Gurukul Coaching Classes

Weekly Test

Std: SSC	**Subject: Geometry**	**Time: 2Hrs**
Date : 12/May/2019	**ch-1**	**Max Marks: 40**

Q.1 Solve the following questions (9th std) **4**

1) Write the converse of the following statements: If the sum of measures of angles in a figure is 180°, then the figure is a triangle.

2) Write the following statements in conditional form: A number having only two divisors is called a prime number.

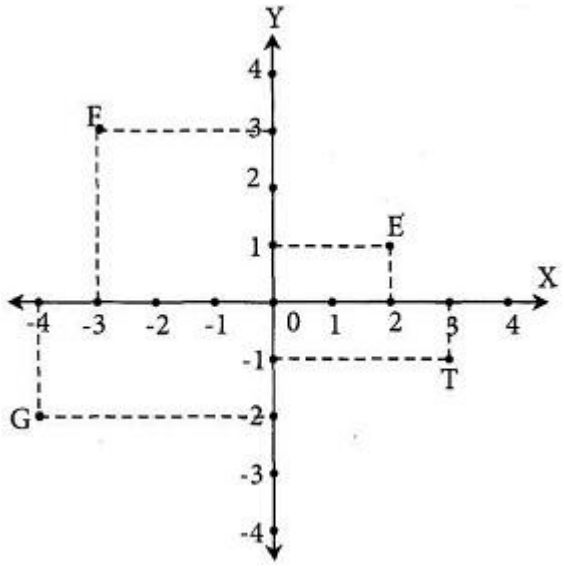
3) Write the converse of the following statement: If the sum of measures of two angles is 90° then they are complement of each other.

4) In which quadrant are the following points ?
(i) whose x co-ordinate is positive, and the y co-ordinate is negative.
(ii) whose x co-ordinate is negative and y co-ordinate is positive.

Q.2 Solve the following questions (9th std) (ANY TWO) **4**

1) Find the value of $2\tan 45° + \cos 30° - \sin 60°$

2) Write the co-ordinates of points E, F, G, T in the figure below.



3) Find the values of: $\cos 60° \times \cos 30° + \sin 60° \times \sin 30°$

Q.3 Choose the correct alternative: **5**

1) The areas of two similar triangles are in respectively 9 cm² and 16 cm². The ratio of their corresponding sides is
(a) 3 : 4 (b) 4 : 3 (c) 2 : 3 (d) 4 : 5

2) Two isosceles triangles have equal angles and their areas are in the ratio 16 : 25, The ratio of their corresponding heights is :
(a) 4 : 5 (b) 5 : 4 (c) 3 : 2 (d) 5 : 7

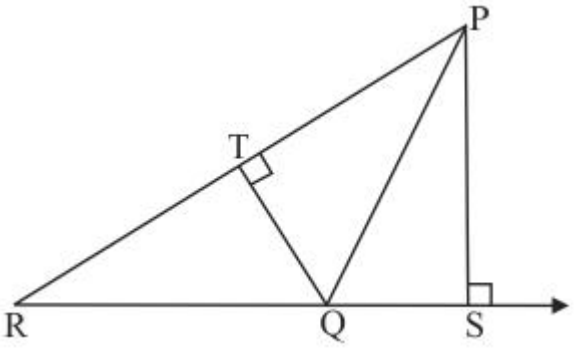
3) In ΔABC, a line XY parallel to BC cuts AB at X and AC at Y. If BY bisects $\angle XYC$, then :
(a) BC = CY (b) BC = BY (c) BC ≠ CY (d) BC ≠ BY

4) If ABC and DEF are similar triangles such that $\angle A = 47°$ and $\angle E = 83°$, then $\angle C$ =
(a) 50° (b) 60° (c) 70° (d) 80°

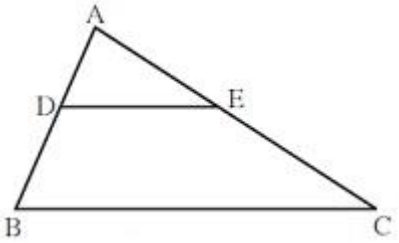
5) In a ΔABC, AD is the bisector of $\angle BAC$. If AB = 8 cm, BD = 6 cm and DC = 3 cm. Find AC
(a) 4 cm (b) 6 cm (c) 3 cm (d) 8 cm

Q.4 Solve the following questions (ANY TWO) **4**

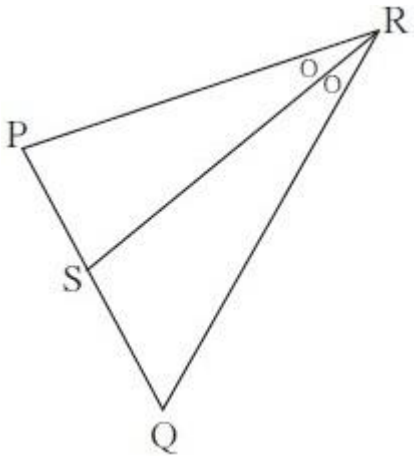
1) In the figure given below seg PS ⊥ seg RQ seg QT ⊥ seg PR. If RQ = 6, PS = 6 and PR = 12, then find QT.



2) In Δ ABC, DE || BC If DB = 5.4 cm, AD = 1.8 cm EC = 7.2 cm then find AE.

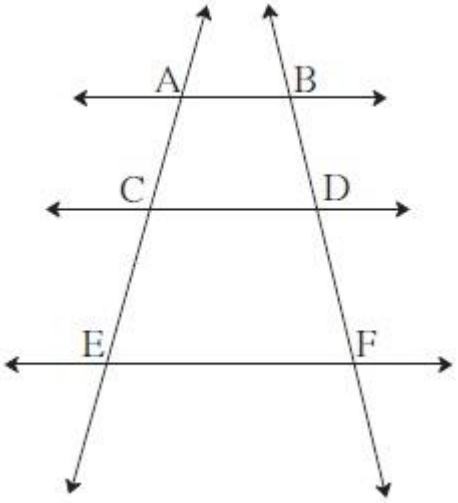


3) In Δ PQR, seg RS bisects ∠R. If PR = 15, RQ = 20 PS = 12 then find SQ.



Q.5 Complete the following Activities (ANY FOUR) **8**

1) In the figure below, AB || CD || EF If AC = 5.4, CE = 9, BD = 7.5 then find DF.

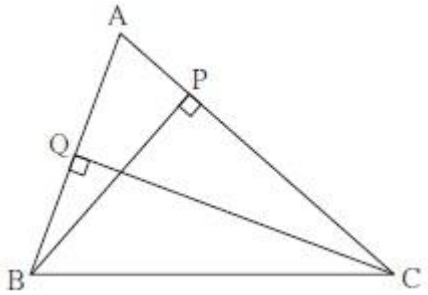


$AB \parallel CD \parallel EF$

$\frac{AC}{\square} = \frac{\square}{DF}$ . . . . . ( )

$\frac{5.4}{9} = \frac{\square}{DF}$ $\quad \therefore DF = \square$

2) In the given figure BP $\perp$ AC, CQ $\perp$ AB, A – P- C, A- Q- B , then prove that Δ APB and Δ AQC are similar.



In Δ APB and Δ AQC

$\angle APB = \square^\circ$ (I)

$\angle AQC = \square^\circ$ (II)

$\therefore \angle APB \cong \angle AQC$ ....from(I) and (II)

$\angle PAB \cong \angle QAC$ .... ($\square$)

$\therefore \Delta APB \sim \Delta AQC$ ..... AA test

3) Δ LMN ~ ΔPQR, 9 x A(ΔPQR) = 16 x A(ΔLMN). If QR = 20 then find MN.

9 x A (ΔPQR) = $\square$ x A(ΔLMN) .... (Given)

$\therefore \frac{9}{16} = \frac{A(\Delta LMN)}{A(\Delta\square)}$

i.e. $\frac{A(\Delta LMN)}{A(\Delta PQR)} = \frac{\square}{16}$ ..... (i)

In ΔLMN and ΔPQR, ...(Given)

$\frac{A(\Delta LMN)}{A(\Delta PQR)} = \frac{MN^2}{QR^2}$ ..... (Theorem on areas of similar triangles)

$\therefore \square = \frac{MN^2}{20^2}$

$\therefore \square = \frac{MN}{20}$ .... (Taking square roots)

$\therefore MN = \frac{3 \times \square}{4}$

$\therefore MN = \square$

$\therefore MN = \square$ units

4) Areas of two similar triangles are 225 sq.cm. 81 sq.cm. If a side of the smaller triangle is 12 cm, then find corresponding side of the bigger triangle.

Let Δ_1 & Δ_2 be two similar triangles with s_1 & s_2 be their corresponding sides.
$A(\Delta_1) =$ [ ], $A(\Delta_2) = 81$ cm^2, $s^2 = 12$ cm [Given]
$\Delta_1 \sim \Delta_2$ [Given]

$$\frac{A(\Delta_1)}{A(\Delta_2)} = \frac{\square}{s_2^2}$$

[Theorem on areas of similar triangles]

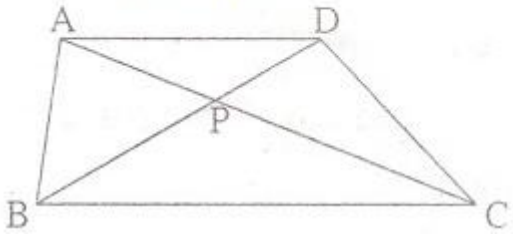
$$\therefore \frac{\square}{81} = \frac{s_1^2}{12^2}$$

$$\therefore \frac{\square \times 12 \times 12}{81} = S_1^2$$

$$\therefore S_1 = \frac{15 \times 12}{9}$$ [Taking square roots]

$\therefore S_1 =$ [ ]
Length of corresponding side of bigger triangle is [ ]

5) In □ ABCD, seg AD // seg BC. Diagonal AC and diagonal BD intersect each other in point P. Then show that $\frac{AP}{PD} = \frac{PC}{BP}$



seg AD ∥ seg [ ] [Given]
$\therefore \angle$[ ] $\cong \angle PCB$
.....1 [Alternate angles theorem]
In ΔAPD & ΔCPB
(i) $\angle PAD \cong \angle$[ ] [From 1]
(ii) $\angle APD \cong \angle CPB$
[ ]
$\therefore \Delta APD \sim \Delta CPB$ [AA test]

$$\therefore \frac{AP}{CP} = \frac{\square}{PB}$$

$$\therefore \frac{AP}{PD} = \frac{\square}{PB}$$ [Alternando]

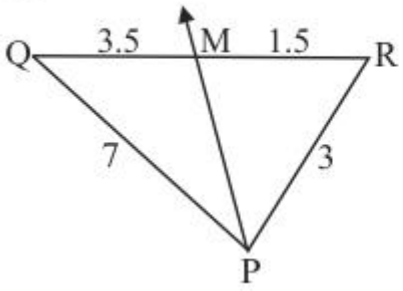
i.e. $\frac{AP}{PD} =$ [ ]

Q.6 Solve the following questions (ANY FIVE) **15**

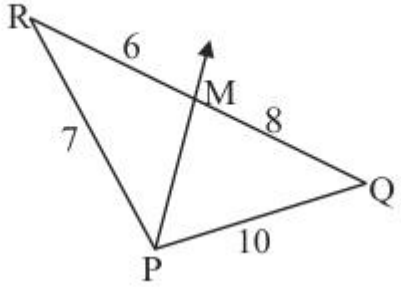
1) Prove that : The ratio of the intercepts made on a transversal by three parallel lines is equal to the ratio of the corresponding intercepts made on any other transversal by the same parallel lines.

2) Given below are some triangles and lengths of line segments. Identify in which figures, ray PM is the bisector of $\angle QPR$.

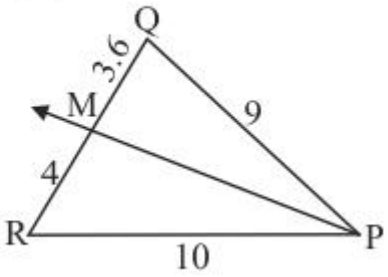
(1)



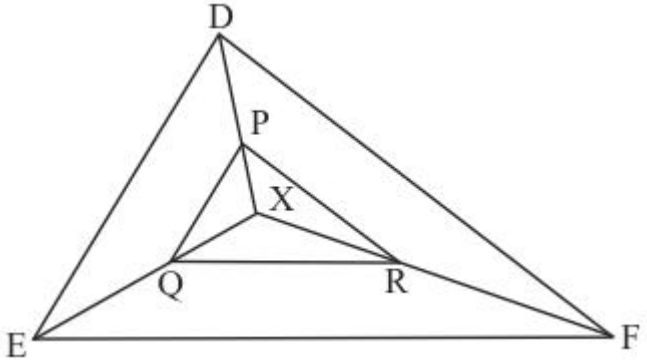
(2)



(3)



3) In the given figure, X is any point in the interior of triangle. Point X is joined to vertices of triangle. Seg PQ ‖seg DE, seg QR ‖seg EF. Fill in the blanks to prove that, seg PE ‖ seg DF.



Proof: In ΔXDE, PQ ‖ DE ..... ☐

$\therefore \frac{XP}{\square} = \frac{\square}{QE}$ ..... (I) (Basic proportionality theorem)

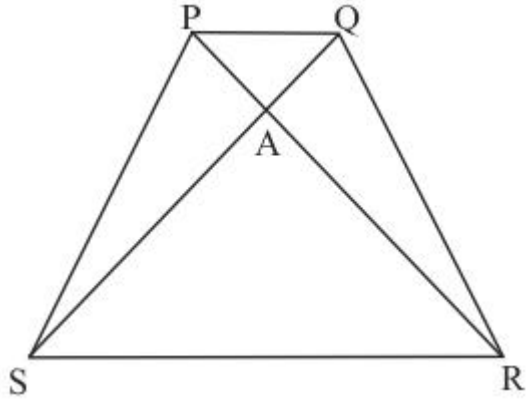
In ΔXEF, QR ‖ EF ..... ☐

$\therefore \frac{\square}{\square} = \frac{\square}{\square}$ .....(II) ☐

$\therefore \frac{\square}{\square} = \frac{\square}{\square}$ ..... from (I) and (II)

∴ seg PR ‖ seg DE ..... (Converse of basic proportionality theorem)

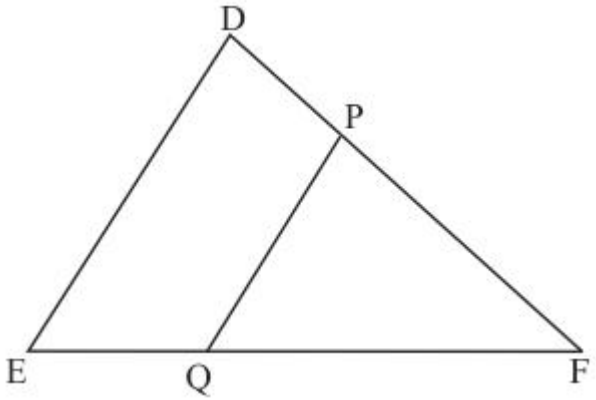
4) Given: In trapezium PQRS, side PQ ‖ side SR, AR = 5AP, AS = 5AQ then prove that, SR = 5PQ



5) ΔABC and ΔDEF are equilateral triangles. If A(ΔABC) : A(ΔDEF) = 1 : 2 and AB = 4, find DE.

6) In figure below, seg PQ ‖ seg DE, A(ΔPQF) = 20 units, PF = 2 DP, then find A(≅ DPQE) by

completing the following activity.



A(ΔPQF) = 20 units, PF = 2 DP, Let us assume DP = x. ∴ PF = 2x

DF = DP + [ ] = [ ] + [ ] = 3x

In Δ FDE ≅ Δ FPQ,

∠FDE ≅ ∠_____ corresponding angles

∠FED ≅ ∠_____ corresponding angles

∴ ΔFDE ~ ΔFPQ …… AA test

$$\therefore \frac{A(\Delta FDE)}{A(\Delta FPQ)} = \frac{\square}{\square} = \frac{(3x)^2}{(2x)^2} = \frac{9}{4}$$

$A(\Delta FDE) = \frac{9}{4}$ $A(\Delta FPQ) = \frac{9}{4}$ x [ ] = [ ]

A(□ DPQE) = A(ΔFDE) – A(Δ FPQ)

= [ ] - [ ]

= [ ]

-------- All the Best --------