**PARISHRAM PUBLICATIONS**

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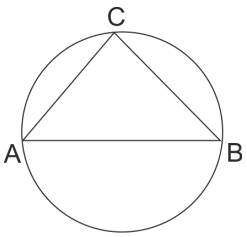
| Std.: X (English) | Mathematics Part - II | Marks: 40 |
| Date: 14-Dec-2019 | Parishram Academy | Time: 2 hrs |
| | Chapter: All | |

**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. $45^0$

**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

**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.

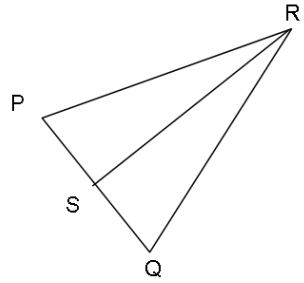
a. 45m b. $\frac{40}{\sqrt{2}}$m c. $\sqrt[40]{2}$ d. 40m

**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 $cm^3$

**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.




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

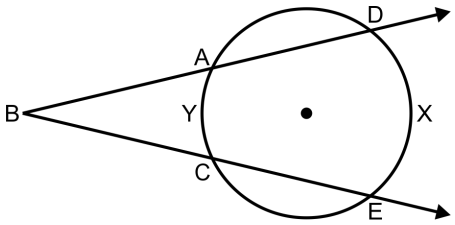
**3)** Find the slopes of the lines passing through the given points.

T(0, -3) , S(0, 4)

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

**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)]

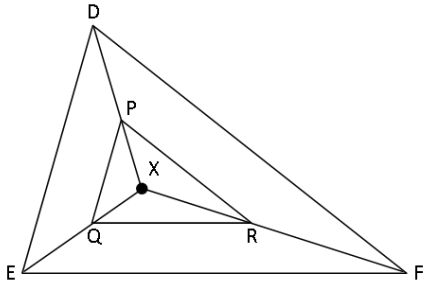
$= \frac{1}{2}$ (_____)

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

= _____

$\angle DBE$ = _____

**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 $\triangle XDE$, $PQ \| DE$ ... _____

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

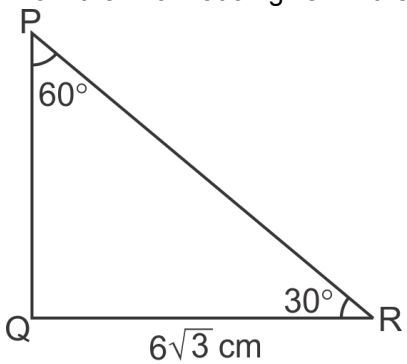
In$\triangle XEF$, $QR \| EF$ ... _____

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

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

$\therefore$ seg PR||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 = _____

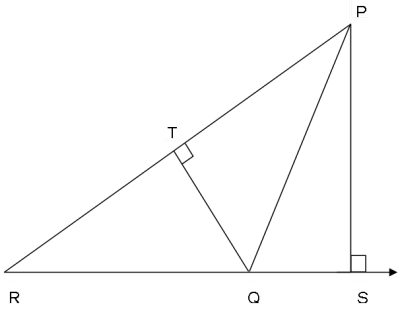
**PR = _____ ; PQ = _____**

**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 ($\pi$ = 3.14).

**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).

**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.




**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.

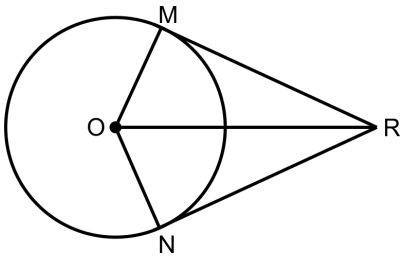
**5)** Prove that, any rectangle is a cyclic quadrilateral.

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

**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]

$\therefore$ $\triangle OMR \sim \triangle ONR$ ... [_____]

$\therefore$ $\angle MRO \cong$_____ ... [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.

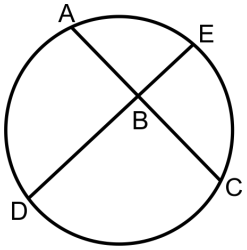
**B) Solve the following questions. (Any two)** **(6)**

**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?

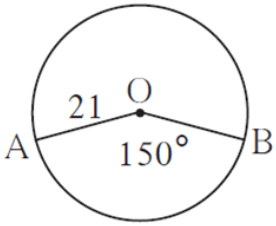
**2)** Prove the following

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

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




**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.



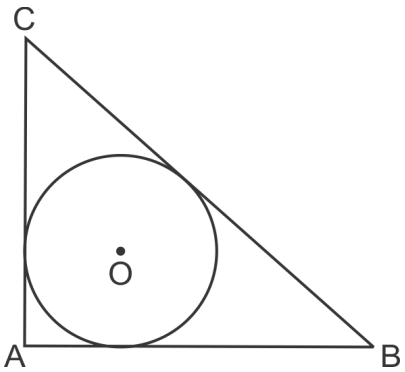

**Q.4 Solve the following questions. (Any two)** **(8)**

**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 $(-5,0)$

**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

△ NED

**3)** △ ABC is a right angled triangle with ∠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.




**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° ≈ 0.94)

**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.