CODE : A-G712092-EI	**I Semester Exam - 2023-24**	4 x 2340
Std. : IX	Sub. : MATHS - II (Geometry)	Marks : 40
Date : 25 / 10 / 2023	Roll No. _____	Time : 2 hrs.

Q.1 A) ***Choose the correct alternative answer and fill in the blanks.*** **4**

1) *If all pairs of adjacent sides of a quadrilateral are congruent, then it is called as* _____

A) Rectangle *B) Parallelogram* *C) Trapezium* *D) Rhombus*

2) *In ΔABC, $\angle A = 76°$, $\angle B = 48°$, $\angle C = ?$*

A) 66° *B) 56°* *C) 124°* *D) 28°*

3) *Find d(A , B) if the co-ordinates of A and B are – 2 and 5 respectively.*

A) – 2 *B) 5* *C) 7* *D) 3*

4) *In a right angled triangle 30° – 60° – 90° if the measure of hypotenuse is 15 cm the measure of side opposite to 30° is* _____

A) 12 *B) 7.5* *C) 6* *D) $6\sqrt{3}$*

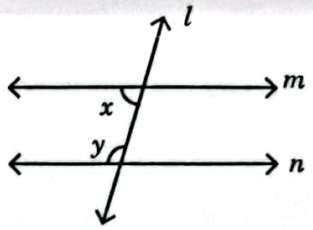
Q.1 B) ***Solve the following sub-questions :*** **4**

1) *Write the following statements in 'if - then' form :*
"The opposite angles of a parallelogram are congruent."

2) *If $\Delta XYZ \sim \Delta LMN$, write the corresponding angles of the two triangles and also write the ratios of the corresponding sides.*

3) *Draw Seg AB of length 7 cm and bisect it.*

4) *In the figure,*
$y = 108°$ and $x = 71°$
Are the lines m and n parallel ? Justify ?



Q.2 A) ***Complete any TWO of the following activities.*** **4**

1) *Point P is the midpoint of Seg CD. If CD = 8 cm, find l(CP).*

Sol^n :- $l(CD) =$ ☐ ..... *(Given)*

$l(CD) = 2 \times$ ☐ ..... *(p is the midpoint of Seg CD)*

$\therefore\ 8 = 2 \times l(CP)$

$\therefore$ ☐ $= l(CP)$

$\therefore\ l(CP) =$ ☐

2) *From the information shown in the figure, in ΔPTQ and ΔSTR*

Seg PT $\cong$ Seg ST

$\angle PTQ \cong \angle STR$ ....*(Vertically opposite angles)*

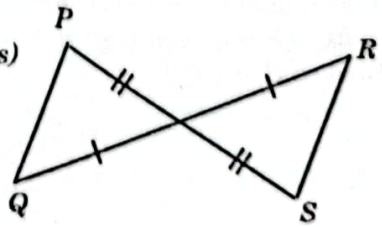
Seg TQ $\cong$ Seg TR

$\therefore\ \Delta PTQ \cong \Delta STR$ ..... ☐ *test*

$\therefore\ \angle TPQ \cong$ ☐ ..... *(c.a.c.t)*

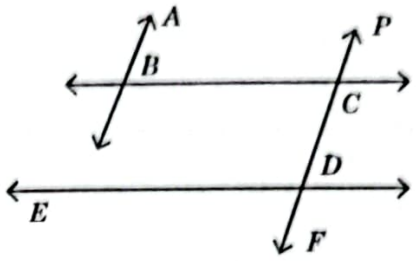
and ☐ $\cong \angle TRS$

Seg PQ $\cong$ ☐ .....*(c.s.c.t)*



P.T.O.

3) *In the figure, if Line AB || Line CF and Line BC || Line ED, then prove that ∠ABC = ∠FDE.*



PROOF : Line AB || Line CF ..... (Given)

and Line BC is the transversal

∴ ∠ABC ≅ ☐ ..... ☐ ...(1)

Line BC || Line DE

and Line PF is the transversal,

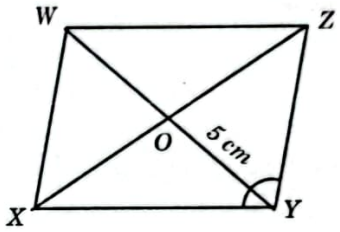
∴ ☐ ≅ ∠FDE ..... ☐ ...(2)

∴ ∠ABC ≅ ∠FDE ...(from (1) and (2))

∴ ∠ABC ≅ ∠FDE

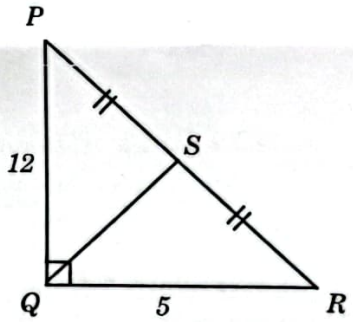
Q.2 B) Solve any FOUR sub-questions from the following. **8**

1) *Diagonals of a parallelogram WXYZ intersects each other at point O. If ∠XYZ = 135°, then what is the measure of ∠XWZ and if l(OY) = 5 cm, then l(WY) = ?*

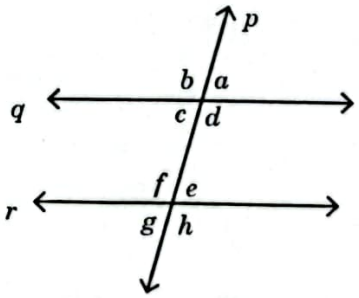


2) *Draw ∠ABC = 120° and bisect it.*

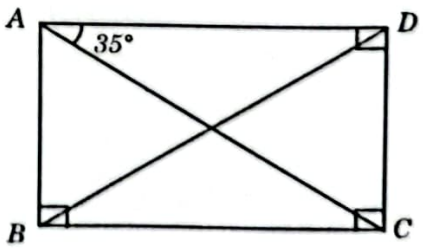
3) *In ΔPQR, ∠Q = 90°, PQ = 12, QR = 5 and QS is a median find l(QS).*



4) *In the figure, if Line q || Line r, Line p is their transversal f if a = 80°, find the values of f and g.*

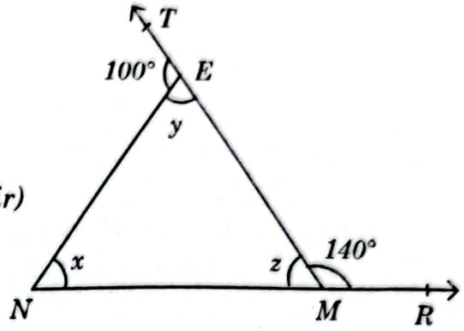


5) *The diagonals of a rectangle ABCD intersect at point O. If AC = 8 cm, then find BO and if ∠CAD = 35° then find ∠ACB.*



Q.3 A) Complete any ONE of the following activity. **3**

1) *In the figure, measure of some angles are given using the measures. Find the values of x, y, z.*



Soln :- $\angle TEN + \angle NEM = 180°$ ..... ☐

$\therefore\ 100° + y = 180°$

$\therefore\ y = 180° -$ ☐

$\therefore\ y = 80°$

$\angle EMR +$ ☐ $= 180°$ ..... *(Angles in a linear pair)*

$\therefore\ 140° + z = 180°$

$\therefore\ z = 180° - 140°$

$\therefore\ z =$ ☐

In ΔNEM,

$x + y +$ ☐ $= 180°$ ..... (The sum of the measures of all angles of a triangle is 180°)

$\therefore\ x + 80° + 40° = 180°$

$\therefore\ x +$ ☐ $= 180°$

$\therefore\ x = 180° - 120°$

$\therefore\ x = 60°$

2) *If the ratio of measures of two adjacent angles of a parallelogram is 1 : 2, find the measures of all angles of the parallelogram.*

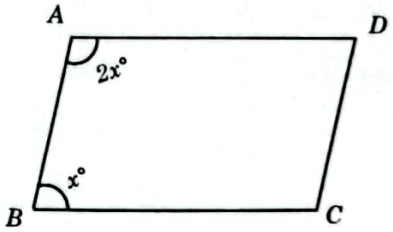
Let ☐ *ABCD be required parallelogram*

Soln : The ratio of measures of two adjacent angles of a parallelogram is 1 : 2

Let the common multiple of the ratio be x.

Then $\angle B = x°$, $\angle A =$ ☐

Adjacent angles of a parallelogram are supplementary



$\therefore\ \angle A + \angle B =$ ☐

$\therefore\ 2x + x = 180$

$\therefore$ ☐ $= 180$

$\therefore\ x = \frac{180}{3}$

$\therefore\ x =$ ☐

$\angle B = \angle D = x°$ ....*(Opposite angles of a parallelogram)*

$\therefore\ \angle B =$ ☐ $= 60°$

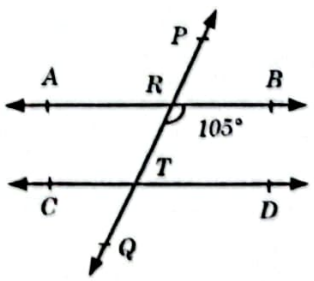
$\angle C = \angle A = 2x°$ .....*(Opposite angles of a parallelogram)*

$\angle C = \angle A = 2(60°)$

$\therefore\ \angle C = \angle A =$ ☐

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

1) *In the figure, Line AB || Line CD and Line PQ is the transversal. Measure of one of the angle is given. Hence, find the measures of the following angles.*

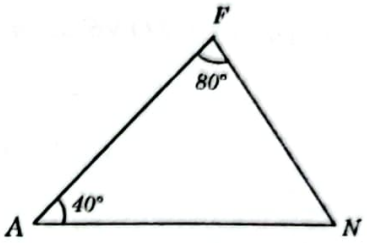


i) $\angle ART$

ii) $\angle CTQ$

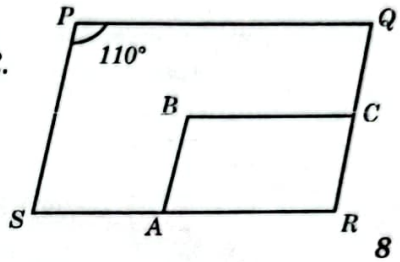
iii) $\angle DTQ$

2) *In ΔFAN, $\angle F = 80°$, $\angle A = 40°$ find $\angle N$ and find out the greatest and the smallest side of the triangle.*



3) *Construct ΔXYZ, in which $YZ = 6$ cm. $XY + XZ = 9$cm, $\angle XYZ = 50°$.*

4) *In the figure, $\square PQRS$ and $\square ABCR$ are two parallelograms, If $\angle P = 110°$ then find the measures of all angles of $\square ABCR$.*



Q.4 Solve any TWO of the following sub-questions. **8**

1) *Construct ΔPQR in which $\angle Q = 70°$, $\angle R = 80°$ and $PQ + QR + PQ = 9.5$ cm.*

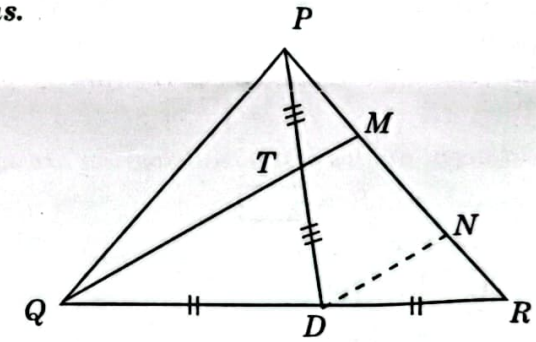
2) *Prove that "If two sides of a triangle are congruent, then the angles opposite to them are congruent.*

3) *The perimeter of a parallelogram is 150 cm. One of its sides is greater than the other side by 25 cm. Find the lengths of all sides.*

Q.5 Solve any ONE of the following questions. **3**

1) *In the figure, Seg PD is a median of ΔPQR.*
Point T is the midpoint of Seg PD.
QT produced intersects PR at M.

Show that $\frac{PM}{PR} = \frac{1}{3}$



2) *Construct ΔXYZ such that $YZ = 7.4$ cm, $\angle XYZ = 45°$ and $XY - YZ = 2.7$ cm.*
