SHIKSHA CLASSES

Subject : Geometry | **QUESTION PAPER** | **Total Marks** : 20

Class : X | **1. Similarity** | **Time** : 1 Hour.

Q. 1 : A) Choose the correct alternative of the following questions. **2**

1) If a line divides any two sides of a triangle in the same ratio, then the line is .....

a) Equal to third side b) parallel to third side

c) half of the third side d) None of these.

2) Areas of triangles with equal heights are proportional to .....

a) Their corresponding bases.

b) Their corresponding Angles.

c) Their corresponding heights.

d) None of the above.

Q. 1 : B) 1) If $\Delta ABC \sim \Delta PQR$ **and** $AB : PQ = 2 : 3$ **then fill in the blanks.** **1**

$$\frac{A(\Delta ABC)}{A(\Delta PQR)} = \frac{AB^2}{\square} = \frac{2^2}{3^2} = \frac{\square}{\square}$$

Q. 2 : A) Solve any One. **2**

1) $\Delta ABC \sim \Delta PQR$, $A(\Delta ABC) = 16$;

$A(\Delta PQR) = 25$ then find $\frac{AB}{PQ}$

$\rightarrow$ Given that

$\Delta ABC \sim \Delta PQR$

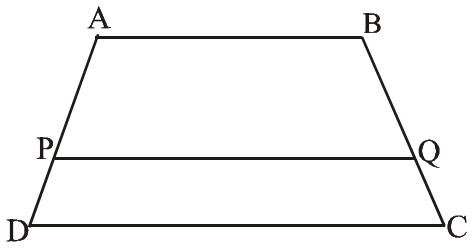
$\therefore$ By theorem of areas of simillar triangle

$$\frac{A(\Delta ABC)}{A(\Delta PQR)} = \frac{\square}{\square}$$

$$\frac{16}{25} = \frac{\square}{\square}$$

By taking square root of both sides,

$\therefore \frac{AB}{PQ} = \frac{\square}{\square}$



2) In trapezium ABCD, side AB || side PQ || side DC

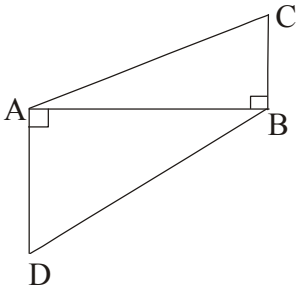
AP=15, PD =12, QC =14 find

BQ.

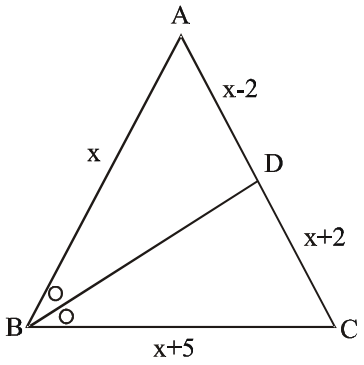
Q. 2 : B) Solve Any One. **2**

1) In ΔABC point D on side BC is such that DC = 6, BC = 15. Find $A(\Delta ABD) : A(\Delta ABC)$ and $A(\Delta ABD) : A(\Delta ADC)$.

2) In fig. $BC \perp AB, AD \perp AB, BC = 4, AD = 8$ then find $\frac{A(\Delta ABC)}{A(\Delta ADB)}$



Q. 3 : A) Solve Any one. **3**



1) In ΔABC, seg BD bisects

$\angle ABC$ If AB=x, BC = x + 5

AD = x - 2, DC = x+ 2 then

find the value of x

→ seg BD bisects $\angle ABC$

AB = $\square$, BC = $\square$

AD = $\square$, DC = $\square$

$\therefore$ By Angle bisector property

$\therefore \frac{\square}{\square} = \frac{\square}{\square}$

$$\frac{x}{x+5} = \frac{x-2}{x+2}$$

$$= x(x+2) = (x+5)(x-2)$$

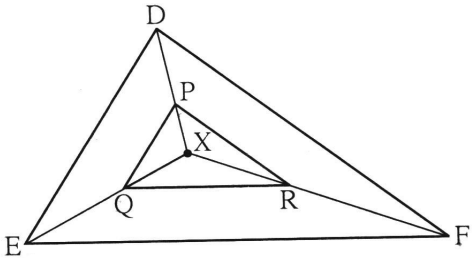
$x^2 + 3x - 10 = x^2 + 2x$

$\therefore\ x = \square$.

2) Write the properties of similar triangles with suitable examples.

Q. 3 : B) Solve Any one. **3**

1) In the 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 PR|| seg DF



In $\Delta XDE, PQ \| DE$ ..... Given

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

In $\Delta XEF, QR \| EF$ ..... Given

$\therefore\ \frac{\square}{\square} = \frac{\square}{\square}$ ..... (II) Basic Proportionality Theorem

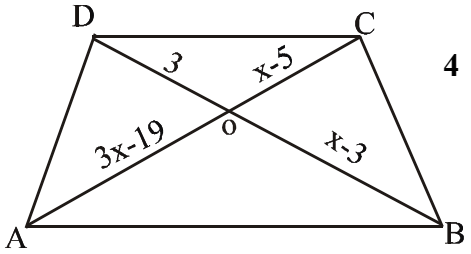
$\therefore\ \frac{\square}{\square} = \frac{\square}{\square}$ ..... from (I) and (II)

$\therefore$ seg PR || seg DF ..... (converse of basic proportionality theorem)

2) State and prove Angle bisector theorem.

Q. 4 : Attempt any one **4**

1) In given figure AB || DC then find the value of x

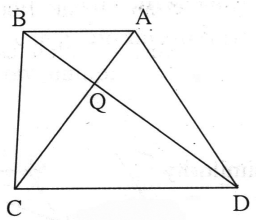


2) Prove that, If a line is parallel to a side of a triangle intersects the remaining sides in two distinct points then the line divides the sides in the same proportion.

Q. 5 : Solve (any one) **3**

1) In trapezium ABCD side AB || side CD diagonal AC and BD intersect each other at point P.

Then prove that $\frac{A(\Delta ABP)}{A(\Delta CPD)} = \frac{AB^2}{CD^2}$



2) Diagonal of quadrilateral ABCD intersect in point Q. If 2QA = QC, 2QB = QD, then prove that DC = 2AB.

***