SAI TUTORIALS

Std.: 10 (English) | **Maths - II** | **Marks: 40**

Date: 27-12-23 | **PRELIM-1 SET A** | **Time: 2 hour**

Chapter: All

Q.1 A) Solve Multiple choice questions. **(4)**

1) The ratio of the corresponding sides of two similar triangles is 2:3. If the area of the smaller triangle is 100 cm^2, find the area of the larger triangle.
(a) 252 cm^2 (b) 522 cm^2 (c) 225 cm^2 (d) 255 cm^2

2)
□ABCD is cyclic. If ∠B = 110°, then find measures of ∠D.

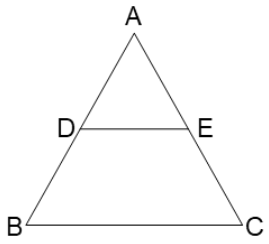
3)
$\Delta LMN \sim \Delta HIJ$ and $\frac{LM}{HI} = \frac{2}{3}$ then .....

(a) ΔLMN is a smaller triangle.

(b) ΔHIJ is a smaller triangle.

(c) both triangles are congruent.
(d) can't say

4) In fig, seg DE || seg BC, identify correct statement.

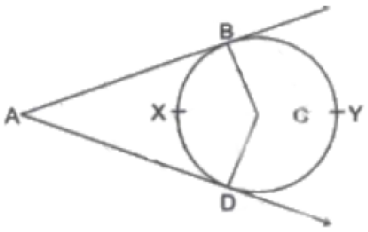


(a) $\frac{AD}{DB} = \frac{AE}{AC}$ (b) $\frac{AD}{DB} = \frac{AB}{AC}$

(c) $\frac{AD}{DB} = \frac{EC}{AC}$ (d) $\frac{AD}{DB} = \frac{AE}{EC}$

B) Solve the following questions. **(4)**

1) In the figure, seg AB and seg AD are tangent segments drawn to a circle with centre C from exterior point A, then prove that: $\angle A = \frac{1}{2}$ [m(arc BYD) - m(arc BXD)].



2) Base of a triangle is 9 and height is 5. Base of another triangle is 10 and height is 6. Find

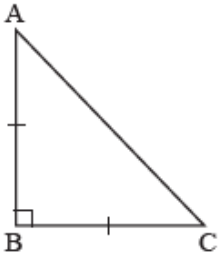
the ratio of areas of these triangles.

3)

Construct ∠ABC = 60° and bisect it.

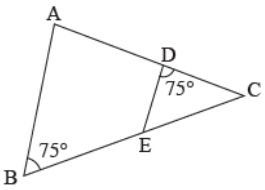
4)

From given figure, In ΔABC, AB⊥BC, AB = BC, AC = $2\sqrt{2}$ then *l*(AB) = ?



Q.2 A) Complete the following Activities. (Any two) **(4)**

1)



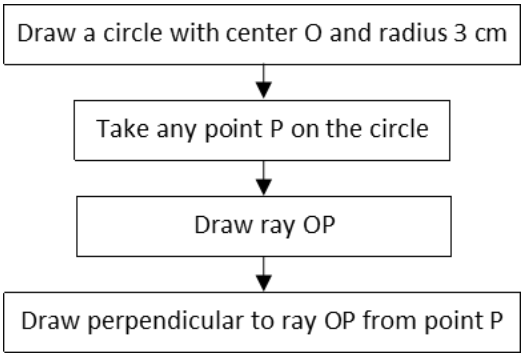
In fig., ∠B = 75°, ∠D = 75°

∠B ≅ _____ (each of 75°)

∠C ≅ ∠C _____

∴ ΔABC ~ _____ _____ similarity test

2)



3)

If sec $\theta = \frac{25}{7}$, find the value of tan θ.

$1 + \tan^2\theta = \sec^2\theta$

∴ $1 + \tan^2\theta = \left(\frac{25}{7}\right)^{\square}$

$\therefore$ $\tan^2\theta = \frac{625}{49} - \_\_\_\_\_$

$= \frac{625 - 49}{49}$

$= \frac{\quad}{49}$

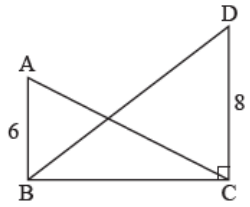
$\therefore$ $\tan\theta = \frac{\quad}{7}$ ... (By taking square roots)

B) Solve the following questions. (Any four) **(8)**

1) If $\tan\theta + \cot\theta = 2$ then $\tan^2\theta + \cot^2\theta$ = ?

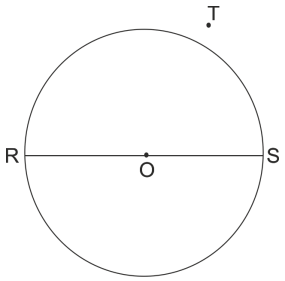
2) Draw a circle with a diameter AB length 6 cm. Draw a tangent to the circle from the endpoints of a diameter.

3) From adjoining figure $\angle ABC = 90°$ $\angle DCB = 90°$ AB = 6, DC = 8 then $\frac{A(\Delta ABC)}{A(\Delta BCD)}$ = ?



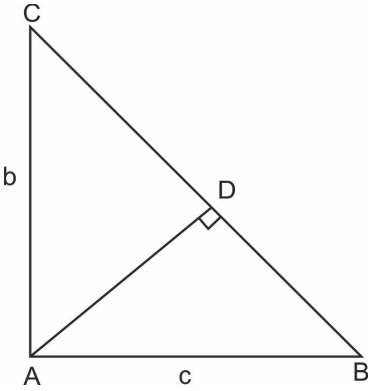
4) If $\sec\theta = \frac{25}{7}$ then find $\tan\theta$.

5) In the adjoining figure, seg RS is a diameter of a circle with centre O. Point T lies in the exterior of the circle. Prove that $\angle RTS$ is an acute angle.



Q.3 A) Complete the following activity. (Any one) **(3)**

1)



In the given figure, find the length of AD in terms of b and c.

ABC is a triangle, $\angle A = 90°$

AB = c, AC = b

To find: AD in terms of b and c

Solution: Area of $\triangle ABC = \frac{1}{2} AB \times AC =$ _____ .....(i)

and $\triangle ABC - \frac{1}{2} BC \times AD$ ..... (ii)

But BC = _____

= _____

Form (i) and (ii),

$= \frac{1}{2} BC \times AD = \frac{1}{2} bc$

$= BC \times AD = b.c$

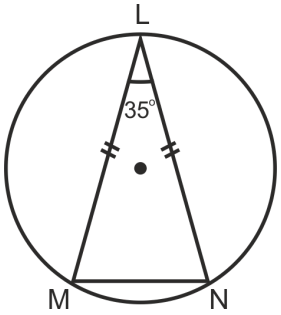
= _____ = bc [_____]

Hence AD = _____

2) In the figure $\angle L = 35°$ find

(i) m (arc MN)

(ii) m (arc MLN)



(i) $\angle L = \frac{1}{2}$ m (arc MN) ... (By inscribed angle theorem)

$\therefore$ _____ $= \frac{1}{2}$ m (arc MN)

$\therefore$ 2×35 = m (arc MN) = _____

(ii) m(arc MLN) = _____ – m(arc MN) ... [Definition of measures of arc]

= 360° – 70°

∴ m (arc MLN) = _____

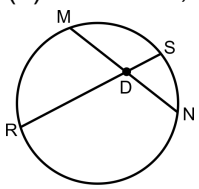
B) Solve the following questions. (Any two) **(6)**

1) If point P(- 4, 6) divides the line segment AB with A(- 6, 10) and B(r, s) in the ratio 2:1, find the co-ordinates of B.

2) Prove the following

$\frac{\cos A}{\text{cosec } A + 1} + \frac{\cos A}{\text{cos ec } A - 1}$ =2 tan A

3) In figure, chord MN and chord RS intersect at point D.
(1) If RD = 15, DS = 4, MD = 8 find DN
(2) If RS = 18, MD = 9, DN = 8 find DS



4)

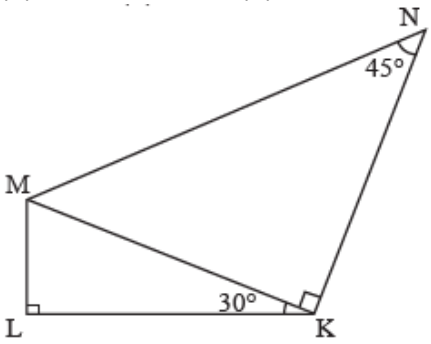
In △PQR, point S is the midpoint of side QR. If PQ = 11, PR = 17, PS = 13, find QR.

Q.4 Solve the following questions. (Any two) **(8)**

1)

As shown in fig., LK = $6\sqrt{2}$ then

(1) MK = ? (2) MN = ?

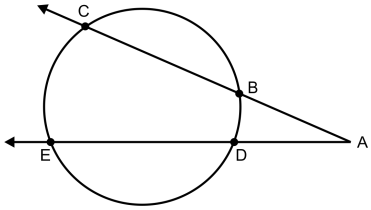


2)

A(– 3, – 4), B(– 5, 0), C(3, 0) are the vertices of △ABC. Find the co-ordinates of the circumcentre of

△ABC.

3)



(1) If m(arc CE) = 54°, m(arc BD) = 23°, find measure of ∠CAE.

(2) If AB = 4.2, BC = 5.4, AE = 12.0, find AD

(3) If AB = 3.6, AC = 9.0, AD = 5.4, find AE

Q.5 Solve the following questions. (Any One) **(3)**

1)

Show that $\frac{\cos^2\ \theta}{1-\tan\ \theta}\ +\ \frac{\sin^3\ \theta}{\sin\ \theta-\cos\ \theta}\ =\ 1+\sin\ \theta\cdot\cos\ \theta$

2) Two circles with centres O and P intersects each other in the points C and D. Chord AB of the circle with centre O touches the circle with centre P in the point E. Prove that ∠ADE + ∠ BCE = 180°.