MODEL QUESTION PAPER SET- 1 : 2021 - 22

STD 10TH – MATHS - II (THEORY)

MM: 40 Time: 2 Hrs

ENTIRE SYLLABUS:

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

1) $\triangle ABC \sim \triangle DEF, \frac{AC}{DF} = \frac{7}{4}$

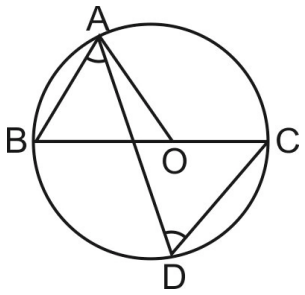
then, $\frac{\angle BAC}{\angle EDF}$ = ...

a. $\frac{7}{4}$ b. $\frac{3}{5}$ c. $\frac{1}{1}$ d. $\frac{4}{7}$

2) Which of the following is not a pythagoras triplet?

a. (5, 12, 13) b. (8, 15, 17) c. (12, 15, 19) d. (3, 4, 5)

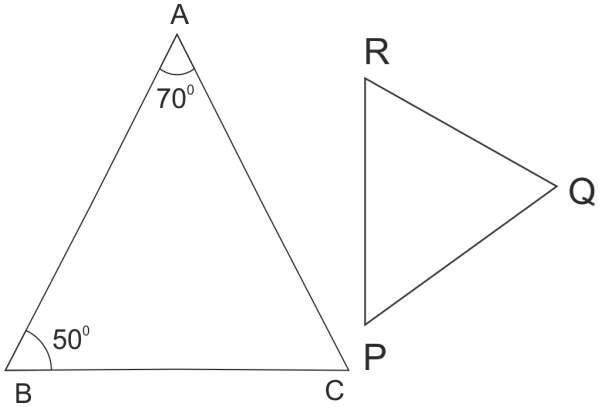
3)



If AB||CD in the given figure, O is the centre of the circle. If $\angle BAD = 60°$, then $\angle ADC$ is equal to

a. 30^0 b. 45^0 c. 60^0 d. 120^0

4)



In the given figure, $\triangle ABC \sim \triangle QPR$. Then $\angle R$ is

a. 60^0 b. 50^0 c. 70^0 d. 80^0

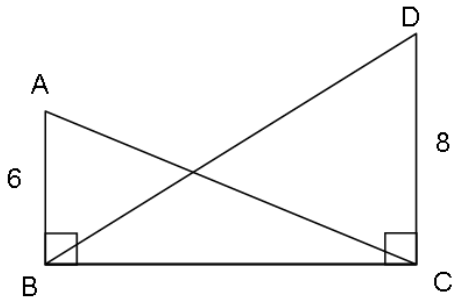
B) Solve the following questions. **(4)**

1) Identify, with reason, if the following is Pythagorean triplet. 3, 5, 4

2) Find the distance between each of the following pairs of points.

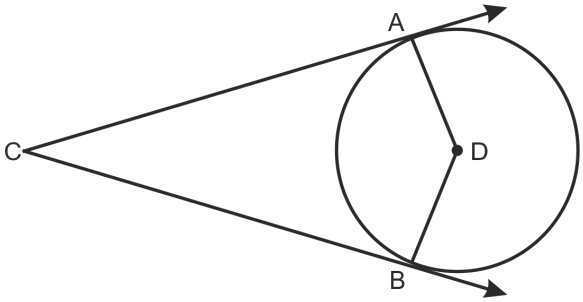
R (0, – 3), S $\left(0, \frac{5}{2}\right)$

3)



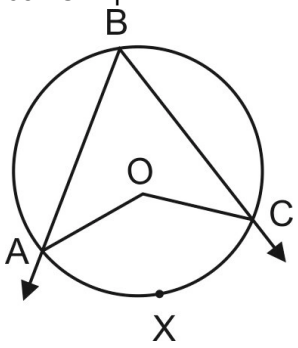
In figure, ∠ABC = ∠DCB = 90°, AB = 6, DC = 8 then $\frac{A(\triangle ABC)}{A(\triangle DCB)}$ = ?

4) In the adjoining figure circle with D touches the side of ∠ ACB at A and B. If ∠ ACB = 52°, find measure of ∠ ADB.



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

1) In the following figure,O is the centre of the circle. ∠ABC is inscribed in arc ABC and ∠ABC = 65°. Complete the following activity to find the measure of ∠ AOC.



Activity :

∠ ABC = $\frac{1}{2}$_____ ... [Inscribed angle theorem]

∴ _____×2 = m (arc AXC)

∴ m (arc AXC) = _____

∠ AOC = m (arc AXC) ... [Definition of measure of minor arc)

∴ ∠ AOC = _____

2) Identify, with reason, which of the following are Pythagorean triplets. (11, 60, 61)

61^2 = _____

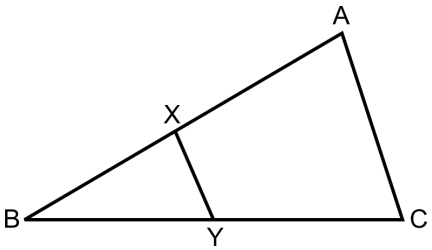
and $11^2 + 60^2$ = _____+ 3600

= _____

∴ 61^2 = $11^2 + 60^2$

∴ (11, 60, 61) is a _____ triplets.

3)



In figure XY || seg AC. If 2AX = 3BX and XY = 9. Complete the activity to find the value of AC.

2 AX = 3 BX ∴ $\frac{AX}{BX}$ = _____

$\frac{AX + BX}{BX}$ = _____ ... by componendo

$\frac{AB}{BX}$ = _____ ... (I)

△BCA ~ △BYX ... _____ test of similarity.

$\therefore \quad \frac{BA}{BX} = \frac{AC}{XY}$ ... corresponding sides of similar triangles.

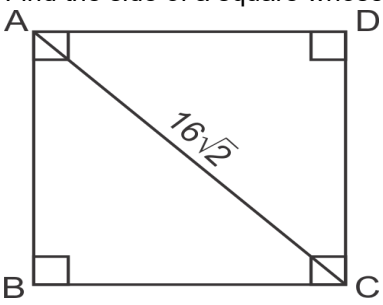
$\therefore \quad \frac{5}{2} = \frac{AC}{9} \quad \therefore \quad AC =$ _____ ... from (I)

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

1) Draw a circle of radius 3.6. Draw a tangent to the circle at any point on it without using centre.

2) Prove that, any rectangle is a cyclic quadrilateral.

3) Find the side of a square whose diagonal is $16\sqrt{2}$ cm.



4) Ratio of corresponding sides of two similar triangles is 2:5, If the area of the small triangle is 64 sq.cm. then what is the area of the bigger triangle?

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

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

1) If $\sin\theta = \frac{5}{13}$, where θ is an acute angle, find the value of other trigonometric ratios, using identities.

$\sin\theta = \frac{5}{13}$ ... (given)

$\sin^2\theta + \cos^2\theta = 1$ ... (Trigonometrically Identity)

$\therefore \quad \cos^2\theta = 1 - \sin^2\theta$

$= $ _____ ... (given)

$\sin^2\theta + \cos^2\theta = 1$ ...(Trigonometrically Identity)

$\therefore \quad \cos^2\theta = 1 - \sin^2\theta$

$= 1 - \frac{25}{169}$

$= \frac{169 - 25}{169}$

$= $ _____

$\therefore \quad \cos\theta = \pm\frac{12}{13}$ ... (Taking sq. root)

$\therefore \quad \cos\theta = \frac{12}{13}$ ... _____

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$= \frac{\frac{5}{13}}{\frac{12}{13}}$ ... [From (1) and (2)]

$\therefore \quad \tan\theta = \frac{5}{12}$

$\cot\theta = \frac{1}{\tan\theta}$

$= \frac{1}{\left(\frac{5}{12}\right)}$ ... [From (3)]

$\therefore \quad \cot\theta =$ _____

$\sec\theta = \frac{1}{\cos\theta}$

$= \frac{1}{\left(\frac{12}{13}\right)}$ ... [From (2)]

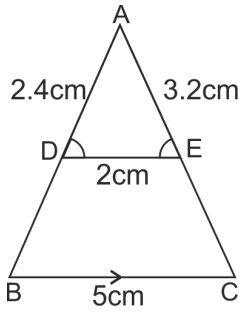
$\therefore \sec\theta =$ _____

$\text{cosec}\,\theta = \frac{1}{\sin\theta}$

$= \frac{1}{\left(\frac{5}{13}\right)}$ ... [From (1)]

$\therefore \text{cosec}\,\theta =$ _____

2) In a △ABC, D and E are points on the sides AB and AC respectively such that DE ∥ BC. If AD = 2.4 cm, AE = 3.2 cm, DE = 2 cm and BC = 5 cm, find the BD and CE.



In △ABC

∵ DE ∥ BC

∴ $\frac{AD}{AB}$ = _____

$\frac{2.4}{AB} = \frac{3.2}{AC} = \frac{2}{5}$

$\frac{2.4}{AB} = \frac{2}{5}$

AB = _____

= 6cm

$\frac{3.2}{AC} = \frac{2}{5}$

and AC = _____ = 8cm

∴ BD = _____

= 6 - 2.4

= _____

and CE = AC - AE

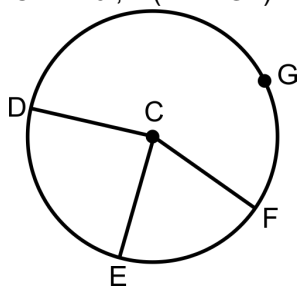
= 8 - 3.2

= _____

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

1) Draw a circle with radius 4.1 cm. Construct tangents to the circle from a point at a distance 7.3 cm from the centre.

2) In the figure, points G, D, E, F are concyclic points of circle with centre C.
∠ECF = 70°, m(arc DGF) = 200° Find m(arc DE) and m(arc DEF).

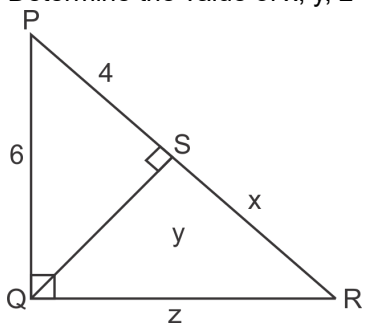


3) If $\tan\theta = 1$ then, find the values of $\frac{\sin\theta + \cos\theta}{\sec\theta + \operatorname{cosec}\theta}$.

4) If point T divides the segment AB with A(- 7, 4) and B(- 6, - 5) in the ratio 7 : 2, find the co-ordinates of T.

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

1) In the given figure an altitude is drawn to the hypotenuse. The lengths of different segments are marked in the figure.
Determine the value of x, y, z



2) Prove that : $\frac{1}{\text{Cosec A} - \text{Cot A}} - \frac{1}{\text{Sin A}} = \frac{1}{\text{Sin A}} - \frac{1}{\text{Cosec A} + \text{Cot A}}$

3) Determine whether the points are collinear.
P (– 2, 3), Q (1, 2), R (4, 1)

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

1) Prove the following $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$

2) Find the point on x-axis which is equidistant from P (2,– 5) and Q (– 2,9).

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