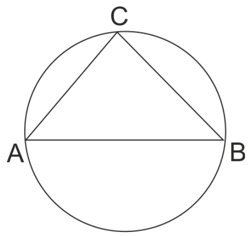
Date: 14-Dec-2019 | Parishram Academy | Time: 2 hrs

Chapter: All

Note:-

Q.1 A) Solve Multiple choice questions. **(4)**

1)



In the given figure, AB is a diameter of the circle. If AC = BC, then $\angle CAB$ is equal to

a. 30^0 b. 60^0 c. 90^0 d. 45^0

Ans. Option d.

2) The maximum number of tangents that can be drawn to a circle from a point out side it is ....

a. 2 b. 1 c. one and only one d. 0

Ans. Option a.

3) A person is standing at distance of 40 m from building looking at its top at an angle of elevation 45°. Find height of church.

a. 45m b. $\frac{40}{\sqrt{2}}$m c. ${}^{40}\sqrt{2}$ d. 40m

Ans. Option d.

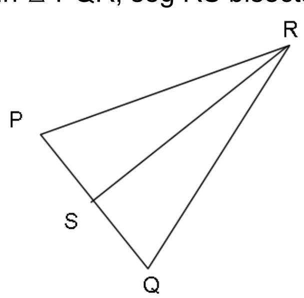
4) Find the volume of cube having length of side 6.

a. 36 cm^3 b. 216 cm^3 c. 108 cm^3 d. 27 cm^3

Ans. Option b.

B) Solve the following questions. **(4)**

1) In $\triangle$ PQR, seg RS bisects $\angle$ R. If PR = 15, RQ = 20, PS = 12 then find SQ.



Ans. In $\triangle$ PRQ, seg RS bisects $\angle$ R.

$\frac{PR}{RQ} = \frac{PS}{SQ}$ ... (Angle bisector property)

$\frac{15}{20} = \frac{12}{SQ}$

$SQ = \frac{12 \times 20}{15}$

$\therefore$ SQ = 16

2) Radius of a circle is 10 cm. Area of a sector is 100 cm^2. Find the area of its corresponding major sector. (π = 3.14).

Ans. Area of a major sector =Area of circle -Area of a minor sector

$= \pi r^2 - 100$

$=(3.14 \times 10 \times 10 - 100)$

$=314 - 100$

$=214\ cm^2$

Area of major sector = 214 cm^2

3) Find the slopes of the lines passing through the given points.
T(0, -3) , S(0, 4)

Ans. Let $T \equiv (0, -3) \equiv (x_1, y_1)$, $S \equiv (0, 4) \equiv (x_2, y_2)$

Slope of line TS = $\frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{4-(-3)}{0-0}$

$= \frac{7}{0}$

$\therefore$ Slope of line TS = not defined

4) Find the length of the hypotenuse of a square whose side is 16 cm.

Ans. $\square$ABCD is a square.

In right angled triangle $\triangle$ABC,

$AC^2 = AB^2 + BC^2$ ... (by Pythagoras theorem)

$\therefore$ $AC^2 = 16^2 + 16^2$

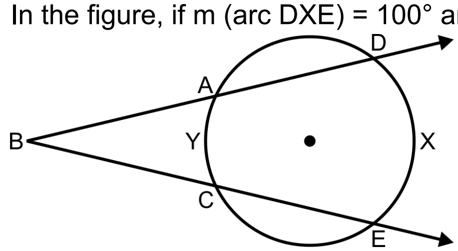
$\therefore$ $AC^2 = 256 + 256$

$\therefore$ $AC^2 = 512$

$\therefore$ $AC = 16\sqrt{2}$

Q.2 A) Complete the following Activities. (Any two) **(4)**

1) In the figure, if m (arc DXE) = 100° and m (arc AYC) = 40°, find $\angle$DBE.



$\angle DBE = \frac{1}{2}$ [m (______) - m (arc AYC)]

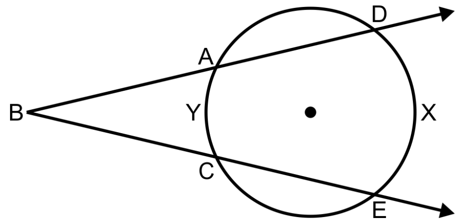
$= \frac{1}{2}$ (______)

$= \frac{1}{2} \times$ ______

= ______

$\angle$DBE = ______

Ans. In the figure, if m (arc DXE) = 100° and m (arc AYC) = 40°, find $\angle$DBE.



$\angle DBE = \frac{1}{2}$ [m (arc DXE) - m (arc AYC)]

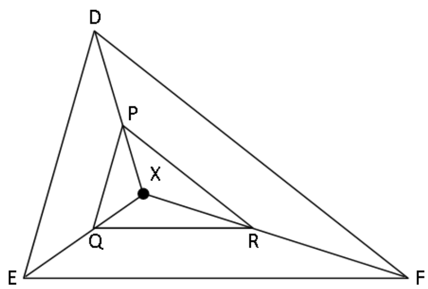
$= \frac{1}{2}(100° - 40°)$

$= \frac{1}{2} \times 60°$

$= 30°$

$\angle DBE = 30°$

2) In the figure, X is any point in the interior of triangle. Point X is joined to vertices of triangle. Seg PQ || seg DE, seg QR || seg EF. Fill in the blanks to prove that, seg PR || seg DF.



In $\triangle XDE$, $PQ \parallel DE$... _____

$\therefore$ _____ = _____ ... (I) (Basic proportionality theorem)

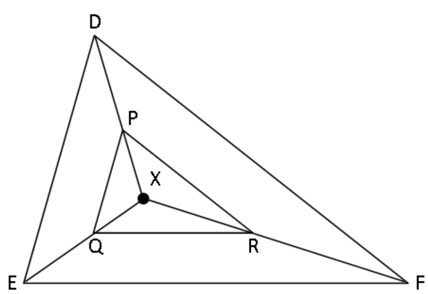
In$\triangle XEF$, $QR \parallel EF$ ... _____

$\therefore$ _____ = _____ ... (II) (Basic proportionality theorem)

$\therefore$ _____ = _____ ... from (I) and (II)

$\therefore$ seg $PR \parallel$ seg DF ... (Converse of basic proportionality theorem)

Ans. In the figure, X is any point in the interior of triangle. Point X is joined to vertices of triangle. Seg PQ || seg DE, seg QR || seg EF. Fill in the blanks to prove that, seg PR || seg DF.



In $\triangle XDE$, $PQ \parallel DE$... $\boxed{\text{Given}}$

$\therefore \frac{XP}{\boxed{PD}} = \frac{\boxed{XQ}}{QE}$ ... (I) (Basic proportionality theorem)

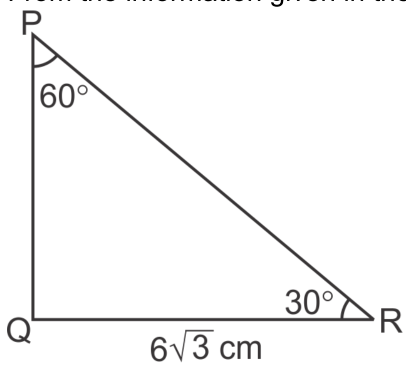
In$\triangle XEF$, $QR \parallel EF$ ... $\boxed{\text{Given}}$

$\therefore \frac{\boxed{XQ}}{\boxed{QE}} = \frac{\boxed{XR}}{\boxed{RF}}$ ... (II) (Basic proportionality theorem)

$\therefore \frac{\boxed{XP}}{\boxed{PD}} = \frac{\boxed{XR}}{\boxed{RF}}$ ... from (I) and (II)

$\therefore$ seg $PR \parallel$ seg DF ... (Converse of basic proportionality theorem)

3) From the information given in the figure, find PR and PQ.



In $\triangle PQR$, $\angle Q = 90°$, $\angle P = 60°$, and $\angle R = 30°$.

By the theorem of 30° - 60° - 90° triangle,

QR = _____PR ... (Side opposite to 60°)

$\therefore$ $6\sqrt{3} = \frac{\sqrt{3}}{2}PR$

$\therefore$ $PR = 6\sqrt{3} \times \frac{2}{\sqrt{3}}$

$\therefore$ PR = _____ ... (1)

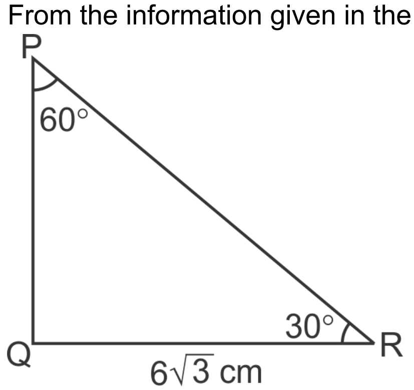
$PQ = \frac{1}{2}PR$ ... (_____)

$\therefore$ $PQ = \frac{1}{2} \times 12$ cm ... (From (1))

$\therefore$ PQ = _____

PR = _____ ; PQ = _____

Ans. From the information given in the figure, find PR and PQ.



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By the theorem of 30° - 60° - 90° triangle,

$QR = \frac{\sqrt{3}}{2}$ PR ... (Side opposite to 60°)

$\therefore$ $6\sqrt{3} = \frac{\sqrt{3}}{2}PR$

$\therefore$ $PR = 6\sqrt{3} \times \frac{2}{\sqrt{3}}$

$\therefore$ PR = 12 cm ... (1)

$PQ = \frac{1}{2}PR$ ... (Side opposite to 30°)

$\therefore$ $PQ = \frac{1}{2} \times 12$ cm ... (From (1))

$\therefore$ PQ = 6 cm.

PR = 12 cm ; PQ = 6 cm

B) Solve the following questions. (Any four) **(8)**

1) If the area of the minor sector is 392.5 sq. cm and the corresponding central angle is 72°, find the radius (π = 3.14).

Ans. Area of minor sector = $\frac{\theta}{360} \times \pi r^2$

$\therefore$ 392.5 = $\frac{72}{360} \times 3.14 \times r^2$

$\therefore$ 392.5 = $\frac{1}{5} \times 3.14 \times r^2$

$\therefore \frac{392.5 \times 5}{3.14} = r^2$

$\therefore$ 125 $\times$ 5 = r^2

$\therefore$ 625 = r^2

$\therefore$ r = 25 cm ...(Taking square root on both side)

$\therefore$ Radius of the circle is 25 cm.

2) Find the co-ordinates of point P if P is the midpoint of a line segment AB with A(- 4, 2) and B(6, 2).

Ans. (- 4, 2) = (x_1, y_1) ; (6, 2) = (x_2, y_2) and co-ordinates of P are (x, y)

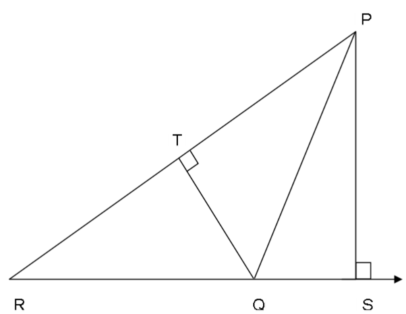
$\therefore$ According to midpoint theorem,

$$x = \frac{x_1 + x_2}{2} = \frac{-4 + 6}{2} = \frac{2}{2} = 1$$

$$y = \frac{y_1 + y_2}{2} = \frac{2 + 2}{2} = \frac{4}{2} = 2$$

$\therefore$ co-ordinates of midpoint P are (1, 2) .

3) In adjoining figure, seg PS $\perp$ seg RQ seg QT $\perp$ seg PR. If RQ = 6, PS = 6 and PR = 12, then find QT.



Ans. RQ = 6, PS = 6 and PR = 12 ... (Given)

Area of a triangle = $\frac{1}{2}$ $\times$ base $\times$ height

A(ΔPQR) = $\frac{1}{2}$ $\times$ QR $\times$ PS

$\therefore$ A(ΔPQR) = $\frac{1}{2} \times 6 \times 6$

$\therefore$ A(ΔPQR) = 18 units^2 ... (1)

also, A(ΔPQR) = $\frac{1}{2}$ $\times$ PR $\times$ QT

$\therefore$ 18 = $\frac{1}{2}$ $\times$ 12 $\times$ QT

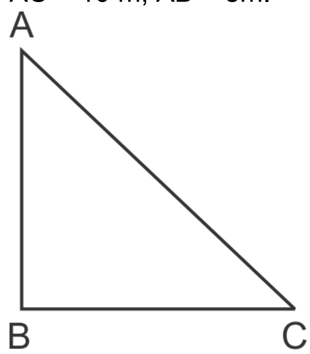
$\therefore$ QT = $\frac{18}{6}$

$\therefore$ QT = 3

QT = 3

4) A Ladder 10m long reaches a window 8m above the ground. Find the distance of the foot of the ladder from the base of the wall.

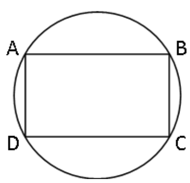
Ans. Seg AC represents the ladder.
Seg BC represents the ground.
C represents the foot of the ladder.
B represents the base of the wall.
A represents the window above the ground
AC = 10 m, AB = 8m.



i) In $\triangle ABC$, $\angle ABC = 90°$ ... (Base of the wall of the building $\perp$ to the ground)
$\therefore$ $AB^2 + BC^2 = AC^2$ ... (Pythagoras theorem)
ii) But, AB = 8 m, AC = 10 m ... (given)
iii) $\therefore$ $8^2 + BC^2 = 10^2$
$\therefore$ $64 + BC^2 = 100$
$\therefore$ $BC^2 = 100 - 64$
$\therefore$ $BC^2 = 36$
$\therefore$ $BC = \sqrt{36}$ ... (Taking square root)
$\therefore$ BC = 6 m

5) Prove that, any rectangle is a cyclic quadrilateral.

Ans.



Let □ABCD be a given rectangle
In □ABCD,
$\angle A = \angle B = \angle C = \angle D = 90°$ ... [angles of a rectangle]
$\therefore$ $\angle A = \angle C = 180°$

$\therefore$ $\angle B = \angle D = 180°$ ... [opposite angle of a quadrilateral are supplementary, then the quadrilateral is a cyclic quadrilateral]
$\therefore$ □ABCD is a cyclic quadrilateral

Q.3 A) Complete the following activity. (Any one) **(3)**

1) A circus tent is cylindrical up to a height of 3.3 m and conical above it. If the radius of the base is 50 m and the slant height of the conical part is 56.4 m, find the canvas used in making the tent.

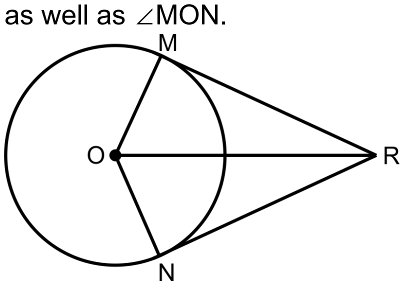
For the cylindrical part : r = 50 m, h = 3.3 m
For the conical part : r = 50 m, l = 56.4 m
Canvas used in making tent
= _____ + curved surface area of conical part

= _____ + πrl ... (Formula)
= πr _____
= $\frac{22}{7}\times 50 \times$ _____
= $\frac{22}{7}\times 50$ (6.6 + 56.4) ... (Substituting the given values)
= _____
= 1100 $\times$ 9
= _____
The canvas used in making the lent is _____

Ans. A circus tent is cylindrical up to a height of 3.3 m and conical above it. If the radius of the base is 50 m and the slant height of the conical part is 56.4 m, find the canvas used in making the tent.

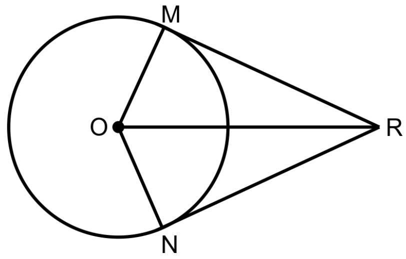
For the cylindrical part : r = 50 m, h = 3.3 m
For the conical part : r = 50 m, l = 56.4 m
Canvas used in making tent
= curved surface area of cylindrical part + curved surface area of conical part
= $2\pi rh + \pi rl$ ... (Formula)
= $\pi r\,(2h + l)$
= $\frac{22}{7}\times 50 \times (2\times 3.3 + 56.4)$
= $\frac{22}{7}\times 50$ (6.6 + 56.4) ... (Substituting the given values)
= $\frac{1100}{7}\times 63$
= 1100 $\times$ 9
= 9900 m^2
The canvas used in making the lent is 9900 m^2.

2) Seg RM and seg RN are tangent segments of a circle with centre O. Prove that seg OR bisects $\angle$MRN as well as $\angle$MON.



In $\triangle$OMR and $\triangle$ONR, side MR $\cong$ side NR... [_____]
$\angle$OMR = $\angle$ONR = 90° ... [_____]
radius OM $\cong$ _____ ... [radius of same circle]
$\therefore$ $\triangle$OMR ~ $\triangle$ONR ... [_____]
$\therefore$ $\angle$MRO $\cong$ _____ ... [congruent angles of similar triangles]
$\therefore$ seg OR bisects $\angle$MRN
Also,
_____ $\cong \angle$NOR ... [congruent angles of similar triangles]
$\therefore$ seg OR bisects $\angle$MON Hence proved.

Ans. Seg RM and seg RN are tangent segments of a circle with centre O. Prove that seg OR bisects $\angle$MRN as well as $\angle$MON.



In $\triangle OMR$ and $\triangle ONR$, side MR $\cong$ side NR ... [Tangents drawn from same external point to the circle are congruent]

$\angle OMR = \angle ONR = 90^\circ$ ... [Radius perpendicular to tangent]

radius OM $\cong$ radius ON ... [radius of same circle]

$\therefore$ $\triangle OMR \sim \triangle ONR$ ... [by SAS Test of similarity]

$\therefore$ $\angle MRO \cong \angle NRO$ ... [congruent angles of similar triangles]

$\therefore$ seg OR bisects $\angle MRN$

Also,

$\angle MOR \cong \angle NOR$ ... [congruent angles of similar triangles]

$\therefore$ seg OR bisects $\angle MON$ Hence proved.

B) Solve the following questions. (Any two) **(6)**

1) Ratio of areas of two triangles with equal heights is 2 : 3. If base of the smaller triangle is 6 cm then what is the corresponding base of the bigger triangle?

Ans. $\frac{A(A_1)}{A(A_2)} = \frac{2}{3}$ ... (given)

$\frac{A(A_1)}{A(A_2)} = \frac{b_1}{b_2}$ ... {heights are same, hence area proportional to bases}

$\therefore$ $\frac{2}{3} = \frac{b_1}{b_2}$

As $2 < 3$

$\therefore$ $b_1 < b_2$

$\therefore$ base of the smallest triangle = b_1 = 6cm.

$\therefore$ $\frac{2}{3} = \frac{6}{b_2}$

$\therefore$ $b_2 \times 2 = 3 \times 6$

$\therefore$ $b_2 = \frac{3 \times 6}{2}$

$\therefore$ $b_2 = \frac{18}{2}$

$\therefore$ b_2 = 9 cm.

$\therefore$ Corresponding base of bigger triangle is 9 cm.

2) Prove the following

$\text{Cot}^2\theta - \tan^2\theta = \text{cosec}^2\theta - \sec^2\theta$

Ans. LHS = $\cot^2\theta - \tan^2\theta$

$= \left(\frac{\cos\theta}{\sin\theta}\right)^2 - \left(\frac{\sin\theta}{\cos\theta}\right)^2$ ... $\left[\cot\theta = \frac{\cos\theta}{\sin\theta}, \tan\theta = \frac{\sin\theta}{\cos\theta}\right]$

$= \frac{\cos^2\theta}{\sin^2\theta} - \frac{\sin^2\theta}{\cos^2\theta}$

$= \frac{\cos^4\theta - \sin^4\theta}{\sin^2\theta \times \cos^2\theta}$

$= \dfrac{(\cos^2\theta)^2 - (\sin^2\theta)^2}{\sin^2\theta \times \cos^2\theta}$

$= \dfrac{(\cos^2\theta + \sin^2\theta) \times (\cos^2\theta - \sin^2\theta)}{\sin^2\theta \times \cos^2\theta}$ ... [(a + b) (a - b) = a^2 - b^2]

$= \dfrac{\cos^2\theta - \sin^2\theta}{\sin^2\theta \times \cos^2\theta}$

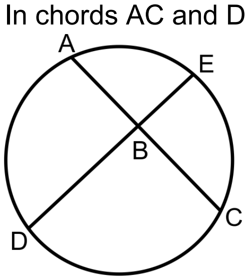
$= \dfrac{\cos^2\theta}{\sin^2\theta \times \cos^2\theta} - \dfrac{\sin^2\theta}{\sin^2\theta \times \cos^2\theta}$

$= \dfrac{1}{\sin^2\theta} - \dfrac{1}{\cos^2\theta}$

$= \text{cosec}^2\theta - \sec^2\theta$ ... $\left[\text{cosec}\,\theta = \dfrac{1}{\sin\theta}, \sec\theta = \dfrac{1}{\cos\theta}\right]$

∴ LHS = RHS

3) In chords AC and DE intersect at B. If ∠ABE = 108°, m(arc AE) = 95°, find m(arc DC).



Ans. Given: m (arc AE) = 95° ... (Given)

∠ABE = 108°

∠ABE has its vertex inside the circle and intercepts arc AE and its vertically opposite ∠DBC intercepts arc DC.

∠ABE = $\frac{1}{2}$[m(arc AE) + m(arc DC)]

∴ 108° = $\frac{1}{2}$ × [95° + m(arc DC)]

∴ 108° × 2 = 95° + m(arc DC)

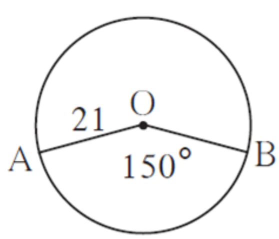
∴ 216° = 95° + m(arc DC)

∴ m(arc DC) = 216° – 95°

∴ m(arc DC) = 121°

m(arc DC) = 121°.

4) The measure of a central angle of a circle is 150 ° and radius of the circle is 21 cm. Find the length of the arc and area of the sector associated with the central angle.



Ans. r = 21 cm, θ = 150, $\pi = \frac{22}{7}$

Area of the sector, A = $\frac{\theta}{360} \times \pi r^2$

= $\frac{150}{360} \times \frac{22}{7} \times 21 \times 21$

= $\frac{1155}{2} = 577.5 cm^2$

Length of the arc, l = = $\frac{\theta}{360} \times 2\pi r$

= $\frac{150}{360} \times 2 \times \frac{22}{7} \times 21$

= 55 cm

Q.4 Solve the following questions. (Any two) (8)

1) In the following examples, can the segment joining the given points form a triangle ? If triangle is formed, state the type of the triangle considering sides of the triangle. P (– 2,– 6) , Q (– 4,– 2), R (– 5,0)

Ans. Let P ≡ (– 2, – 6) ≡ (x_1, y_1),

Q ≡ (– 4, – 2) ≡ (x_2, y_2),

R ≡ (– 5, 0) ≡ (x_2, y_2),

By distance formula

$$PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{[-4-(-2)]^2 + [-2-(-6)]^2}$$
$$= \sqrt{(-4+2)^2 + (-2+6)^2}$$
$$= \sqrt{(-2)^2 + (4)^2}$$
$$= \sqrt{4+16}$$
$$= \sqrt{20}$$
$$= \sqrt{4 \times 5}$$

$\therefore$ PQ = $2\sqrt{5}$ ... I

By distance formula

$$QR = \sqrt{(x_3 - x_2)^2 + (y_3 - y_2)^2}$$
$$= \sqrt{[-5-(4)]^2 + [0-(-2)]^2}$$
$$= \sqrt{(-5+4)^2+(0+2)^2}$$
$$= \sqrt{(-1)^2+(2)^2}$$
$$= \sqrt{1+4}$$

$\therefore$ QR = $\sqrt{5}$ ... I

By distance formula

$$PR = \sqrt{(x_3-x_1)^2+(y_3-y_1)^2}$$
$$= \sqrt{[-5-(-2)]^2+[0-(-6)]^2}$$
$$= \sqrt{(-5+2)^2+(0+6)^2}$$
$$= \sqrt{(-3)^2+(6)^2}$$
$$= \sqrt{9+36}$$
$$= \sqrt{45}$$
$$= \sqrt{9 \times 5}$$

$\therefore$ PR = $3\sqrt{5}$ ... III

PQ + QR= $2\sqrt{5}$ + $\sqrt{5}$ ... [From I, II]

= $3\sqrt{5}$

PR = $3\sqrt{5}$ ... [From III]

$\therefore$ PQ + QR = PR ... [From I, II, III]

∴ Points P, Q, R are collinear

∴ The line segments joining the points A, B, C do not determine a triangle.

2) $\triangle$ RHP ~ $\triangle$ NED, In $\triangle$ NED, NE = 7 cm, $\angle$ D = 30^0 $\angle$ N = 20^0 and $\frac{HP}{ED} = \frac{4}{5}$; Construct $\triangle$ RHP and $\triangle$ NED

Ans. $\triangle$ RHP ~ $\triangle$ NED ... [Given]

∴ $\frac{RH}{NE} = \frac{HP}{ED} = \frac{RP}{ND} = \frac{4}{5}; NE = 7$ ... [c.s.s.t]

∴ $\frac{RH}{NE} = \frac{4}{5}$

∴ $\frac{RH}{7} = \frac{4}{5}$

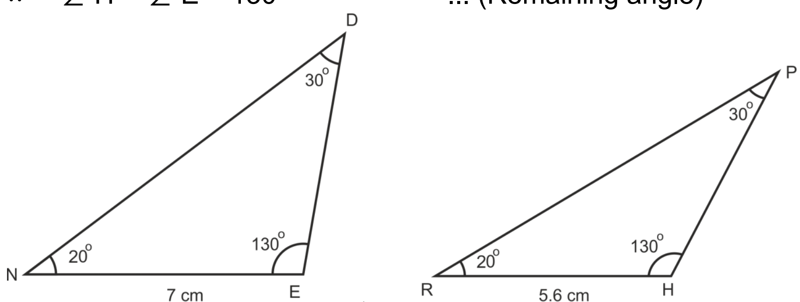
∴ RH = $\frac{4 \times 7}{5} = \frac{28}{5}$

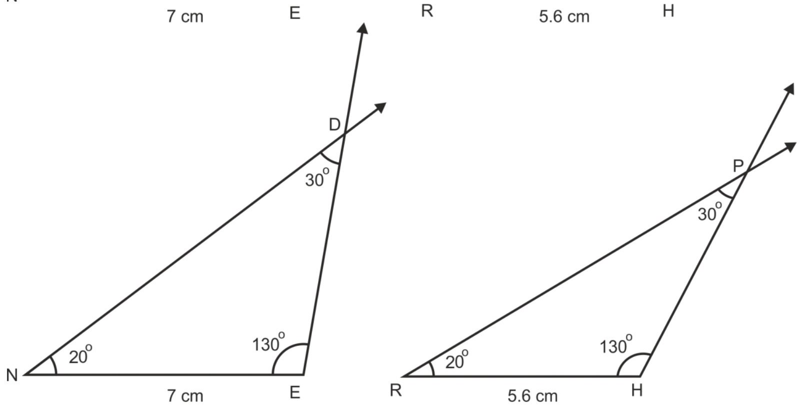
∴ RH = 5.6

$\angle$ R = $\angle$ N = 20^o

$\angle$ P = $\angle$ D = 30^o

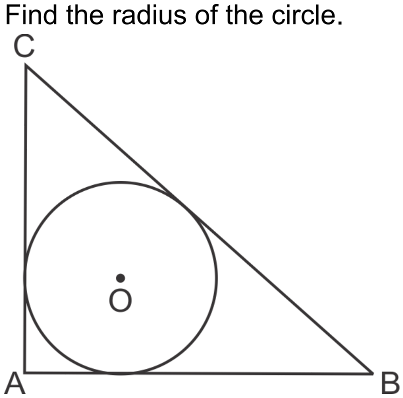
∴ $\angle$ H = $\angle$ E = 130^o ... (Remaining angle)





$\triangle$ RHP and $\triangle$ NED are the required triangles

3) $\triangle$ABC is a right angled triangle with $\angle$A = 90°. A circle is inscribed in it. The lengths of the sides containing the right angle are 6 cm and 8 cm.
Find the radius of the circle.



Ans. In $\triangle CAB$,

$m\angle CAB = 90°$ ... (Given)

$\therefore$ By Pythagoras theorem,

$BC^2 = AC^2 + AB^2$

$BC^2 = (6)^2 + (8)^2$

$BC^2 = 36 + 64$

$BC^2 = 100$

$BC = \sqrt{100}$

$= 10$ cm

Let the radius of the circle be r cm.

$\therefore$ OP = OQ = r ... (Radii of the same circle)

$m\angle OPA = 90°$

$m\angle OQA = 90°$ ... (ii) [Tangent is perpendicular to the radius]

$\therefore$ In $\square APOQ$,

$m\angle PAQ = 90°$ ... (Given)

$m\angle OPA = 90°$ ... [From (ii)]

$\therefore$ $\square APOQ$ is a rectangle ... [Definition of a rectangle]

OQ = AP = r

$\therefore$ OP = AQ = r ... [Opp. sides of a rectangle are congruent]

AC = AP + CP ... [A – P – C]

6 = r + CP

$\therefore$ CP = (6 – r) cm

AB = AQ + BQ ... [A - Q - B]

8 = r + BQ BQ = (8 – r) cm

$\therefore$ CP = CR = 6 – r cm ... [The length of two tangent segments to the circle drawn from an external point are equal]

BQ = BR = 8 – r cm

$\therefore$ BC = BR + CR ... [B – R – C]

10 = 8 – r + 6 – r

10 = 14 – 2r 2r = 14 – 10

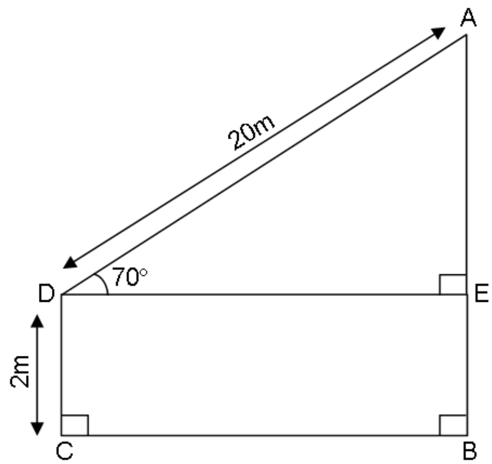
2r = 4 r = 2 cm

$\therefore$ Radius of the circle is 2 cm

Q.5 Solve the following questions. (Any one) (3)

1) A ladder on the platform of a fire brigade van can be elevated at an angle of 70^0 to the maximum. The length of the ladder can be extended upto 20m. If the platform is 2m above the ground, find the maximum height from the ground upto which the ladder can reach. ($\sin 70° \approx 0.94$)

Ans.



Here, AD represents the ladder.

$\therefore$ AD = 20m

At point D, angle of elevation is 70°.

$\therefore$ $m\angle EDA = 70°$

The lower end of the ladder fitted on fire truck is 2m above the ground.

$\therefore$ DC = 2m

Now $\square$BCDE is a rectangle. ... [Each angle is 90°]

$\therefore$ DC = EB = 2m ... [Opposite sides of rectangle are congruent]

In $\triangle$ AED, $m\angle AED = 90°$

$\sin 70° = \frac{AE}{AD}$

$\therefore$ $0.94 = \frac{AE}{20}$

$\therefore$ AE = 20 $\times$ 0.94

$\therefore$ AE = 18.8m

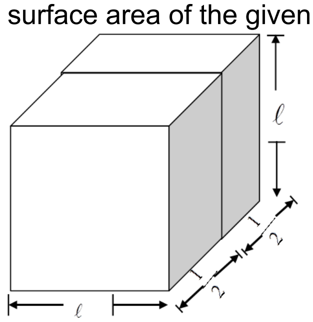
AB = AE + EB ... [A-E-B]

$\therefore$ AB = 18.8 + 2

$\therefore$ AB = 20.8m

The maximum length of other end of the ladder is 20.8m away from the ground.

2) A solid cube is cut into two cuboids exactly at middle as shown in figure. Find the ratio of the total surface area of the given cube and that of the cuboid.



Ans. For the solid cube, length of edge = ℓ

Total surface area of cube = $6\ell^2$ sq. units ...(i)

For the cuboid

length = length of cube = ℓ

height = length of cube = ℓ

breadth = $\frac{\text{length of cube}}{2} = \frac{l}{2}$

Total surface area of each cuboid = 2 (lb + bh + hl)

$= 2\left[l \times \frac{l}{2} + \frac{l}{2} \times l \times l \times l\right]$

$= 2\left[\frac{l^2}{2} + \frac{l^2}{2} + l^2\right]$

$= 2\left[\frac{2l^2}{2} + l^2\right] = 2[l^2 + l^2] = 4l^2$ ...(ii)

Total surface area of each cuboid = 4l2 sq. units.

$\therefore \frac{\text{Total surface area of cube}}{\text{Total surface area of cuboid}} = \frac{6l^2}{4l^2}$ ...[From (i) and (ii)]

$= \frac{3}{2}$

$\therefore$ The ratio of total surface area of the given cube and that of cuboid is 3 : 2