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**MM 30**

**Triangles**

**Time 1h**

**Section A 1 mark each**

- Q1. If in two triangles ABC and PQR,  $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$ , then  
(A)  $\Delta PQR \sim \Delta CAB$  (B)  $\Delta PQR \sim \Delta ABC$  (C)  $\Delta CBA \sim \Delta PQR$  (D)  $\Delta BCA \sim \Delta PQR$
- Q2. In  $\Delta ABC$ ,  $DE \parallel BC$  intersecting AB at D and AC at E,  $AD = 1\text{cm}$ ,  $DB = 3\text{cm}$ ,  $AE = 1.5\text{cm}$ ,  $AC = ?$   
(A) 6 cm (B) 10 cm (C) 8 cm (D) None of these
- Q3. In  $\Delta ABC$ , D is a point on AB and E is a point on AC, DE is joined.  $AD = 2$ ,  $DB = 3$ ,  $AE = 3\text{ cm}$ ,  $EC = 4.5$ . Is  $DE \parallel BC$ ?
- Q4. The lengths of the diagonals of a rhombus are 16 cm and 12 cm. Then, the length of the side of the rhombus is  
(A) 9 cm (B) 10 cm (C) 8 cm (D) 20 cm
- Q5. In triangles ABC and DEF,  $\angle B = \angle E$ ,  $\angle F = \angle C$  and  $AB = 3\text{ DE}$ . Then, the two triangles are  
(A) congruent but not similar (B) similar but not congruent  
(C) neither congruent nor similar (D) congruent as well as similar

**Section B 2 marks each**

- Q6. D is a point on side QR of  $\Delta PQR$  such that  $PD \perp QR$ . Will it be correct to say that  $\Delta PQD \sim \Delta PRD$ ? Why?
- Q7. In the  $\Delta ABC$ ,  $\angle ACB = 90^\circ$  and  $CD \perp AB$ , D lies on AB. Prove that  $CD^2 = BD \times AD$
- Q8. In a triangle PQR, N is a point on PR such that  $QN \perp PR$ . If  $PN \cdot NR = QN^2$ , prove that  $\angle PQR = 90^\circ$

**Section C 3 marks each**

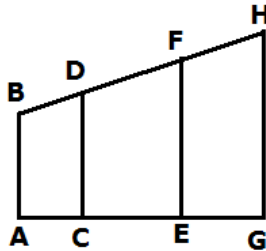
- Q9. O is any point inside a rectangle ABCD. Prove that  $OB^2 + OD^2 = OA^2 + OC^2$ .
- Q10. In  $\Delta PQR$ ,  $PD \perp QR$  such that D lies on QR. If  $PQ = a$ ,  $PR = b$ ,  $QD = c$  and  $DR = d$ , prove that  $(a + b)(a - b) = (c + d)(c - d)$ .

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**Section D 4 marks each**

- Q11. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides. Apply the above theorem on the following: ABC is a triangle and PQ is a straight line meeting AB in P and AC in Q. If  $AP = 1$  cm,  $PB = 4$  cm,  $AQ = 1.5$  cm,  $QC = 6$  cm, Prove that the area of  $\Delta APQ$  is one-sixteenth of the area of  $\Delta ABC$ .
- Q12. In Fig. 6.21, PA, QB, RC and SD are all perpendiculars to a line  $l$ ,  $AB = 6$  cm,  $BC = 9$  cm,  $CD = 12$  cm and  $SP = 36$  cm. Find PQ, QR and RS.



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