EDUDEVS

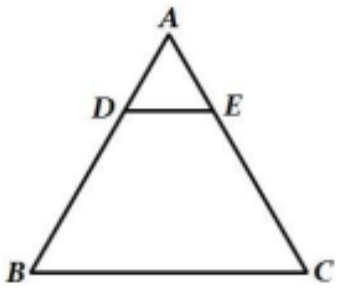
Upskilling Education

CLASS - X
MATHS TEST

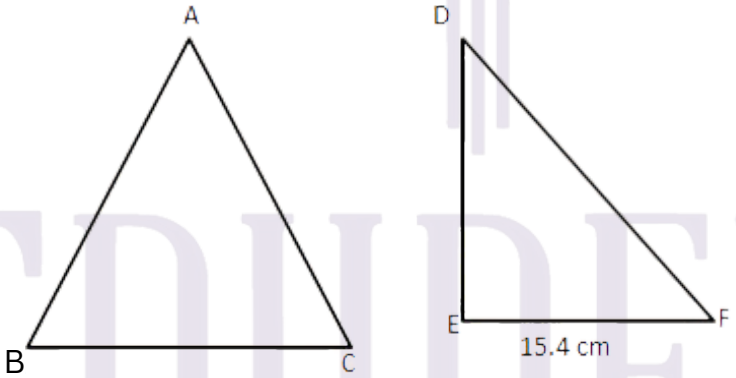
CHAPTER - 06
TRIANGLES

1 Mark Each

1.In the given figure, DE is parallel to BC and AD = 1 cm, BD = 2 cm. What is the ratio of the area of ΔABC to the area of ΔADE?

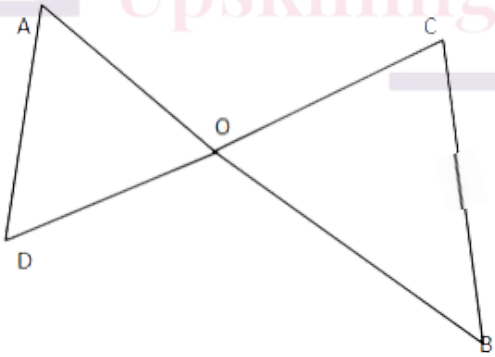


2. △ABC ~ △ DEF and their areas are respectively 64 cm^2 and 121 cm^2. If EF = 15.4 cm, find BC.



2 Mark Each

3. In the given figure, OA × OB = OC × OD or $\frac{OA}{OC} = \frac{OD}{OB}$, prove that ∠A = ∠C and ∠B = ∠D

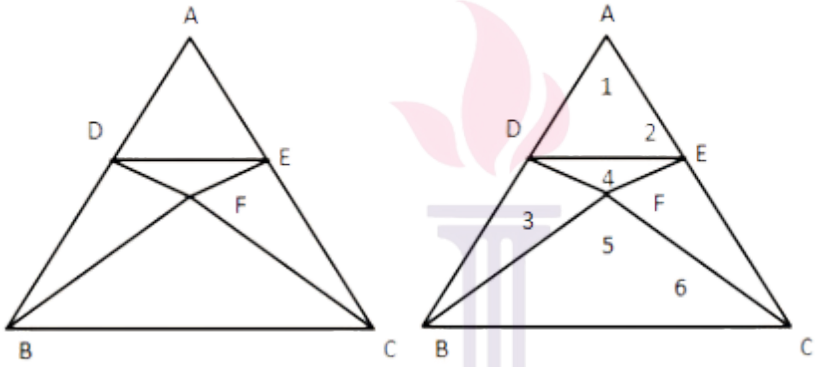


4. The perimeter of two similar triangle ABC and PQR are respectively 36 cm and 24cm. If PQ = 10 cm, find AB.

3 Mark Each

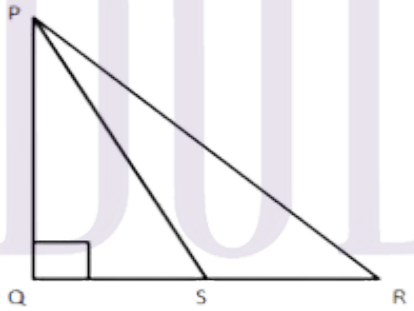
5.In the given figure, DE || BC and AD:DB = 5 : 4, find

$$\frac{\text{area } (\triangle DFE)}{\text{area } (\triangle CFB)}$$



6.PQR is a right triangle right angled at Q. If QS = SR, show that

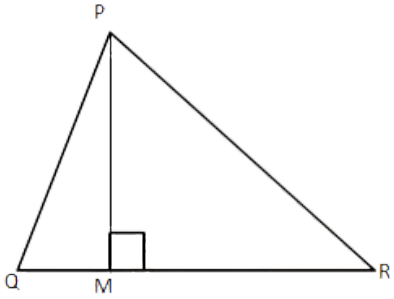
$$PR^2 = 4PS^2 - 3PQ^2$$



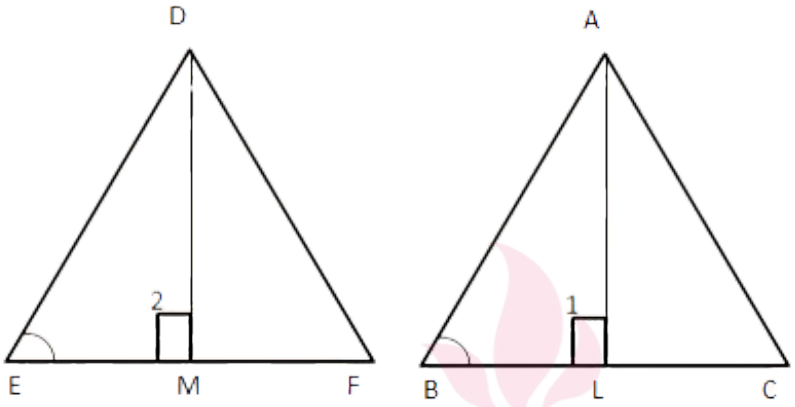
4 Marks Each

7. Prove that in a right-angled triangle the square of the hypotenuse is equal to the sum 45 of the squares of the other two sides. Use the above theorem in the given figure to prove that

$$PR^2 = PQ^2 + QR^2 - 2QM.QR$$



8. Prove that the ratio of areas of two similar triangles is equal to the square of their corresponding sides. Using the above theorem do the following the area of two similar triangles are $81cm^2$ and $144cm^2$, if the largest side of the smaller triangle is 27 cm, then find the largest side of the largest triangle.



CHAPTER - 07
COORDINATE GEOMETRY

1 Mark Each

1. Find the coordinates of the centroid of a triangle whose vertices are (0,6), (8,12) and (8,0).

2. The distance between the points (x_1, y_1) and (x_2, y_2) is given by

2 Mark Each

3. Show that (4,4), (3,5),(-1,1) are vertices of a right - angled triangle.

4. Find the distance between the points (0,0) and (36,15). Also find the distance between towns A and B if town B is located at 36 km east and 15km north of town A.

3 Mark Each

5. Prove that diagonals of a rectangle bisect each other and are equal.

6. Point A is on x-axis, point B is on y-axis and the point P lies on line segment AB, such that P (4, - 5) and AP : PB = 5 : 3. Find the coordinates of point A and B.

4 Mark Each

7.A (4, 2), B (6, 5) and C (1, 4) are the vertices of △ABC.

i. The median from A meets BC in D. Find the coordinates of the point D.

ii. Find the coordinates of point P on AD such that AP : PD = 2:1.

iii. Find the coordinates of the points Q and R on medians BE and CP respectively such that BQ : QE = 2 :1 and CR: RF =2: 1

iv. What do you observe?

8.Find the lengths of the medians of a △ ABC whose vertices are A(0, -1) B(2, 1) and C(0, 3).

CHAPTER - 08

INTRODUCTION TO TRIGONOMETRY

Multiple Choice Questions — 1 Mark Each

1.The value of sin 60° cos 30° + sin 30° cos 60° is:

(a) 0

(b) 1

(c) 2

(d) 4

2.The value of the expression [cosec (75° + θ) − sec (15° − θ) − tan (55° + θ) + cot (35° − θ)] is

(a) -1

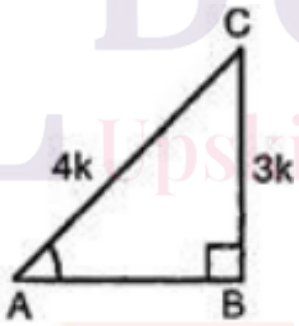
(b) 0

(c) 1

(d) 3/2

2 Mark Each

3.If Sin A = $\frac{3}{4}$, calculate cos A and tan A.



4. Evaluate :

(i) $\frac{\text{Sin } 18°}{\text{Cos } 72°}$

(ii) $\frac{\tan 26°}{\text{Cot } 64°}$

(iii) cos 48° - sin 42°

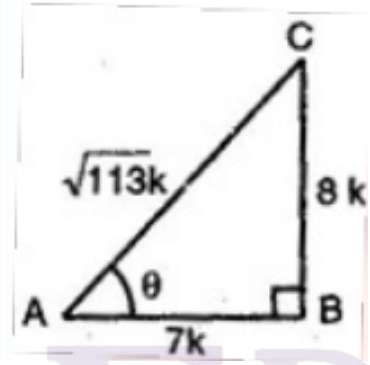
(iv) cosec 31° - sec 59°

3 Mark Each

5. If $\cot\theta = \frac{7}{8}$, evaluate

(i) $\frac{(1 + \sin\theta)(1 - \sin\theta)}{(1 + \cos\theta)(1 - \cos\theta)}$

(ii) $\cot^2\theta$



6. Prove that: $\frac{\tan^2 A}{\tan^2 A - 1} + \frac{\operatorname{cosec}^2 A}{\sec^2 A - \operatorname{cosec}^2 A} = \frac{1}{1 - 2\cos^2 A}$

4 Mark Each

7. If $\cos x = \cos 40° \cdot \sin 50° + \sin 40° \cdot \cos 50°$, then find the value of x.

8. Show that $\sin^6 A + 3\sin^2 A \cos^2 A = 1 - \cos^6 A$.

CHAPTER - 09

SOME APPLICATIONS OF TRIGNOMETRY

Multiple Choice Questions 1 Mark Each

1.Two men are on opposite sides of a tower. They observe the angles of elevation of the top of the tower as 30° and 45° and respectively. If the height of the tower is 100m, then the distance between them is

(a) 100(√3 -1)m

(b) 100(√3 + 1)m

(c)100(1 - √3)m

(d) none of these

2.The angle of elevation of the top of a tower from a point on the ground and at a distance of 30m from its foot is 30° . The height of the tower is

(a) 30√3 m

(b) 10m

(c)10√3 m

(d) 30 m

2 Mark Each

3.Find the length of kite string flying at 100 m above the ground with the elevation of 60° .

4.A bird is sitting on the top of a 80 m high tree. From a point on the ground, the angle of elevation of the bird is 45°. The bird flies away horizontally in such a way that it remained at a constant height from the ground. After 2 seconds, the angle of elevation of the bird from the same point is 30°. Find the speed of flying of the bird.

3 Mark Each

5.From the top of a tower of height 50 m, the angles of depression of the top and bottom of a pole are 30° and 45° respectively.
Find:
i. How far the pole is from the bottom of the tower,
ii. the height of the pole.(Use √3 = 1.732)

6.A boy is standing on the ground and flying a kite with 100 m of string at an elevation of 30° . Another boy is standing on the roof of a 20 m high building and is flying his kite at an elevation of 45° . Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.

4 Mark Each

7.An aeroplane is flying at a height of 300 m above the ground. Flying at this height the angle of depression from the aeroplane of two points on both banks of a river are 45° and 30° respectively. Find the width of the river.

8.Two poles of equal heights are standing opposite to each other on either side of the road which is 80 m wide. From a point P between them on the road, the angle of elevation of the top of a pole is 60° and the angel of depression from the top of another pole at point P is 30°. Find the heights of the poles and the distances of the point P from the poles.