

FAROOQ HIGH SCHOOL FOR GIRLS

SUB : GEOMETRY

I SEMESTER EXAMINATION 2022 – 2023

STD : X

MARKS : 40

DATE : 08/10/2022

TIME : 2HRS

Q.1A) Four alternative answers are given for each of the following sub-questions. Choose the correct alternative and write alphabet of that answer.

[4]

1) Which of the following is not Pythagorean triplet ?

(a) (12,9,15) (b) (10,24,26) (c) (12,16,25) (d) (15,17,8)

2) If two circles with radius 3cm and 5cm touch each other externally, find the distance between their centres.

(a) 8cm (b) 2cm (c) 15cm (d) 9cm

3) If $\triangle ABC \sim \triangle DEF$ and $\angle A = 48^\circ$ then $\angle D = ?$

(a) 48° (b) 83° (c) 49° (d) 132°

4) The number of tangents that can be drawn to a circle at a point on the circle is ____.

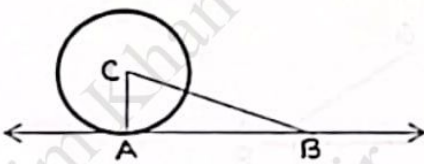
(a) 3 (b) 2 (c) 1 (d) 0

(B) Solve the following.

[4]

1) $\triangle DEF \sim \triangle MNK$ if $DE = 5$, $MN = 6$ then find the value of $\frac{A(\triangle DEF)}{A(\triangle MNK)}$.

2) Radius of the circle with centre C is 6cm. Line AB is a tangent at point A. what is the measure of $\angle CAB$.



3) Construct a tangent to a circle with centre P and radius 3.2cm at any point M on it.

4) In $\triangle ABC$, $AB = 9$ cm, $BC = 40$ cm, $AC = 41$ cm, state whether $\triangle ABC$ is right angled or not.

Q.2A) Complete the following activities (Any two).

[4]

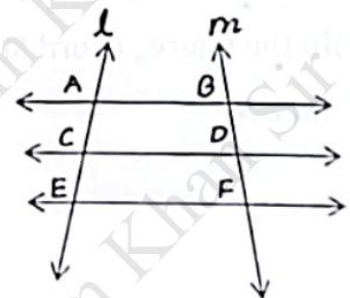
1) In the figure $AB \parallel CD \parallel EF$. Line l and m are its transversal.

If $AC = 6$, $CE = 9$, $BD = 8$ then complete the following activity.

$$\frac{AC}{CE} = \frac{BD}{DF}$$

$$\frac{6}{9} = \frac{8}{DF} \quad (\text{Property of three parallel lines \& their transversal})$$

$$DF = \boxed{}$$



[1]

2) In the figure $\square ABCD$ is a rectangle. If $AB=5$, $AC=13$ then complete the following activity to find BC .

$\triangle ABC$ is triangle.

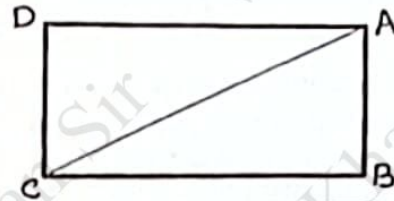
By Pythagoras theorem.

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

$$25 + BC^2 = \text{$$

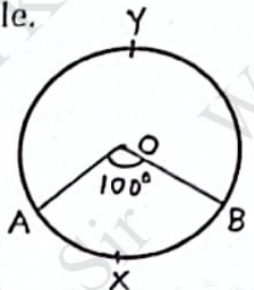
$$BC^2 = \text{$$

$$BC = \text{$$



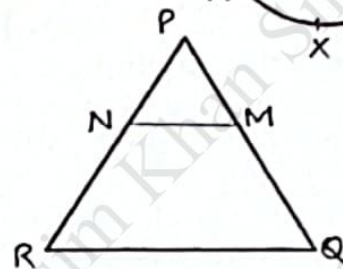
3) In the figure 'o' is the centre of the circle. Complete the following table.

Type of arc	Name of the arc	Measure of the arc
Minor arc		
Major arc		

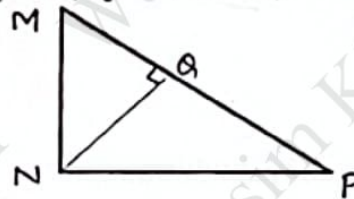


(B) Solve the following. (any four)

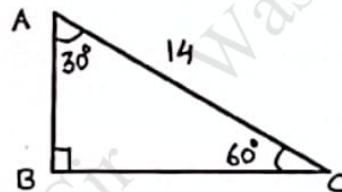
1) In $\triangle PQR$, $MN \parallel RQ$, if $PM=15$, $MQ=10$, $NR=8$ then, find PN .



2) In $\triangle MNP$, $\angle MNP = 90^\circ$. $seg NQ \perp seg MP$. If $MQ=9$, $QP=4$ then, find NQ .



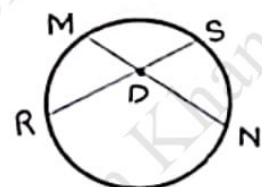
3) In $\triangle ABC$, $\angle B=90^\circ$, $\angle A=30^\circ$, $AC=14$ then, find AB and BC .



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

5) In the figure, chord MN & chord RS intersect at point D . $RD=15$, $DS=4$, $MD=8$.

Find DN .



Q.3A) Complete and write the following activities.(any one)

{3}

1) In ΔPQR seg PM is a median . angle bisectors of $\angle PMQ$ and $\angle PMR$ intersect side PR in points x and y . prove that $XY \parallel QR$.

Complete the proof by filling in the boxes.

In ΔPMQ , ray MX is bisector of $\angle PMQ$.

$$\frac{PX}{XQ} = \frac{PM}{MQ} \dots\dots\dots I \text{ (Theorem of angle bisects)}$$

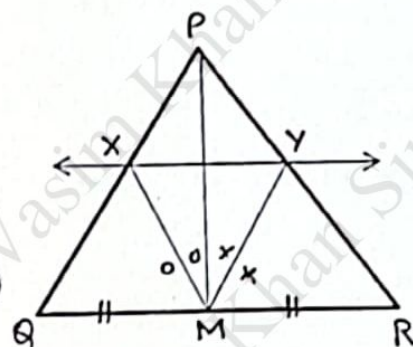
In ΔPMR , ray MY is bisector of $\angle PMR$.

$$\frac{PY}{YR} = \frac{PM}{MR} \dots\dots\dots II \text{ (Theorem of angle bisects)}$$

But $\frac{PM}{MQ} = \frac{PM}{MR} \dots\dots (M \text{ is the midpoint of } QR)$
 $MQ = MR$

$$\therefore \frac{PX}{XQ} = \frac{PY}{YR}$$

$$\therefore XY \parallel QR \text{ (Converst of B.P.T)}$$



2)Tangent segment drawn from an external point to a circle are congruent .Draw radius AP and radius AQ complete the following proof of the theorem .

In ΔPAD & ΔQAD

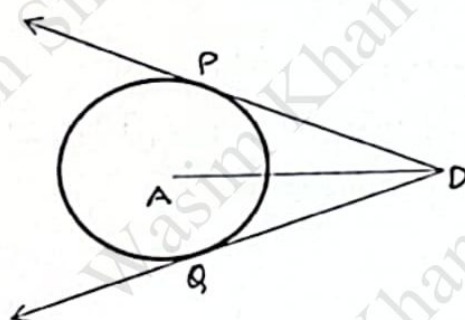
Seg $PA \cong$ _____ (radius of the same circle)

Seg $AD \cong$ seg AD (.....)

$\angle APD =$ _____ $= 90^\circ$ (.....)

$\therefore \Delta PAD \cong \Delta QAD$ (.....)

\therefore seg $DP \cong$ seg DQ (.....)



(B) Solve the following sub-questions.

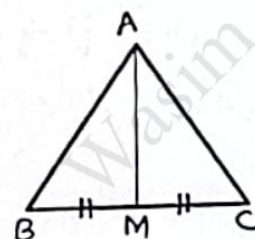
(Any Two)

[6]

1) In ΔABC , point M is the midpoint of side BC .

$$\text{If } AB^2 + AC^2 = 290 \text{ cm}^2$$

$AM = 8\text{cm}$ find BC .

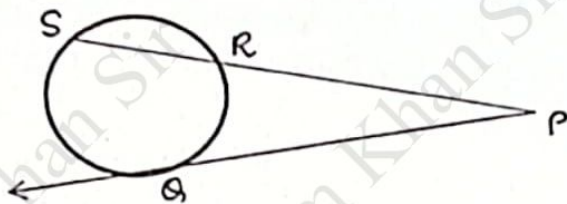


2) Draw a circle with centre P and radius 3.4cm , take point Q at a distance 5.5cm from the centre . construct tangents to the circle from point Q .

3) In figure ray PQ touches the circle at point Q . $PQ = 12$, $PR = 8$.

find PR & RS .

PS

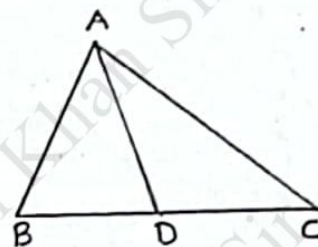


4) In $\triangle ABC$, $B-D-C$ and $BD=7, BC=20$ then find the ratios.

(i) $\frac{A(\triangle ABD)}{A(\triangle ADC)}$

(ii) $\frac{A(\triangle ABD)}{A(\triangle ABC)}$

(iii) $\frac{A(\triangle ADC)}{A(\triangle ABC)}$

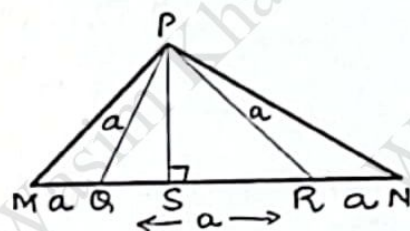


Q.4A) Solve the following questions. [Any two] [8]

1) $\triangle ABC \sim \triangle LMN$. In $\triangle ABC$, $AB=5.5\text{cm}, BC=6\text{cm}, CA=4.5\text{cm}$. construct $\triangle ABC$ and $\triangle LMN$ such that $\frac{BC}{MN} = \frac{5}{4}$

2) From the information given in the figure.

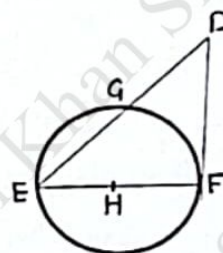
prove that $PM=PN=\sqrt{3} \times a$.



3) In figure seg EF is a diameter and seg DF is a tangent segment.

The radius of the circle is r .

prove that $DE \times GE = 4r^2$.



Q.5) Solve the following. [Any one]

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

2) In the figure G, D, E, F are concyclic points of a circle with centre C.

$\angle ECF = 70^\circ$, $m(\text{arc } DGF) = 200^\circ$. Find $m(\text{arc } DE)$ and $m(\text{arc } DEF)$.

