PRISM WORLD

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

Date: **Time: 2 hour**

Chapter: 1 to 7

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

1) In △ ABC and △ PQR, in a one to one correspondence.

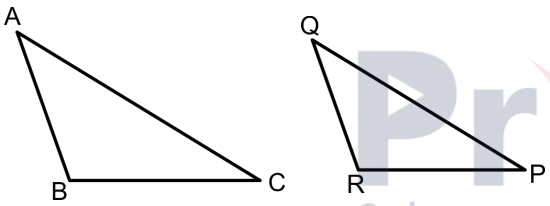
$\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$ then

a. △PQR ~ △ABC

b. △PQR ~ △CAB

c. △CBA ~ △PQR

d. △BCA ~ △PQR



2) If a cone, a hemisphere and a cylinder have equal radius and have the same height then the ratio of their volumes is

a. 1 : 3 : 2 b. 2 : 3 : 1 c. 2 : 1 : 3 d. 1 : 2 : 3

3) If a, b, c are sides of a triangle and $a^2 + b^2 = c^2$, name the type of triangle.

a. Obtuse angled triangle

b. Acute angled triangle

c. Right angled triangle

d. Equilateral triangle

4) Two circles of radii 5.5 cm and 3.3 cm respectively touch each other. What is the distance between their centers?

a. 4.4 cm b. 8.8 cm c. 2.2 cm d. 8.8 or 2.2 cm

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

1) If radius of a circle is 5 cm, then find the length of longest chord of a circle.

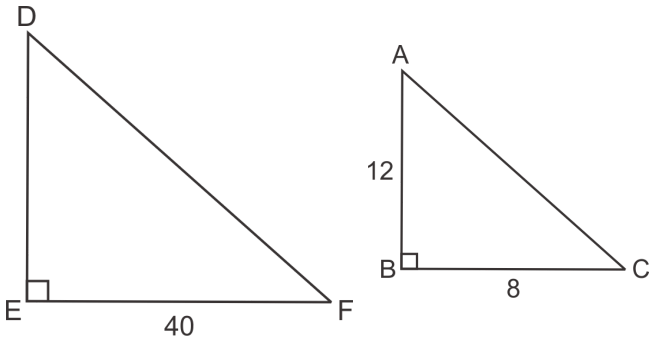
2) Identify, with reason, if the following is Pythagorean triplet. 3, 5, 4

3) Two circles of radii 5.5 cm and 4.2 cm touch each other externally. Find the distance between their centres.

4) Find the slopes of the lines passing through the given points.
E(– 4, – 2), F (6, 3)

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

1) A vertical stick 12m long casts a shadow 8m long on the ground. At the same time a tower casts the shadow of length 40m on the ground. Determine the height of the tower.



In the figure
seg AB is the stick and seg BC is its shadow.
seg DE is the tower and seg EF is its shadow.
The triangles formed by the stick with its shadow and by the tower with its shadow are similar to each other.

$\therefore$ $\triangle ABC \sim \triangle DEF$

$\therefore$ $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ ... (i) [c.s.s.t]

$\therefore$ $\frac{AB}{DE} =$ _____ ... [From (i)]

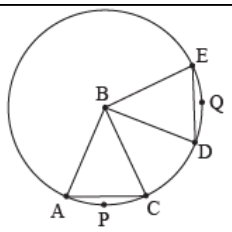
$\therefore$ $\frac{12}{DE} =$ _____

$\therefore$ $12 \times 40 = DE \times 8$

DE = _____
DE = _____

$\therefore$ Height of the tower is _____

2) The chords corresponding to congruent arcs of a circle are congruent.
Prove the theorem by completing following activity.



Given: In a circle with centre B, arc APC ≅ arc DQE

To Prove: chord AC ≅ chord DE.

Proof:

In ΔABC and ΔDBE,

side AB ≅ side DB _____

side BC ≅ side _____ _____

$\angle ABC \cong \angle DBE$ (Measure of congruent arcs)

$\therefore$ $\Delta ABC \cong \Delta DBE$ _____

chord AC chord DE.... [Corresponding sides of congruent triangles]

3) A tank of cylindrical shape has radius 2.8 m and its height 3.5m. Complete the activity to find how many litres of water the tank will contain.

Capacity of water tank = Volume of cylindrical tank

$= \pi r^2 h$

$= \frac{22}{7} \times 2.8 \times 2.8 \times$ _____

= _____ m^3

= _____ × 1000 litre

= _____ litre

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

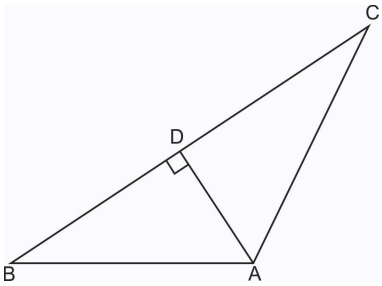
1) Measure of an arc of a circle is 80° cm and its radius is 18 cm. Find the length of the arc. (π = 3.14)

2) 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?

3) Find the centroids of the triangles whose vertices are given below.

(3, – 5), (4, 3), (11, – 4)

4)



In △ABC, seg AD ⊥ seg BC. Prove that: $AB^2 + CD^2 = BD^2 + AC^2$

5)

Prove the following: $\cot\theta + \tan\theta = \text{cosec}\theta . \sec\theta$

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

1)

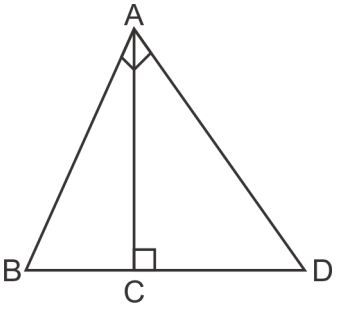
△ABD is a triangle in which ∠A = 90° and seg AC ⊥ seg BD

Show that

i) $AB^2 = BC.BD$

ii) $AD^2 = BD.CD$

iii) $AC^2 = BC.CD$



i) In △ABD,

∠BAD = 90° ... (Given)

seg AC ⊥ hypotenuse BD

∴ In △BCA ~ △ACD ~ △BAD ... (Similarity in Right-angled triangle)

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

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

$\therefore$ _____ $= BC.BD$

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

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

$\therefore$ _____ $= BD.CD$

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

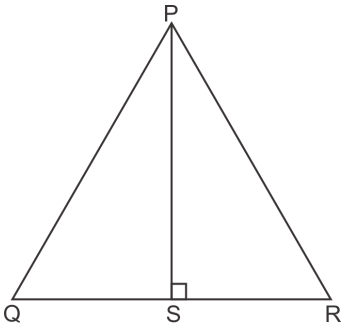
$\therefore$ _____ $= \frac{AC}{DC}$ ... (c.s.s.t)

$\therefore \quad AC^2 =$ _____

2)

$\triangle PQR$ is an equilateral triangle. Seg PS $\perp$ side QR.

Prove that $PS^2 = 3QS^2$.



Proof : In $\triangle PQS$, $\angle PSQ = 90°$ ... (Seg PS $\perp$ side QR)

$\angle Q = 60°$ ... (Angle of an equilateral triangle)

$\therefore \quad \angle QPS = 30°$ ... (Remaining angle of $\triangle PQS$)

$\therefore \quad \triangle PQS$ is a 30° - 60° - 90° triangle.

$\therefore$ PS = _____ ... (Side opposite to 60°) ... (1)

QS = $\frac{1}{2}$PQ ... _____

$\therefore$ PQ = _____ ... (2)

Substituting the value of _____ from (2) in (1),

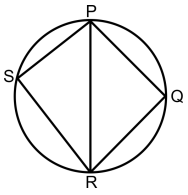
PS = $\frac{\sqrt{3}}{2} \times$ _____

$\therefore$ PS = $\sqrt{3}$ QS

$\therefore$ $PS^2 = 3\ QS^2$ ... _____

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

1)



In figure, □PQRS is cyclic. side PQ ≅ side RQ. ∠PSR = 110°, Find

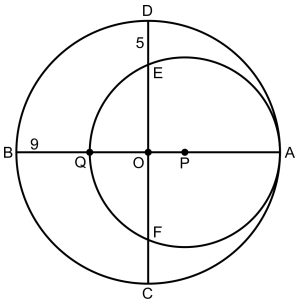
i) Measure of ∠PQR

ii) m(arc PQR)

iii) m(arc QR)

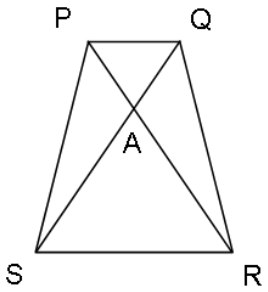
iv) Measure of ∠PRQ

2) In the figure, two circles with centres O and P are touching internally at point A. If BQ = 9, DE = 5, find the radii of the circles.



3) The hypotenuse of right angled triangle is 6m more than twice the shortest side. If the third side is 2m less then the hypotenuse, find the sides of the triangle.

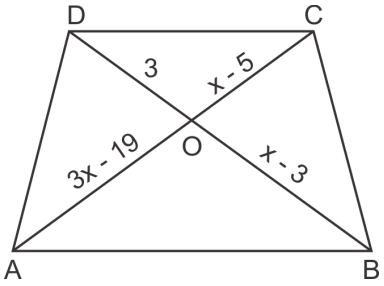
4)



In trapezium PQRS, side PQ || side SR, AR = 5AP, AS = 5AQ then prove that, SR = 5PQ.

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

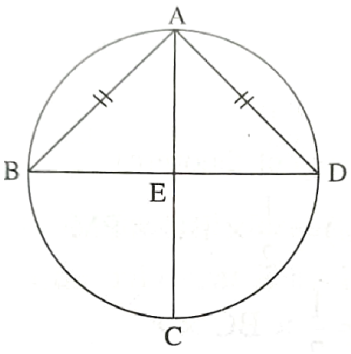
1) In the figure, seg AB || seg DC. Using the information given find the value of x.



2)

In the figure, chord AB ≅ chord AD. Chord AC and chord BD intersect each other at point E.

Prove that $AB^2 = AE \times AC$

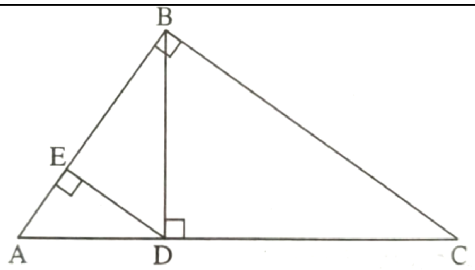


3)

In $\triangle ABC$, $\angle ABC = 90°$, seg BD $\perp$ side AC,

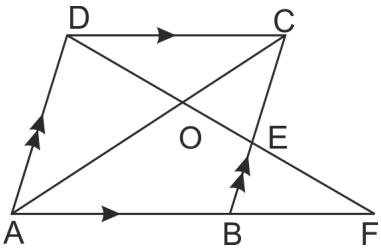
A–D–C, seg DE $\perp$ side AB, A–E–B.

Prove $DB^2 + DC^2 + DE^2 + EB^2 = CA \times CD + BA \times BE$.



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

1)



In the adjoining figure, ABCD is a parallelogram. E is mid-point of BC. DE meets the AB (produced) at F. Prove that.

i. DO : OE = 2 : 1

ii. area of $\triangle$OEC: area of $\triangle$OAD = 1 : 4

2)

A metal parallelopiped of measures 16cm $\times$ 11cm $\times$ 10cm was melted to make coins. How many coins were made if the thickness and diameter of each coin was 2mm and 2cm respectively?