



10TH SSC MCQ - CH - SIMILARITY

DATE: _____

TIME: 14 Min

MARKS: 14

SEAT NO: _____

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Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Q.1 Areas of two similar triangles are 36 cm^2 and 100 cm^2 . If the length of a side of the larger triangle is 20 cm, then the length of the corresponding side of the smaller triangle is ____ (1)

- A) 12 cm B) 13 cm
C) 14 cm D) 15 cm

Ans : A

Q.2 In $\triangle XYZ$, M is the a point on side YZ such that YM is 4 cm and MZ is 7cm. $A(\triangle XMZ) : A(\triangle XYZ) =$ _____ (1)

- A) 11 : 7 B) 7 : 11
C) 4 : 7 D) 7 : 4

Ans : B

Q.3 In $\triangle PQR$, seg RS is the bisector of $\angle PRQ$, PS = 8, SQ = 6, PR = 20 then QR = _____ (1)

- A) 10 unit B) 18 units
C) 5 units D) 15 units

Ans : D

Q.4 In $\triangle ABC$, line PQ \parallel side BC, AP = 3, BP = 6, AQ = 5 then the value of CQ is _____ (1)

- A) 10 B) 4
C) 6 D) 20

Ans : A

Q.5 $\triangle ABC \sim \triangle PQR$. If $A(\triangle ABC) = 25$, $A(\triangle PQR) = 16$, find AB : PQ (1)

- A) 25 : 16 B) 4 : 5
C) 16 : 25 D) 5 : 4

The ratio of area of two similar triangle is proportional to the ratio of square of their corresponding sides.

$$\frac{A(ABC)}{A(PQR)} = \frac{(AB)^2}{(PQ)^2}$$

$$\frac{25}{16} = \left(\frac{AB}{PQ}\right)^2$$

Taking square root

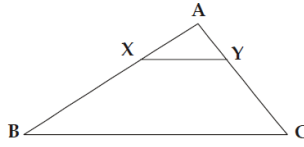
$$\frac{5}{4} = \frac{AB}{PQ}$$

AB : PQ = 5 : 4

Ans : D

Q.6

In figure, $\text{seg } XY \parallel \text{seg } BC$,
then
which of the following
statement is true?



(1)

- A) $\frac{AB}{AC} = \frac{AX}{AY}$ B) $\frac{AX}{XB} = \frac{AY}{AC}$
C) $\frac{AX}{YC} = \frac{AY}{XB}$ D) $\frac{AB}{YC} = \frac{AC}{XB}$

Ans : A

Q.7

In $\triangle ABC$ and $\triangle DEF$,
 $\angle B = \angle E$, $\angle F = \angle C$ and $AB = 3DE$ then which of the statements regarding
the two triangles is true?

(1)

- A) the triangles are not congruent and not similar. B) the triangles are similar but not congruent.
C) the triangles are congruent and similar. D) none of the statements above is true.

Ans : B

Q.8

If in $\triangle DEF$ and $\triangle PQR$,
 $\angle D \cong \angle Q$, $\angle R \cong \angle E$
then which of the following statement is false?

(1)

- A) $\frac{EF}{PR} = \frac{DF}{PQ}$ B) $\frac{DE}{PQ} = \frac{EF}{RP}$
C) $\frac{DE}{QR} = \frac{DF}{PQ}$ D) $\frac{EF}{PR} = \frac{DE}{QR}$

Ans : A

Q.9

In $\triangle ABC$ and $\triangle PQR$,
in a one to one correspondence $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$
then,

(1)

- A) $\triangle PQR \sim \triangle ABC$ B) $\triangle PQR \sim \triangle CAB$
C) $\triangle CBA \sim \triangle PQR$ D) $\triangle BCA \sim \triangle PQR$

Ans : B

Q.10

$\triangle ABC$ is such that $AB = 3$ cm, $BC = 2$ cm and $CA = 2.5$ cm. If $\triangle DEF \sim \triangle ABC$ and $EF = 4$ cm
then perimeters of $\triangle DEF$ is_____

(1)

- A) 7.5 cm B) 15 cm
C) 22.5 cm D) 30 cm

Given : $AB = 3\text{cm}$, $BC = 2\text{cm}$ and $CA = 2.5\text{cm}$ and $EF = 4\text{cm}$ Also, $\triangle ABC \sim \triangle DEF$

Thus,

$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$
$$\frac{3}{DE} = \frac{2}{4} = \frac{2.5}{DF}$$

Hence, $DE = 6\text{cm}$ and $DF = 5\text{cm}$

Perimeter of $\triangle DEF = DE + EF + DF$

Perimeter of $\triangle DEF = 6 + 4 + 5$

Perimeter of $\triangle DEF = 15\text{ cm}$

Ans : B

Q.11 Two isosceles triangles have equal angles and their areas are in the ratio 16 : 25. The ratio of their corresponding height is _____ (1)

A) 4 : 5

B) 5 : 4

C) 3 : 2

D) 5 : 7

The ratio of areas of two similar triangles is equal to the ratio of the squares of their corresponding heights.

So, ratio of areas of two similar triangles = Ratio of the squares of their corresponding heights = 16 : 25

So, ratio of the squares of their corresponding heights = $\sqrt{\frac{16}{25}} = \frac{4}{5}$

Hence the ratio of corresponding heights is 4 : 5

Ans : A

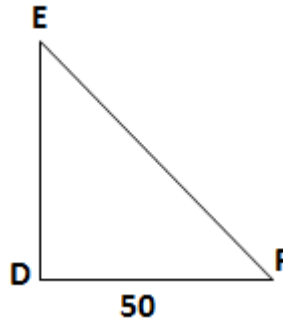
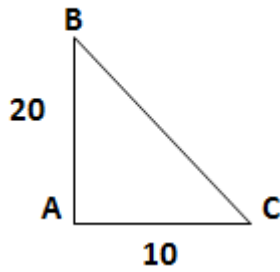
Q.12 A vertical stick 20 m long casts a shadow 10 m long on the ground. At the same time, a tower casts a shadow 50 m long on the ground. The height of the tower is _____ (1)

A) 100m

B) 120m

C) 25m

D) 200m



In $\triangle ABC$ & $\triangle DEF$

$$\angle A = \angle D = 90^\circ$$

$$\angle C = \angle F$$

Hence, by AAA, $\triangle ABC \sim \triangle DEF$

$$\frac{AB}{DE} = \frac{AC}{DF}$$

$$\frac{20}{DE} = \frac{10}{50}$$

$$DE = 100$$

$$DE = 100$$

\therefore The height of the tower is 100m.

Ans : A

Q.13 The areas of two similar triangles are 9 cm^2 and 16 cm^2 respectively. The ratio of their corresponding sides is _____ **(1)**

- A) 3 : 4 B) 4 : 3
C) 2 : 3 D) 4 : 5

We know that the ratio of areas of two similar triangles is equal to the ratio of squares of their corresponding sides

$$\therefore \frac{A_1}{A_2} = \left(\frac{\text{side}_1}{\text{side}_2} \right)^2$$

$$\therefore \frac{9}{16} = \left(\frac{\text{side}_1}{\text{side}_2} \right)^2$$

Taking square root we get, $\frac{3}{4}$

The ratio of their corresponding sides is $\frac{3}{4}$

Ans : A

Q.14 Sides of two similar triangles are in the ratio 4 : 9. Areas of these triangles are in the ratio _____ **(1)**

- A) 2 : 3 B) 4 : 9
C) 81 : 16 D) 16 : 81

If two triangles are similar to each other, then the ratio of the area of this triangle will be equal to the square of the ratio of the corresponding sides of this triangle.

$$\therefore \text{The ratio between area of these triangle} = \frac{4^2}{9^2} = \frac{16}{81}$$

Ans : D