



# SUCCESS KEY TEST SERIES

X (English)

(Worksheet -1 Math-2 (Ch-1,2))

Mathematics Part - II-

DATE:

TIME: 1 Hour

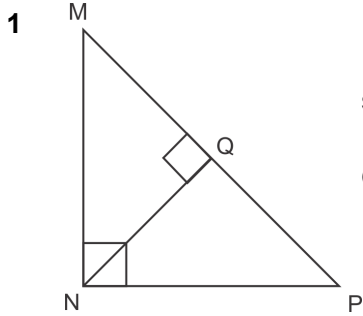
MARKS: 20

SEAT NO:

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2

**Q.1 A Answer the following.**



In  $\triangle MNP$ ,  $\angle MNP = 90^\circ$ ,

seg  $NQ \perp$  seg  $MP$ ,  $MQ = 9$ ,

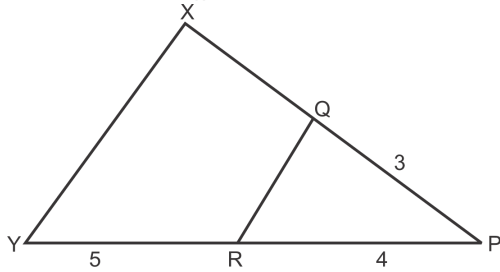
$QP = 4$ , find  $NQ$ .

2  $\triangle ABC \sim \triangle PQR$ .  $A(\triangle ABC) : A(\triangle PQR) = 16 : 25$ . If  $BC = 2$  cm, find  $QR$ .

**B Multiple Choice Questions**

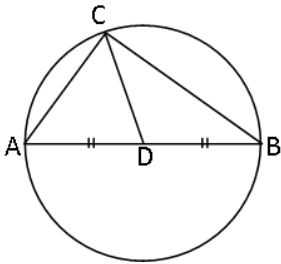
2

1 If in  $\triangle PXY$ ,  $XY \parallel QR$   $l(PQ) = 3$  units  $l(PR) = 4$  units,  $l(YR) = 5$  units. Find  $l(PX)$ .



- a. 5.75 units      b. 6.25 units      c. 7 units      d. 6.75 units

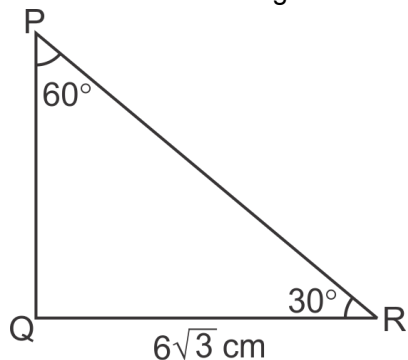
2 Find  $BC$ . if diameter of circle is 10 cm and  $AC = 6$  cm



- a. 7 cm      b. 10 cm      c. 9 cm      d. 8 cm

**Q.2 A Attempt the following (Any One)**

1 From the information given in the figure, find PR and PQ.



In  $\triangle PQR$ ,  $\angle Q = 90^\circ$ ,  $\angle P = 60^\circ$ , and  $\angle R = 30^\circ$ .

By the theorem of  $30^\circ - 60^\circ - 90^\circ$  triangle,

$QR = \underline{\hspace{2cm}} PR$  ... (Side opposite to  $60^\circ$ )

$\therefore 6\sqrt{3} = \frac{\sqrt{3}}{2} PR$

$\therefore PR = 6\sqrt{3} \times \frac{2}{\sqrt{3}}$

$\therefore PR = \underline{\hspace{2cm}}$  ... (1)

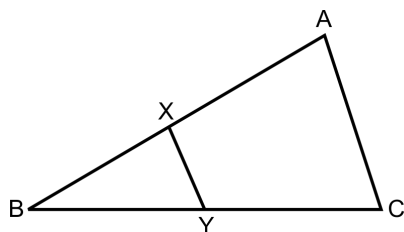
$PQ = \frac{1}{2} PR$  ... ( $\underline{\hspace{2cm}}$ )

$\therefore PQ = \frac{1}{2} \times 12 \text{ cm}$  ... (From (1))

$\therefore PQ = \underline{\hspace{2cm}}$

**$PR = \underline{\hspace{2cm}} ; PQ = \underline{\hspace{2cm}}$**

2



In figure  $XY \parallel$  seg  $AC$ . If  $2AX = 3BX$  and  $XY = 9$ . Complete the activity to find the value of  $AC$ .

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

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

$\frac{AB}{BX} = \frac{\square}{\square}$  ... (I)

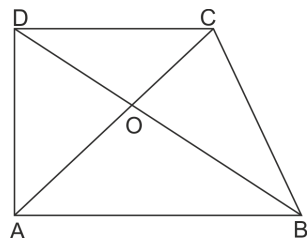
$\triangle BCA \sim \triangle BYX$  ...  $\square$  test of similarity.

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

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

**B Attempt the following.(Any Two)**

1



In the given figure, ABCD is a trapezium in which  $AB \parallel DC$ . If  $2AB = 3DC$ , find the ratio of the areas of  $\triangle AOB$  and  $\triangle COD$ .

$$\frac{AB}{DC} = \underline{\hspace{2cm}}$$

To find : area  $\triangle AOB$  : area of  $\triangle COD$

Proof : In  $\triangle AOB$  and  $\triangle COD$

$$\angle AOB = \angle COD$$

$$\angle OAB = \underline{\hspace{2cm}}$$

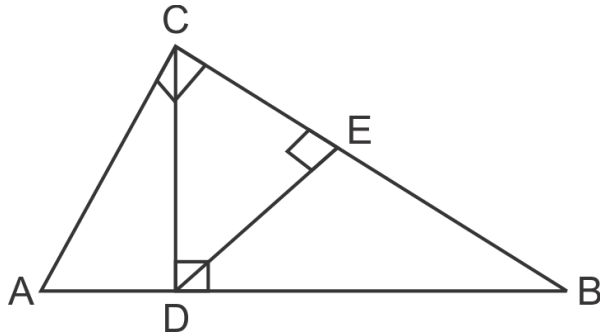
(alternate angles)

$$\therefore \triangle AOB \sim \triangle COD$$

$$\therefore \frac{\text{area } \triangle AOB}{\text{area } \triangle COD} = \underline{\hspace{2cm}} = \frac{3^2}{2^2} = \underline{\hspace{2cm}}$$

**Ratio in the areas of  $\triangle AOB$  and  $\triangle COD$   $\underline{\hspace{2cm}}$**

- 2 In  $\triangle ABC$ ,  $\angle ACB = 90^\circ$ , seg  $CD \perp$  seg  $AB$ .  
 seg  $DE \perp$  seg  $CB$ .  
 Show that :  $CD^2 \times AC = AD \times AB \times DE$



In  $\triangle ABC$ ,

$$\angle ACB = 90^\circ$$

seg  $CD \perp$  seg  $AB$  ... (Given)

$$\therefore CD^2 = \underline{\hspace{2cm}} \quad \dots (1) \text{ (Geometric mean property)}$$

In  $\triangle DEB$  and  $\triangle ACB$

$$\angle DEB \cong \angle ACB \quad \dots \text{ (Each angle is } 90^\circ)$$

$$\angle B \cong \angle B \quad \dots \underline{\hspace{2cm}}$$

$$\therefore \triangle DEB \sim \triangle ACB \quad \dots \text{ (A-A test of similarity)}$$

$$\therefore \frac{DE}{AC} = \underline{\hspace{2cm}} \quad \dots \text{ (c.s.s.t)}$$

$$\therefore DE \times AB = \underline{\hspace{2cm}}$$

$$\therefore AD \times DE \times AB = \underline{\hspace{2cm}} \quad \text{(Multiplying both sides by AD)}$$

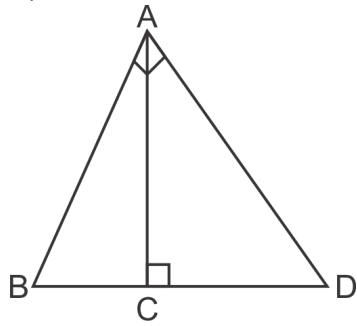
$$\underline{\hspace{2cm}} = CD^2 \times AC \quad \text{[from (1)]}$$

$$\text{i.e. } CD^2 \times AC = AD \times AB \times DE$$

- 3  $\triangle ABD$  is a triangle in which  $\angle A = 90^\circ$  and seg  $AC \perp$  seg  $BD$   
 Show that  
 i)  $AB^2 = BC \cdot BD$

ii)  $AD^2 = BD \cdot CD$

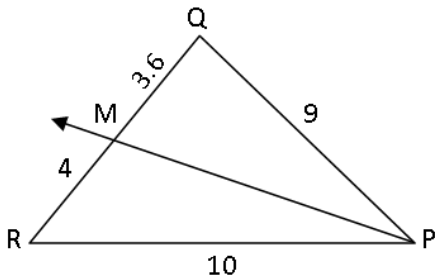
iii)  $AC^2 = BC \cdot CD$



- i) In  $\triangle ABD$ ,  
 $\angle BAD = 90^\circ$  ... (Given)  
 seg  $AC \perp$  hypotenuse  $BD$   
 $\therefore$  In  $\triangle BCA \sim \triangle ACD \sim \triangle BAD$  ... (Similarity in Right-angled triangle)
- ii)  $\triangle BCA \sim \triangle BAD$  ... (From (i))  
 $\therefore \frac{BC}{BA} = \frac{BC}{BD}$  ... (c.s.s.t)  
 $\therefore \frac{BC}{BA} = \frac{BC}{BD}$
- iii)  $\triangle ACD \sim \triangle BAD$  ... (From (1))  
 $\therefore \frac{CD}{AD} = \frac{CD}{BD}$  ... (c.s.s.t)  
 $\therefore \frac{CD}{AD} = \frac{CD}{BD}$
- iv)  $\triangle BCA \sim \triangle ACD$  ... (From (1))  
 $\therefore \frac{BC}{BA} = \frac{AC}{DC}$  ... (c.s.s.t)  
 $\therefore AC^2 = BC \cdot CD$

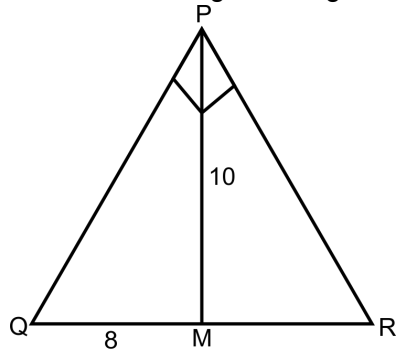
**Q.3 Answer the following (Any Two)**

1

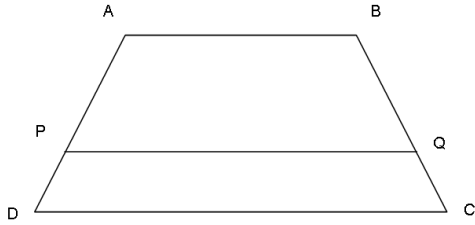


Given below is a triangle and lengths of its line segments. Identify in the figure if, ray  $PM$  is the bisector of  $\angle QPR$ .

2  $\angle QPR = 90^\circ$ , seg  $PM \perp$  seg  $QR$  and  $Q-M-R$ ,  $PM = 10$ ,  $QM = 8$ , find  $QR$ .



- 3 In trapezium ABCD, side  $AB \parallel$  side  $PQ \parallel$  side  $DC$ ,  $AP = 15$ ,  $PD = 12$ ,  $QC = 14$ , find  $BQ$ .



**Q.4 Answer the following(Any One)**

4

- 1 Prove that :  
"If a line parallel to a side of a triangle intersects the remaining sides in two distinct points, then the line divides the sides in the same proportion."

- 2 In the figure,  $\square PQRV$  is a trapezium in which  $\text{seg } PQ \parallel \text{seg } VR$   $SR = 4$  and  $PQ = 6$   
Find :  $VR$

