

IITJEE Foundation Practice paper

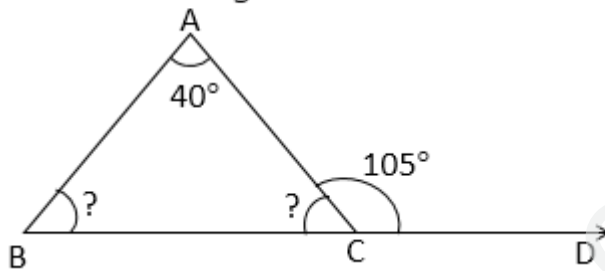
**TRIANGLES**

class-10th-Mathematics Number of Questions: 75

For Answers and Solutions, Go to [www.micromerits.com](http://www.micromerits.com)

**1**

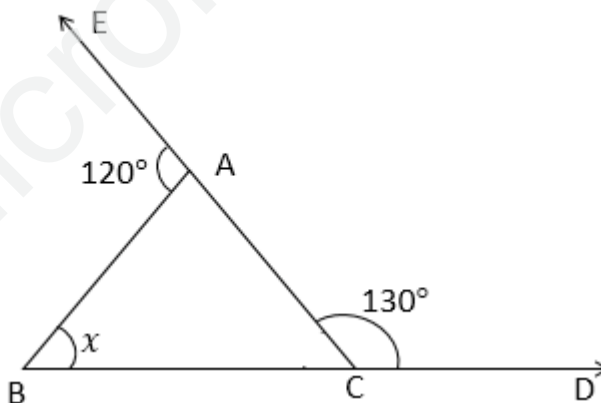
An exterior angle of a triangle is  $105^\circ$  and one of the interior opposite angle is  $40^\circ$ . Find other two angles.



- $\angle B = 65^\circ, \angle C = 75^\circ$   
  $\angle B = 65^\circ, \angle C = 75^\circ$   
  $\angle B = 65^\circ, \angle C = 35^\circ$   
  $\angle B = 25^\circ, \angle C = 75^\circ$   
  $\angle B = 105^\circ, \angle C = 35^\circ$

**2**

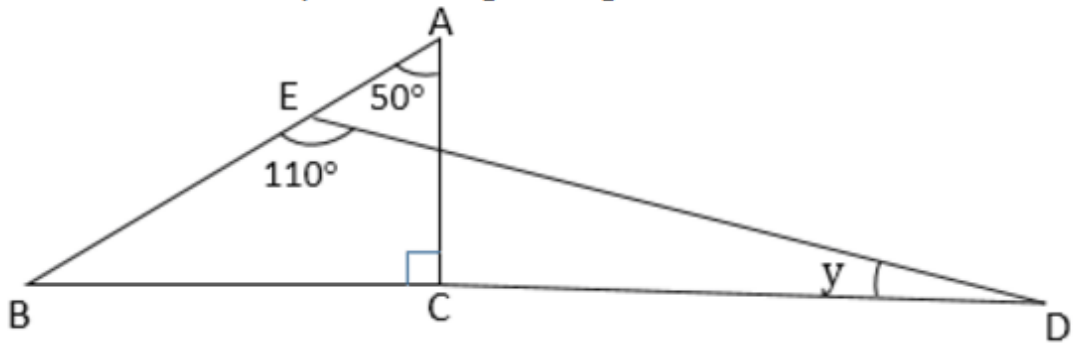
From the below given figure, find the value of 'x'.



- $40^\circ$   
  $60^\circ$   
  $70^\circ$   
  $70^\circ$   
  $50^\circ$

3

Find the value of  $y$  from the given figure ?



- $25^\circ$      $30^\circ$      $30^\circ$      $65^\circ$      $75^\circ$

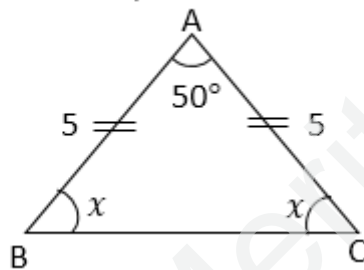
4

CPCT means

- Corresponding parts of congruent triangles  
 Common parts of corresponding triangles    Congruent parts of congruent triangles  
 None

5

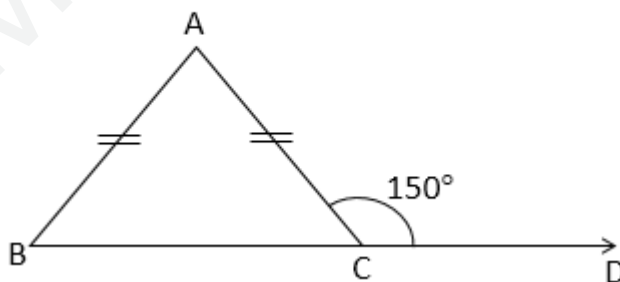
In  $\triangle ABC$ ,  $AB = 5\text{cm}$ ,  $AC = 5\text{cm}$ ,  $\angle A = 50^\circ$ . Then  $\angle B =$



- $65^\circ$      $65^\circ$      $75^\circ$      $50^\circ$      $60^\circ$

6

In the figure  $AB = AC$ ,  $\angle ACD = 150^\circ$  then find  $\angle A$ .



- $70^\circ$      $50^\circ$      $100^\circ$      $120^\circ$      $120^\circ$

7

Perimeter of a triangle is \_\_\_\_\_ sum of its three altitudes.

- greater than    lesser than    equal    not equal

8

In  $\triangle ABC$ , the medians  $AD, BE, CF$  passes through ' $G$ ', if  $BG = 8$ . Find  $BE = ?$

- 12    16    14    8

9

The centroid of a triangle divides each median in the ratio

- 1 : 1    2 : 3    1 : 2    2 : 1

10

Circumcentre of a right angled triangle is

- mid point of hypotenuse    inside the triangle    outside the triangle  
 none of these

11

The orthocentre of a triangle is the point of concurrency of its

- Median    Angle bisectors    Perpendicular bisector of sides    Altitudes

12

In  $ABC$ ,  $\angle A = 70^\circ$ ,  $\angle B = 40$ . Find  $\angle C$ .

- $70^\circ$      $60^\circ$      $50^\circ$      $40^\circ$

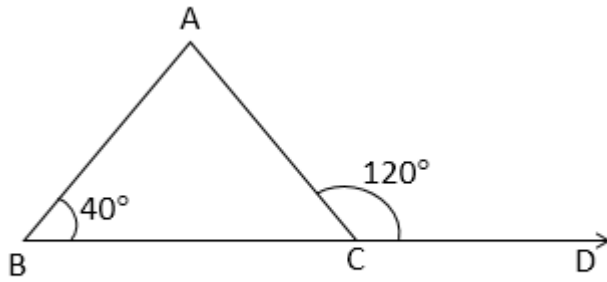
13

In  $\triangle ABC$ ,  $\angle A + \angle B = 65^\circ$ ,  $\angle B + \angle C = 140^\circ$ .

Find  $\angle A$ .

- $70^\circ$      $40^\circ$      $20^\circ$      $60^\circ$

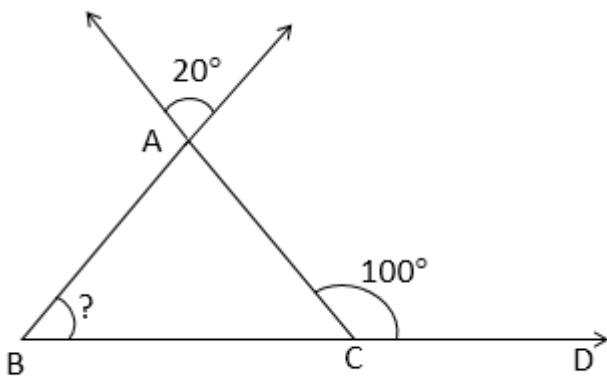
14



Find  $\angle BAC$  .

- $70^\circ$   
  $80^\circ$   
  $80^\circ$   
  $60^\circ$   
  $100^\circ$

15



Find  $\angle ABC$  .

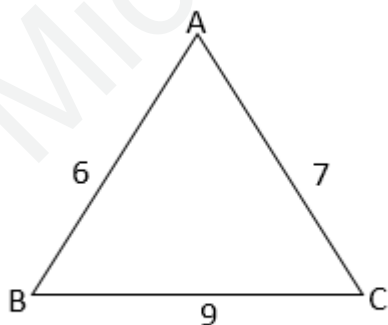
- $60^\circ$   
  $70^\circ$   
  $80^\circ$   
  $80^\circ$   
  $40^\circ$

16

The length of longest side of a triangle is 12 cm. Then other two sides are

- 4.8, 8.2  
 6.4, 2.8  
 3.8, 2.6  
 None of these

17



Which of the following is true ?

- $\angle B = \angle A$      $\angle A$  is a greatest angle    $\angle A$  is a greatest angle  
  $\angle B$  is greatest angle     $\angle C$  is greatest angle

**18**

If one angle of a triangle is equal to the sum of the other two angles, then the triangle is

- An equilateral    A right triangle    Obtuse angle triangle    An isosceles triangle

**19**

The difference of two sides of the triangle is \_\_\_\_\_ third side

- less than    greater than    equal    not equal

**20**

One of the angles of a triangle is  $75^\circ$ . If the difference of the other two angles is  $35^\circ$ . Then larger angle of the triangle is

- $75^\circ$      $60^\circ$      $70^\circ$      $45^\circ$

**21**

In  $\triangle ABC$ , If  $\angle A = 50^\circ$ ,  $\angle B = 60^\circ$ . Greatest side is

- AB    BC    CA    None of these

**22**

A triangle can have

- Two right angles    Two obtuse angles    Two acute angles  
 All angles more than  $70^\circ$

**23**

Sum of the angles of a hexagon is

- $180^\circ$      $360^\circ$      $720^\circ$      $450^\circ$

**24**

Sum of the exterior angles of a triangle is

- $180^\circ$      $360^\circ$      $270^\circ$      $100^\circ$

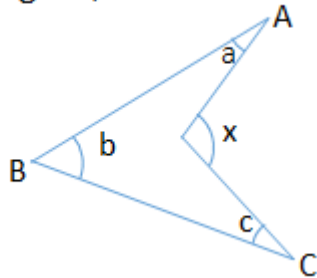
25

In  $\triangle ABC$ ,  $\angle A : \angle B : \angle C = 1 : 2 : 3$ . Find  $\angle C = ?$

- $90^\circ$    $80^\circ$    $60^\circ$    $70^\circ$

26

In the given figure, find the value of  $x$



- $a + b - c$    $a + b + c$    $a + b$    $a + c$

27

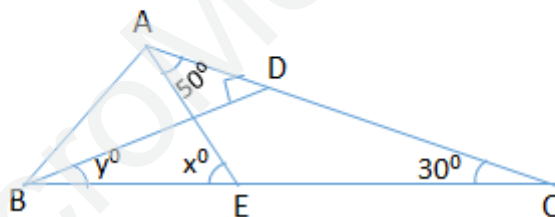
The exterior angles obtained on producing the base of a triangle both ways are  $100^\circ$  and  $120^\circ$ . Find the angles.

- $80^\circ, 60^\circ, 20^\circ$    $70, 50, 60^\circ$    $40^\circ, 60^\circ, 80^\circ$    $20, 30, 130^\circ$

28

In given figure

$BD \perp AC$   $\angle ACB = 30^\circ$ ,  $\angle EAC = 50^\circ$ , find  $x + y = ?$



- $140^\circ$    $140^\circ$    $120^\circ$    $130^\circ$    $150^\circ$

29

In  $\triangle ABC$ , is Isosceles  $\angle A = 50^\circ$ , L, M are mid points of AB and AC,  $LM \parallel BC$ , Find  $\angle LMC = ?$

- $75^\circ$    $65^\circ$    $125^\circ$    $115^\circ$

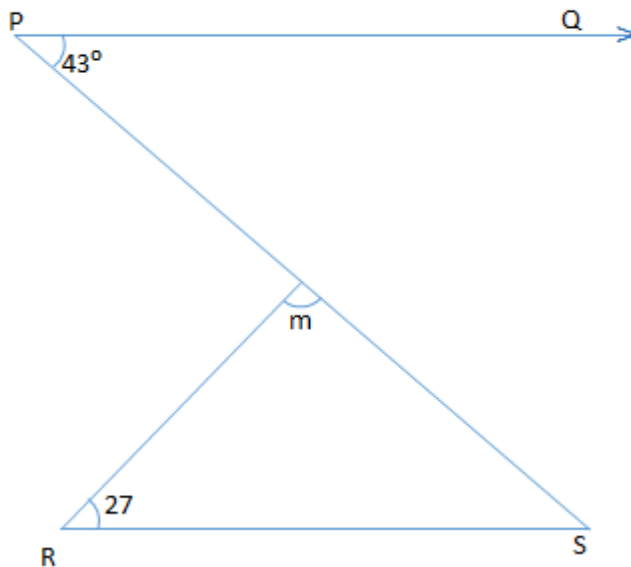
30

Sum of the angles of a triangle is \_\_\_\_\_

- $180^\circ$      $360^\circ$      $90^\circ$      $0^\circ$

31

In fig, If  $PQ \parallel RS$ ; find 'm'



- $110^\circ$      $110^\circ$      $120^\circ$      $98^\circ$      $36^\circ$

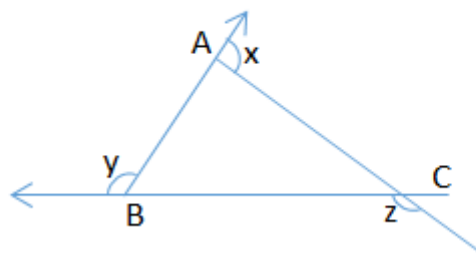
32

In  $\triangle ABC$ ,  $AB = BC$  then \_\_\_\_\_

- $\angle A = \angle B$      $\angle B = \angle C$      $\angle C = \angle A$      $\angle A = \angle B = \angle C$

33

In fig find  $\angle x + \angle y + \angle z$



- $180^\circ$      $270^\circ$      $360^\circ$      $360^\circ$      $0^\circ$

34

In  $\triangle ABC$ , If  $\angle A = 70^\circ$ ,  $\angle B = 50^\circ$  shortest side is \_\_\_\_\_

- AB  BC  CA  None of these

35

In  $\triangle ABC$ ,  $\angle A = x$ ,  $\angle B = x + 20$ ,  $\angle C = x + 40^\circ$ , find  $x - 10 = ?$

- $30^\circ$    $40^\circ$    $60^\circ$    $90^\circ$

36

If medians of a triangle are equal then triangle is \_\_\_\_\_

- Isosceles  Equilateral  Scalene  None of these

37

Two line segment are congruent. If they have \_\_\_\_ length

- Equal  Not Equal  Difference  Sum

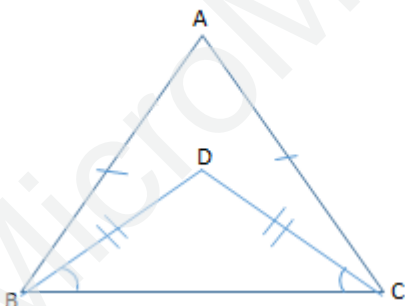
38

In exact point of median of the triangle is \_\_\_\_\_

- Centroid  Circumcentre  Incentre  Orthocentre

39

In the figure the ratio of  $\angle ABD : \angle ACD$  is \_\_\_\_\_



- 1 : 1  1 : 1  2 : 1  1 : 2  1 ; 3

40

In what kind of triangle do the orthocentre, incentre, circumcentre coincide?



- Scalene triangle  Equilateral  Isosceles triangle  None of these

41

If two medians of a triangle are equal then triangle is said to be \_\_\_\_\_

- Equilateral  Scalene  Isosceles  None of these

42

The angles of a triangle are in ratio 3 : 5 : 10. what is the largest angle?

- $80^\circ$    $100^\circ$    $120^\circ$    $150^\circ$

43

In  $\triangle ABC = 3 \text{ } \angle A = 6 \text{ } \angle B = 5 \text{ } \angle C$  find  $\angle B$

- $65^\circ$    $75^\circ$    $50^\circ$    $140^\circ$

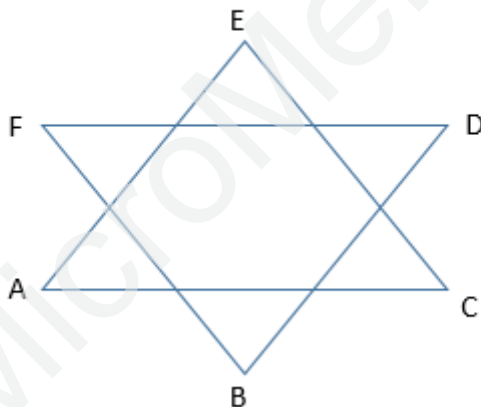
44

The sum and difference of two angles of a triangle are  $128^\circ, 22^\circ$ . Find the angles

- $70^\circ, 60^\circ, 50^\circ$    $20^\circ, 80^\circ, 80^\circ$    $70^\circ, 60^\circ, 50^\circ$    $75^\circ, 52^\circ, 53^\circ$

45

In fig  $\angle A + \angle B + \angle C + \angle D + \angle E + \angle F = ?$



- $360^\circ$    $360^\circ$    $180^\circ$    $90^\circ$    $720^\circ$

46

The angles of a triangle are  $3x - 5$ ,  $2x + 55$  and  $5x - 50$ , then  $x = ?$

- $28^\circ$    $18^\circ$    $68^\circ$    $78^\circ$

47

Two sides of a triangle are 12cm and 13 cm. Length of third side cannot be \_\_\_\_\_

- 0.5    4    6    7

48

In a square diagonal is  $5\sqrt{2}$  cm its area is \_\_\_\_\_

- $25 \text{ cm}^2$      $49 \text{ cm}^2$      $36 \text{ cm}^2$      $81 \text{ cm}^2$

49

When equilateral triangles are drawn on the sides of a right triangle, then the area of the triangle on the hypotenuse is equal to the

- difference of the areas between the other two sides  
 sum of the areas of the triangles on the other two sides  
 sum of the squares of the areas on the other two sides  
 difference of the squares of the areas on the other two sides

50

The sum of the squares of the diagonals of a parallelogram is

- equal to the sum of the squares of its sides    equal to the sum of its sides  
 equal to the difference of its sides    equal to the difference of the squares of its sides

51

In  $\triangle ABC$  and  $\triangle DEF$ , it is given that  $\angle B = \angle E$ ,  $\angle F = \angle C$  and  $AB = 3DE$ , then the two triangles are

- similar as well as congruent    congruent but not similar    similar but not congruent  
 neither congruent nor similar

52

The altitude of an equilateral triangle whose side is  $a$  is

- $\frac{1}{2}a$      $\frac{\sqrt{3}}{4}a^2$      $\frac{\sqrt{3}}{2}a^2$      $\frac{\sqrt{3}}{2}a$

53

The area of an equilateral triangle whose side is  $a$  is

- $\frac{\sqrt{3}}{4}a$      $\frac{\sqrt{3}}{4}a^2$      $\frac{\sqrt{3}}{2}a$      $\frac{\sqrt{3}}{4}a^2$

54

$\triangle ABC$  is an isosceles triangle with  $AC = BC$ . If  $AB = 2AC^2$ , then  $\triangle ABC$  is

- a right triangle    an isosceles triangle    a scalene triangle    None of the above

55

'In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.' - is the statement of

- Angle-Bisector theorem    Midpoint theorem    Thales theorem  
 Pythagoras theorem

56

If in  $\triangle ABC$  and  $\triangle PQR$ , we have  $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$  then

- $\triangle PQR \sim \triangle CAB$      $\triangle PQR \sim \triangle ABC$      $\triangle CBA \sim \triangle PQR$   
  $\triangle BCA \sim \triangle PQR$

57

The diagonals of a quadrilateral  $ABCD$  intersect each other at the point  $O$  such that  $\frac{AO}{OC} = \frac{BO}{OD}$ . Then  $ABCD$  is a

- quadrilateral    trapezium    parallelogram    square

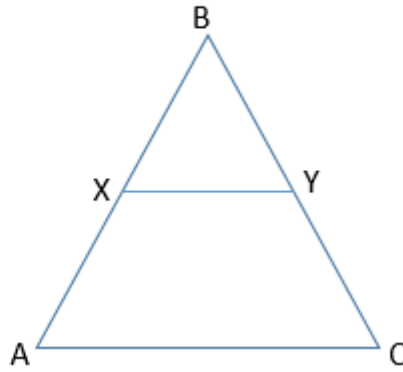
58

The area of an equilateral triangle is  $9\sqrt{3}cm^2$ . Then its side is

- 12    9    6    4

59

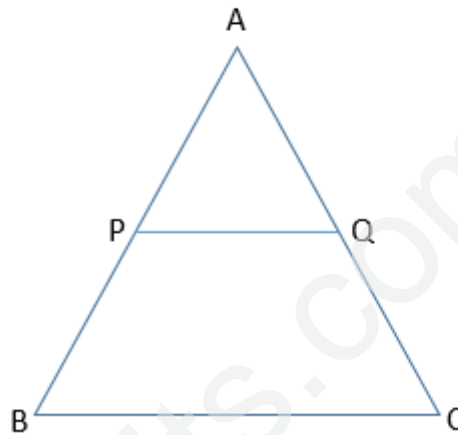
In  $\Delta ABC$ ,  $XY$  is parallel to  $AC$  and divides the triangle into the two parts of equal area. Then  $\frac{AX}{AB} =$



- $\frac{\sqrt{2}+1}{2}$   
  $\frac{2-\sqrt{2}}{2}$   
  $\frac{2-\sqrt{2}}{2}$   
  $\frac{2+\sqrt{2}}{2}$   
  $\frac{\sqrt{2}-1}{2}$

60

In the figure,  $PQ \parallel BC$  and  $AP : PB = 1 : 2$ , then the ratio of area of  $\Delta APQ$  and  $\Delta ABC$  will be



- 1 : 2  
 1 : 4  
 1 : 9  
 1 : 9  
 4 : 1

61

In  $\Delta ABC$ ,  $D$  is a point on  $BC$  such that  $3BD = BC$ , if each side of a triangle is 12 cm, then  $AD$  equals to

- $4\sqrt{5}$  cm  
  $4\sqrt{6}$  cm  
  $4\sqrt{7}$  cm  
  $4\sqrt{11}$  cm

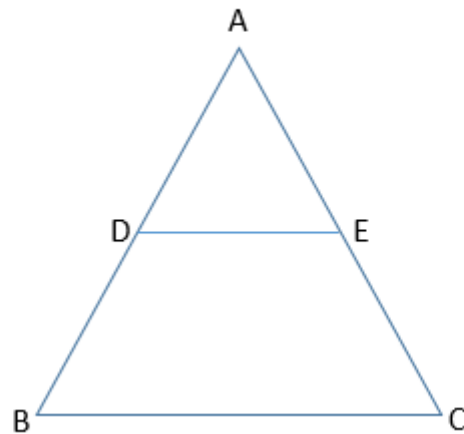
62

If  $P$  is a point inside a scalene triangle  $ABC$  such that  $\Delta APB$ ,  $\Delta BPC$  and  $\Delta CPA$  have the same area, then  $P$  must be

- Incentre of  $\Delta ABC$   
 Circumcentre of  $\Delta ABC$   
 Centroid of  $\Delta ABC$   
 Orthocentre of  $\Delta ABC$

63

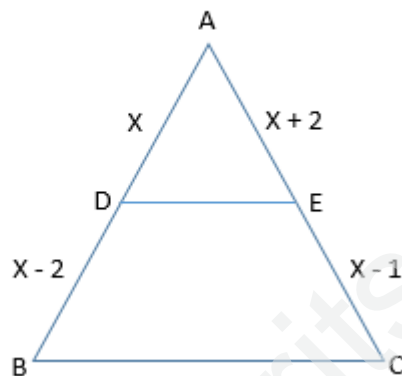
In the given figure, if  $DE \parallel BC$  and  $AD = 2$  cm,  $DB = 3$  cm and  $AE = 1.6$  cm, then  $EC$  equal to



- 1.2 cm    2.4 cm    2.4 cm    2.5 cm    4.8 cm

64

In the given  $\triangle ABC$ , if  $DE \parallel BC$ , then find the value of  $x$ .



- 1    2    3    4

65

If a  $\triangle ABC \sim \triangle PQR$ ,  $AB = 6$  cm,  $BC = 4$  cm,  $AC = 8$  cm, and  $PR = 6$  cm, then  $PQ + QR =$

- 8 cm    10 cm    7.5 cm    9 cm

66

If in a  $\triangle ABC$ ,  $\frac{AB}{AC} = \frac{BD}{DC}$ ,  $\angle B = 55^\circ$  and  $\angle C = 55^\circ$  then  $\angle CAD$  is \_\_\_  
(where  $D$  is a point on  $BC$ )

- $30^\circ$      $40^\circ$      $35^\circ$      $25^\circ$

67

P and Q are the points on the sides AB and AC respectively of  $\Delta ABC$ . if  $AP = 4$  cm,  $PB = 6$  cm,  $AQ = 10$  cm, and  $QC = 15$  cm, then BC is

- $\frac{3}{2}PQ$      $\frac{2}{3}PQ$      $\frac{2}{5}PQ$      $\frac{5}{2}PQ$

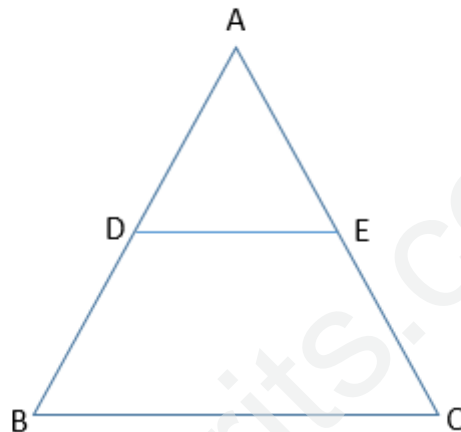
68

A vertical stick 10 m long casts a shadow 8 m long on the ground. At the same time, a tower casts the shadow 30 m long, then the height of the tower is

- 26 m    37.5 m    24.3 m    35.5 m

69

In the given figure,  $DE \parallel BC$ , such that  $AE = \frac{1}{4}AC$ . If  $DE = 6$  cm, then the value of BC is



- 20 cm    36 cm    24 cm    24 cm    15 cm

70

The perimeter of two similar triangles are 24 cm and 18 cm. If one side of the first triangle is 9 cm, then the corresponding side of the other triangle is

- 8 cm    6 cm    6.75 cm    4.25 cm

71

If a  $\Delta ABC \sim \Delta DEF$ ,  $AB : DE = 2 : 3$  and the perimeter of  $\Delta ABC$  is 4 cm, then the perimeter of a  $\Delta DEF$  is

- 16 cm    8 cm    6 cm    5 cm

**72**

In a  $\Delta ABC$ , P is the mid-point of AB and PQ is drawn parallel to BC. If AP = 3.5 cm, AQ = 4.5 cm and PQ = 6 cm, then the perimeter of  $\Delta ABC$  is

- 28 cm    26 cm    29 cm    30 cm

**73**

In a  $\Delta ABC$ , P divides the side AB such that AP : PB = 2 : 3. Q is a point on AC such that PQ || BC. Then ratio of the areas of  $\Delta APQ$  and trapezium BCPQ is

- 21 : 4    4 : 21    25 : 4    4 : 25

**74**

ABC is an isosceles triangle, right angled at B. Similar triangles,  $\Delta ACD$  and  $\Delta ABE$  are constructed on sides AC and AB. The ratio of areas of  $\Delta ABE$  and  $\Delta ACD$  is

- 1 : 2    2 : 1    1 : 1    2 : 3

**75**

If two similar triangles have ratio of their areas as 16 : 25 then, the ratio of their perimeters will be

- 9 : 25    3 : 5    4 : 5    16 : 25

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