

PVG's  
**Muktangan English School & Jr. College, Pune - 9**  
**Terminal Examination (2024-25)**  
**Standard - IX**

**Subject - MATHEMATICS (Part II)**  
**Date - 19-10-2024**

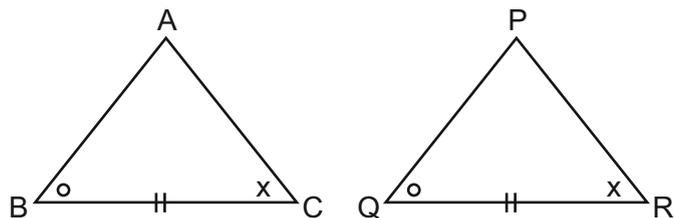
**Marks - 40**  
**Time - 2.00 p.m. to 4.00 p.m.**

**Q.1 (A) Choose the correct alternative answer for the questions given below and (4) write the correct alternative alphabet. (e.g. 1-(A))**

- 1) Which figure is formed by three non-collinear points ?  
(A) segment      (B) line      (C) angle      (D) triangle
- 2) A transversal intersects two parallel lines. If the measure of one of the angles is  $40^\circ$  then the measure of its corresponding angle is .....  
(A)  $40^\circ$       (B)  $50^\circ$       (C)  $140^\circ$       (D)  $180^\circ$
- 3) The length of hypotenuse of a right angled triangle is 15. What is the length of median of its hypotenuse ?  
(A) 7.5      (B) 15      (C)  $\frac{15}{\sqrt{2}}$       (D)  $7.5\sqrt{3}$
- 4) If two sides of a triangle are 5 cm and 1.5 cm, the length of its third side cannot be .....  
(A) 4.1 cm      (B) 3.8 cm      (C) 3.7 cm      (D) 3.4 cm

**Q.1 (B) Attempt the following subquestions. (4)**

- 1) Observe the adjoining figure and state the test by which the given pair of triangles are congruent.



- 2) Point M is the midpoint of seg PQ. If  $PM = 4$  cm then find the length of seg PQ.
- 3) Write the following statement in conditional form.  
A number having only two divisors is called a prime number
- 4) In  $\triangle XYZ$ ,  $\angle X = 65^\circ$ ,  $\angle Y = 35^\circ$  then find  $\angle Z$ .

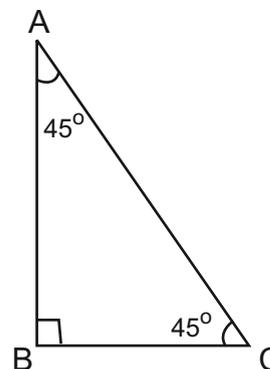
**Q.2 (A) Attempt any two of the following subquestions.**

**(4)**

- 1) In the adjoining figure,  $\triangle ABC$  is a right angled triangle.  $l(AC) = 8\sqrt{2}$  cm. Find  $l(AB)$  by completing the activity below.

Solution:

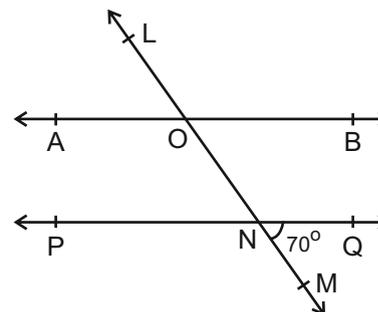
In  $\triangle ABC$ ,  $\angle B = 90^\circ$   
 $\angle A = \angle C = \boxed{\phantom{00}}$   
 $\therefore AB = \frac{1}{\sqrt{2}} \times \boxed{\phantom{00}}$  ..... ( $45^\circ$ -  $45^\circ$ -  $90^\circ$  theorem)  
 $= \frac{\boxed{\phantom{00}}}{\sqrt{2}}$   
 $= \boxed{\phantom{00}}$  cm



- 2) In the adjoining figure line  $AB \parallel$  line  $PQ$ . Line  $LM$  is a transversal.  $m\angle MNQ = 70^\circ$ , then find  $m\angle AON$  by completing the activity below.

Solution:

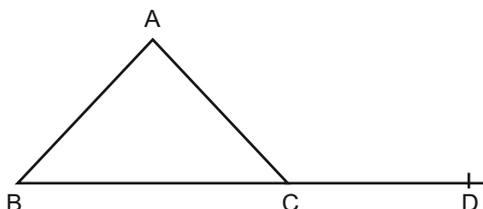
$m\angle MNQ = 70^\circ$   
 $\therefore m\angle NOB = \boxed{\phantom{00}}$  ..... (Corresponding angles)  
 $m\angle AON + m\angle NOB = \dots\dots\dots$  (Angles in linear pair)  
 $\therefore m\angle AON + 70^\circ = \boxed{\phantom{00}}$   
 $\therefore m\angle AON = \boxed{\phantom{00}}$  ..... (On solving)



- 3) In the adjoining figure,  $\angle B = 40^\circ$ ,  $\angle A = 65^\circ$ . Find the measure of  $m\angle ACD$  by completing the activity below.

Solution:

$\boxed{\phantom{00}}$  is an exterior angle of  $\triangle ABC$   
 $\therefore \angle ACD = \angle ABC + \boxed{\phantom{00}}$  ..... (Theorem of  $\boxed{\phantom{00}}$ )  
 $= 40^\circ + 65^\circ$   
 $= \boxed{\phantom{00}}$

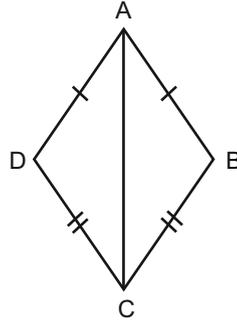


**Q.2 (B) Attempt any four of the following subquestions.**

**(8)**

- 1) Draw seg  $CD$  of length 6.8 cm and construct perpendicular bisector of seg  $CD$ .
- 2) Find  $d(A,B)$  if co-ordinates of points  $A$  and  $B$  are  $-1$  and  $-9$  respectively.

- 3) In the adjacent figure, parts shown by identical marks are congruent. Prove that  $\triangle ADC \cong \triangle ABC$



- 4) In  $\triangle PQR$ ,  $PQ = 14$  cm,  $QR = 10$  cm,  $PR = 12$  cm. Find the greatest and smallest angles of the triangle. Justify your answer.
- 5) Draw a labelled figure showing information in the following statement and hence write the antecedent and the consequent for the same.  
If angles in a linear pair are congruent then each of them is a right angle.

**Q.3 (A) Attempt any one of the following subquestions. (3)**

- 1) Some information is shown in  $\triangle ABC$  and  $\triangle PQR$ . Observe it. Complete the following activity to find the lengths of side AC and side PQ.

Solution :  $\triangle ABC$  and  $\triangle PQR$  are equiangular triangles.

$\therefore$  their sides are proportional

$$\therefore \frac{AB}{PQ} = \frac{QR}{PR} = \frac{AC}{PR}$$

$$\therefore \frac{3}{PQ} = \frac{4}{6} = \frac{AC}{PR}$$

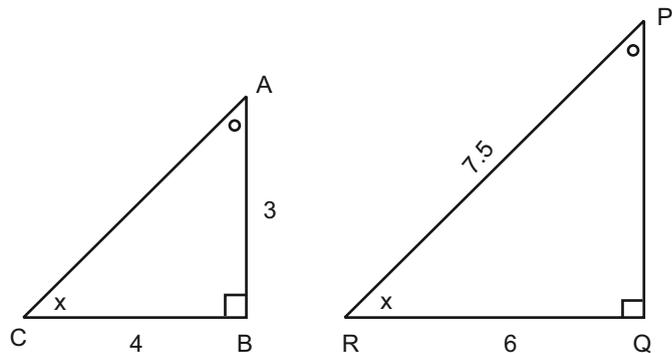
$$\therefore 4 \times \square = 18$$

$$\therefore \text{On solving, } PQ = \square$$

Similarly,

$$6 \times AC = \square \times 4$$

$$\therefore \text{On solving, } AC = \square$$



- 2) Complete the following activity to prove that an equilateral triangle is equiangular.

Solution : Given :  $\triangle DEF$  is an equilateral triangle.

To prove :  $\triangle DEF$  is an equiangular triangle.

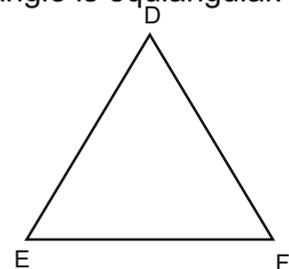
Proof : In  $\triangle DEF$ ,

Side DE  $\cong$  Side DF ..... Given

$$\therefore \angle DEF \cong \square \text{ ..... (I) (Reason } \square \text{ )}$$

Side DE  $\cong$  Side EF ..... Given

$$\therefore \angle DFE \cong \square \text{ ..... (II) (Reason } \square \text{ )}$$



$\therefore \square \cong \angle DFE \cong \square$  ..... From I and II

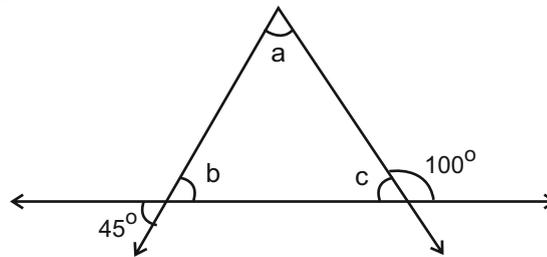
$\therefore \triangle DEF$  is an equiangular triangle.

**Q.3 (B) Attempt any two of the following subquestions. (6)**

- 1) Prove : If two angles of a triangle are congruent then the sides opposite to them are congruent.
- 2) Construct  $\triangle XYZ$ , such that  $YZ = 7.4$  cm,  $\angle XYZ = 45^\circ$  and  $XY - XZ = 2.7$  cm.
- 3) Construct  $\triangle ABC$ , such that  $BC = 6$  cm,  $\angle B = 70^\circ$  and  $AB + AC = 9$  cm.
- 4) Prove : The sum of measures of all angles of a triangle is  $180^\circ$ .

**Q.4 Attempt any two of the following subquestions. (8)**

- 1) Using the information in the figure alongside, find the measures of  $\angle a$ ,  $\angle b$  and  $\angle c$ .



- 2) Construct  $\triangle LMN$ , in which,  $\angle M = 60^\circ$ ,  $\angle N = 80^\circ$  and  $LM + MN + NL = 11$  cm.
- 3) Sketch proper figure and write which of the point is between the other two using following information :  
 $l(ST) = 3.7$ ,  $l(RS) = 2.5$ , then  $l(RT) = ?$

**Q.5 Attempt any one of the following subquestions. (3)**

- 1) Write the answers to the following questions with reference to the figure given below :



- a) Write the name of the opposite ray of ray BC.
- b) Write the intersection set of ray EF and ray DE.
- c) Write the intersection set of ray CD and ray CB.

- 2) In the figure alongside, point G is the point of concurrence of the medians of  $\triangle XYZ$ . If  $GW = 2.5$ , find the lengths of  $XG$  and  $XW$ .

