PRISM WORLD

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

Date: | Time: 2 hour

Chapter: 1 to 5

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

1) Find the distance between the points.
T (- 4, 2) and R (4, - 4)
a. 100 units b. 10 units c. 5 units d. 4 units

2)
In ΔABC, $\angle A = 60°$, $\angle C = 30°$, $\angle B = 90°$ and AC = 6 cm. Find the length of side AB.

a. 3 b. 4 c. 5 d. 6

3) Chords AB and CD of a circle intersect inside the circle at point E. If AE = 4, EB = 10, CE = 8, then find ED.
a. 7 b. 5 c. 8 d. 9

4) If two angles of one triangle are congruent to two corresponding angles of another triangle, is this condition sufficient for similarity for two triangles?
a. True b. False c. Depends on type of triangles d. None of above

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

1) Two circles of radii 5 cm and 3 cm touch each other externally. Find the distance between their centres.

2) Find the distances between the following points.

P $(-6, -3)$, Q $(-1, 9)$

3) Identify, with reason, if the following is Pythagorean triplet. 4, 9, 12

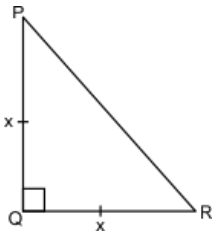
4)
$\triangle ABC \sim \triangle PQR$, $A(\triangle ABC) = 16$, $A(\triangle PQR) = 25$, then find the value of ratio $\frac{AB}{PQ}$.

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

1)
If $\Delta ABC \sim \Delta PQR$ and AB : PQ = 2 : 3, then fill in the blanks.

$\frac{A(\Delta ABC)}{A(\Delta PQR)} = \_\_\_\_\_ = \frac{2^2}{3^2} = \_\_\_\_\_$

2) A side of an isosceles right angled triangle is x. Find its hypotenuse.



In △PQR, ∠PQR = 90°

and PQ = QR = x

∴ PR^2 = _____ ... [Pythagoras theorem]

= _____

∴ PR^2 = _____

∴ PR = _____units ... [Taking square root]

∴ The length of hypotenuse is _____ units.

3) Find the slopes of the lines passing through the given points. A(2, 3) , B(4, 7)

Let A ≡ (2, 3) ≡ (x_1, y_1) amd B ≡ (4, 7) ≡ _____

Slope of line AB = _____

= $\frac{7-3}{4-2}$

= _____

∴ Slope of line AB = _____

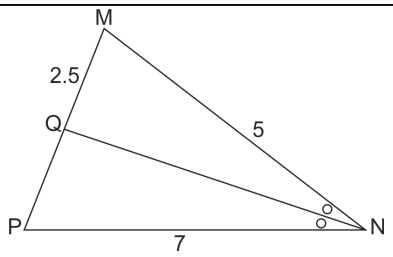
B) Solve the following questions. (Any four) **(8)**

1) Draw any circle.Take any point A on it and construct tangent at A without using the centre of the circle.

2)

In △RST, ∠S = 90°, ∠T = 30°, RT = 12 cm then find RS and ST.

3)

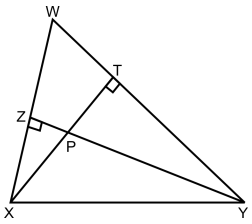


Seg NQ is the bisector of ∠N of △MNP. If MN = 5, PN = 7, MQ = 2.5 then find QP.

4)

In altitudes YZ and XT of ΔWXY intersect at P. Prove that,

(1) □WZPT is cyclic. (2) Points X, Z, T, Y are concyclic.



5) Find the slope of the line passing through the points A(2, 3), B(4, 7)

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

1)

In a △ABC, ∠ A = 90°, CA = AB and D is a point on AB produced. Prove that : $DC^2 - BD^2 = 2AB.AD$

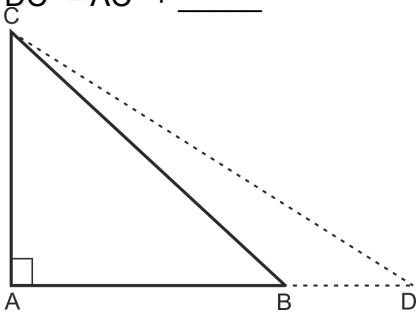
Given: △ABC in which ∠A = 90°, CA = AB and D is a point on AB produced.

To prove = $DC^2 - BD^2 = 2AB.AD$

Proof . In right angled △ACD,

DC^2 = _____

$DC^2 = AC^2 +$ _____^{2}



$DC^2 = AC^2 + AB^2 + BD^2 + 2AB.BD$

_____ $= AC^2 + AB^2 + 2AB.BD$

But AC = _____

$DC^2 - BD^2$ = _____

$DC^2 - BD^2 = 2AB^2 + 2AB.BD$

$DC^2 - BD^2 = 2AB\ (AB + BD)$

$\therefore$ $DC^2 - BD^2 =$ _____ ... (A-B-D)

Hence, the result.

2)

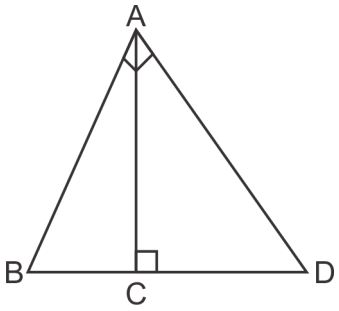
$\triangle ABD$ is a triangle in which $\angle A = 90°$ and seg AC $\perp$ seg BD

Show that

i) $AB^2 = BC.BD$

ii) $AD^2 = BD.CD$

iii) $AC^2 = BC.CD$



i) In $\triangle ABD$,

$\angle BAD = 90°$ ... (Given)

seg AC $\perp$ hypotenuse BD

$\therefore$ In $\triangle BCA \sim \triangle ACD \sim \triangle BAD$ ... (Similarity in Right-angled triangle)

ii) $\triangle BCA \sim \triangle BAD$ ... (From (i))

$\therefore$ $\frac{BC}{BA}$ = _____ ... (c.s.s.t)

$\therefore$ _____ = BC.BD

iii) $\triangle ACD \sim \triangle BAD$ ... (From (1))

$\therefore$ $\frac{CD}{AD}$ = _____ ... (c.s.s.t)

$\therefore$ _____ = BD.CD

iv) $\triangle BCA \sim \triangle ACD$ ... (From (1))

$\therefore$ _____ = $\frac{AC}{DC}$ ... (c.s.s.t)

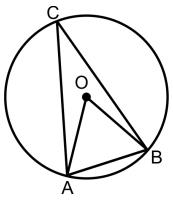
$\therefore$ AC^2 = _____

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

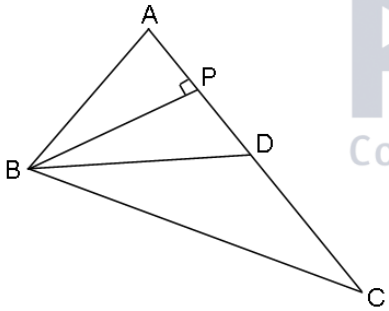
1) Determine whether the given points are collinear.
A (0,2), B (1,-0.5), C (2,-3)

2) In figure, in a circle with centre O, length of chord AB is equal to the radius of the circle. Find measure of each of the following.

i) $\angle AOB$ ii) $\angle ACB$ iii) arc AB iv) arc ACB.



3)



In adjoining figure in $\triangle ABC$, point D is on side AC. If AC = 16, DC = 9 and BP $\perp$ AC, then then find the following ratios.

i. $\frac{A(\triangle ABD)}{A(\triangle ABC)}$ ii. $\frac{A(\triangle BDC)}{A(\triangle ABC)}$ iii. $\frac{A(\triangle ABD)}{A(\triangle BDC)}$

4) Draw a circle with centre O and radius 3.5 cm. Take point P at a distance 5.7 cm from the centre. Draw tangents to the circle from point P.

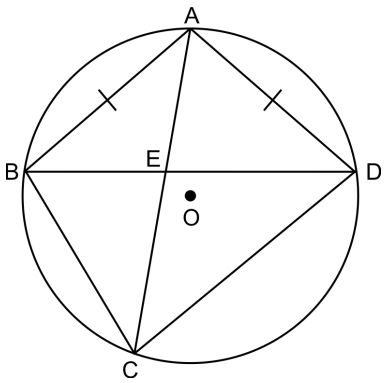
Q.4 Solve the following questions. (Any two) **(8)**

1) In the following examples, can the segment joining the given points form a triangle? If triangle is formed, state the type of the triangle considering sides of the triangle.

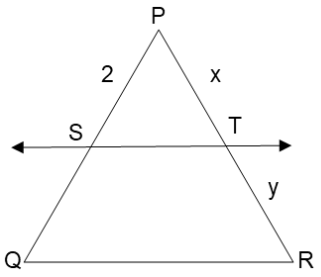
A $(\sqrt{2}, \sqrt{2})$, B $(-\sqrt{2}, -\sqrt{2})$, C $(-\sqrt{6}, \sqrt{6})$

2) In the figure, chord AC and chord BD intersect each other in the point E.

Chord AB = chord AD. Prove that $AB^2 = AE \times AC$



3) In fig., PS = 2, SQ = 6, QR = 5, PT = x, and TR = y, then find the pair of value of x and y such that ST || side QR.



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

1) A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60°. When he moves 40 m away from the bank, he finds the angle of elevation to be 30°.

Find:

i. the height of the tree, correct to 2 decimal places,

ii. the width of the river. ($\sqrt{3} = 1.73$)

2) AB and AC are the two chords of a circle whose radius is r. If p and q are the distance of chord AB and CD, from the centre respectively and if AB = 2AC then proved that $4q^2 = p^2 + 3r^2$.