CODE : A-G323102-UI

I Semester Exam - 2022-23

3 x 1390

Std. : X | Sub. : MATHS - II | Marks : 40

Date : 11/10/2022 | Roll No. _____ | Time : 2 hrs.

Note : 1) All questions are compulsory.
2) Use of calculator os not allowed.

Q. 1 A) Choose correct alternative for each of the following questions. 4

1) ΔABC and ΔDEF are equilateral triangles, $A(\Delta ABC) : A(\Delta DEF) = 1 : 2$. If $AB = 4$ then what is length of DE

A) $2\sqrt{2}$ B) 4 C) 8 D) $4\sqrt{2}$

2) Height and base of a right angled triangle are 24 cm and 18 cm find the length of its hypotenus.

A) 24 cm B) 30 cm C) 15 cm D) 18 cm

3) A circle touches all sides of a parallelogram. So the parallelogram must be a .....

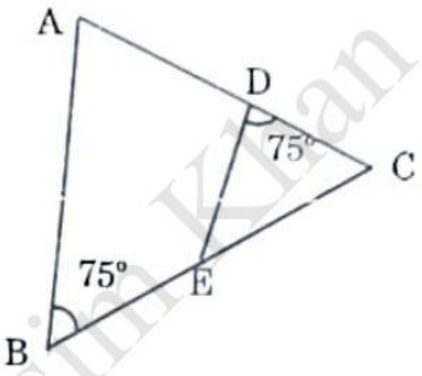
A) rectangle B) rhombus C) square D) trapezium

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

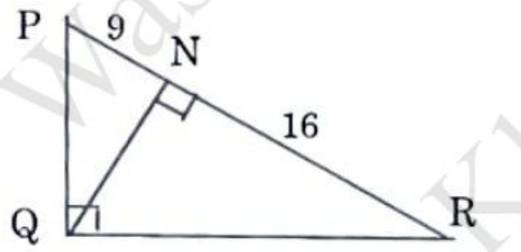
A) 2 B) 1 C) One and only one D) 0

Q.1 B) Solve the following sub questions : 4

1) In the given figure, state which two triangles are similar and by which test ?



2) In figure $\angle PQR = 90^o$, *seg* $QN \perp$ *seg* PR, $PN = 9$, $NR = 16$ Find QN.



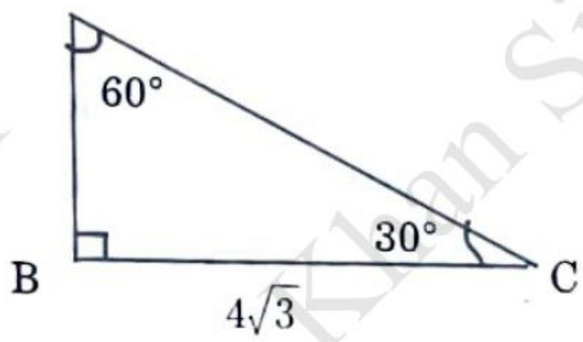
3) Fill in the blanks :
Opposite angles of a cyclic quadrilatral are .....

4) Draw Seg AB is 5 cm & bisect it.

Q.2 A) Complete the following activities : (Any Two) 4

1) Complete the activity for find hypotense AC with the help of given information in ΔABC .

Solution : $\angle ABC = 90^o$. $BC = 4\sqrt{3}\ cm$



Opposite side of angles $60^o = \frac{\square}{2} \times hypotenuse$

$\therefore BC = \frac{\sqrt{3}}{2} \times \square$

$4\sqrt{3} = \frac{\sqrt{3}}{2} \times AC$

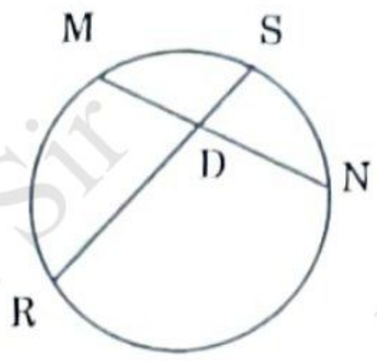
$\therefore AC = \frac{4\sqrt{3} \times \square}{\sqrt{3}} = \square\ cm$

P.T.O.

2) In the figure, chord MN and chord RS intersect at point D. If $RD = 15$, $DS = 4$, $MD = 8$, find DN.

Solution :

Chords MN and RS intersect each Other at point D inside the circle



$\therefore$ DM $\times$ DN = $\square$ $\times$ DS

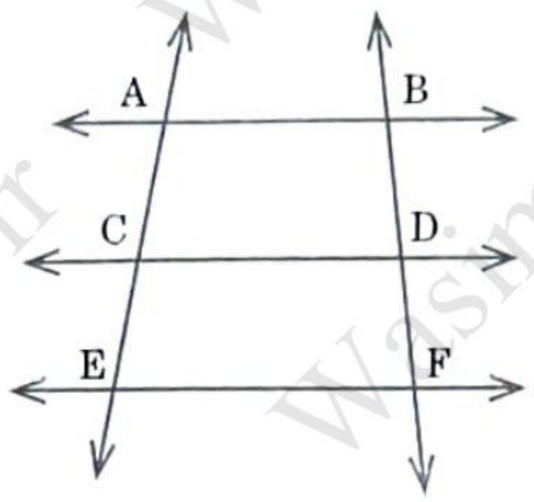
$\therefore$ 8 $\times$ DN = $\square$ $\times$ 4

$\therefore DN = \dfrac{15 \times 4}{\square}$

$\therefore$ DN = $\square$

3) In the figure, $AB \parallel CD \parallel EF$

If $AC = 5.4$, $CE = 9$, $BD = 7.5$ then find DF



Solution : $AB \parallel CD \parallel EF$

$$\frac{AC}{\square} = \frac{\square}{DF}$$

$$\therefore \frac{5.4}{9} = \frac{\square}{DF}$$

$\therefore$ DF = $\square$

Q.2 B) Solve any four of the following sub questions : **8**

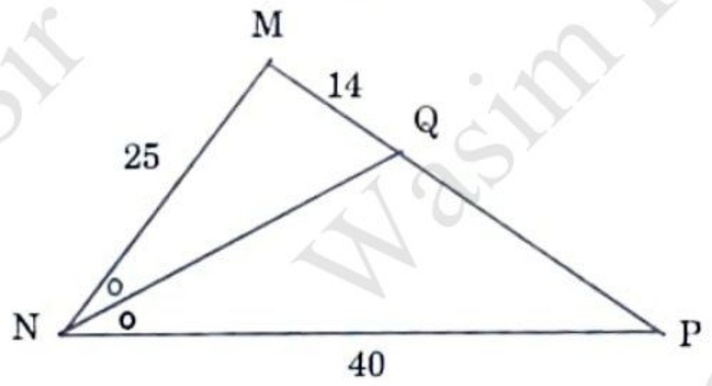
1) Base of the triangle is 9 and height is 5. Base of another triangle is 10 and height is 6. Find the ratio of areas of these triangles.

2) Find the length a diagonal of a rectangle having sides 11 cm and 60 cm.

3) Two circles having radius 5.5 cm and 4.2 cm touch each other externally. Find the distance between their centres.

4) Draw a circle of radius 3.6 cm. Draw a tangent to the circle at any point on it without using the center.

5) Find QP using given information in the figure.

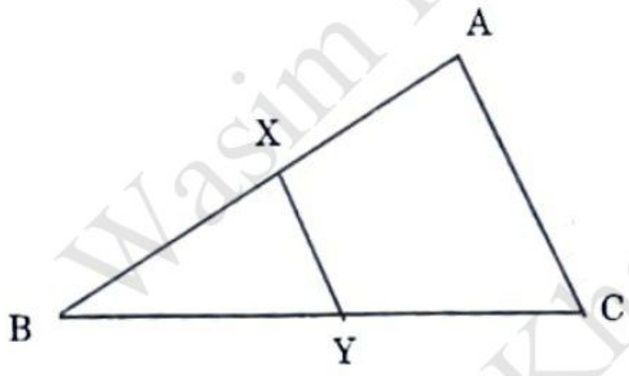


Q.3 A) Complete the following activities. (Any One) **3**

1) Draw a circle with radius 4.1 cm. Construct tangents to the circle from a point at a distance 7.3 cm from the center.

2) In figure, $XY \parallel Seg\ AC$. If $2AX = 3BX$ and $XY = 9$

Complete the activity to find the value of AC.



Activity : $2AX = 3BX$

$$\therefore \frac{AX}{BX} = \frac{3}{2}$$

$$\frac{AX + BX}{BX} = \frac{\square + \square}{2} \quad \text{.....by componendo}$$

$$\therefore \frac{AB}{BX} = \frac{5}{2} \quad \text{.....(I)}$$

$\therefore$ $\Delta BCA \sim \Delta BYX$ ..... $\square$ test of similarity.

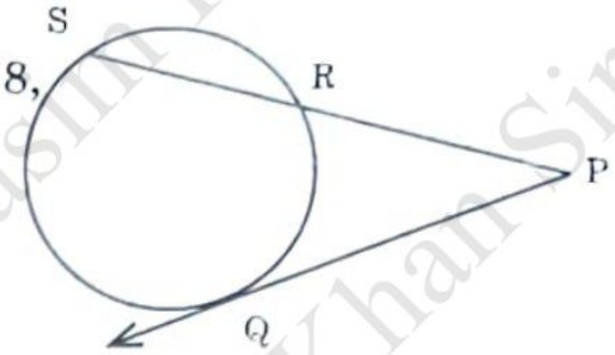
$\therefore \frac{BA}{BX} = \frac{AC}{XY}$ ..... corresponding sides of similar traingles

$\therefore \frac{\square}{\square} = \frac{AC}{9}$ $\therefore$ AC = $\square$ ..... from (I)

Q.3 B) Solve any two of the following sub-questions: **6**

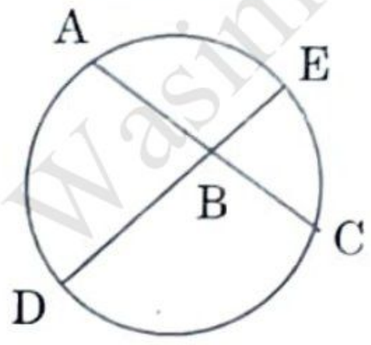
1) In ΔABC Seg AP is a median. If BC = 18, $AB^2 + AC^2 = 260$. Find AP.

2) In figure, ray PQ touches the circle at point Q. PQ = 12, PR = 8, find PS and RS.



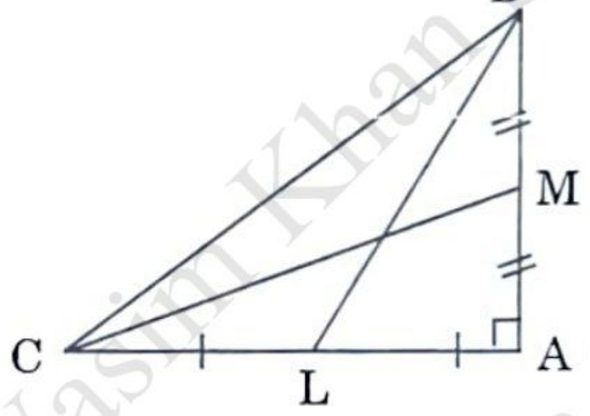
3) $\Delta LMN \sim \Delta PQR$, $9 \times A(\Delta PQR) = 16 \times A(\Delta LMN)$ If QR = 20 then find MN.

4) In the figure, chords AC and DE intersect at B.
If $\angle ABE = 108°$, $m(arc\ AE) = 95°$, Find $m(arc\ DC)$.



Q.4 Solve the following sub-questions : (Any Two) **8**

1) In ΔABC, $\angle BAC = 90°$ Seg BL and Seg CM is a median.
of ΔABC then prove that
$4(BL^2 + CM^2) = 5BC^2$.



2) Prove that " tangent segments drawn from an external point to a circle are conguent. "

3) $\Delta PQR \sim \Delta LTR$. In ΔPQR, PQ = 4.2 cm. QR = 5.4 cm, PR = 4.8 cm. Construct ΔPQR and ΔLTR, such that $\frac{PQ}{LT} = \frac{3}{4}$

Q.5 Solve any one of the following sub questions : **3**

1) Line M intersect sides AB and AC of ΔABC in the points P and Q respectively.
AP = 4.2, PB = 6.3, AQ = 4, QC = 6. State, with reason, whether line m is parallel to side BC or not.

2) Draw a circle with center P. Draw an arc AB of 100° measure. Draw tangents to the circle at point A and B.
