VIVEK TUTORIALS

Practice Test

Std: SSC (E.M)	**Subject: Mathematics II**	**Time: 45Min**
Date : 21/Dec/2019	**2 and 3**	**Max Marks: 20**

Q.1 Choose the correct alternative answer for each of the following questions: **2**

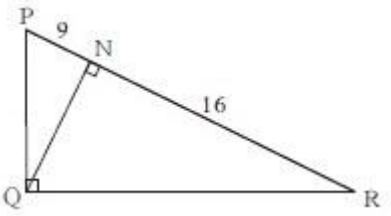
1) Show that 6,8 and 10 form a Pythagorean triple
(a) 6^2 (b) 8^2 (c) 12^2 (d) 10^2

2) Out of the following which is the Pythagorean triplet?
(A) (1,5, 10) (B)(3,4, 5) (C)(2,2,2) (D) (5, 5, 2)

Q.2 Solve the following questions **2**

1) Find the length of the hypotenuse of a right angled triangle if remaining sides are 9 cm and 12 cm.

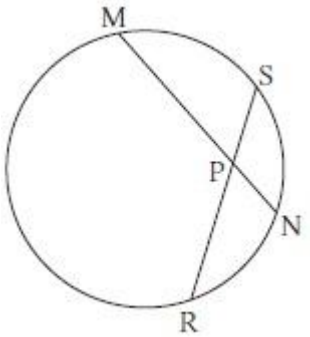
2) In figure below, ∠ PQR = 90°,seg QN ⊥ seg PR, PN = 9, NR = 16. Find QN.



Q.3 Solve the following questions **4**

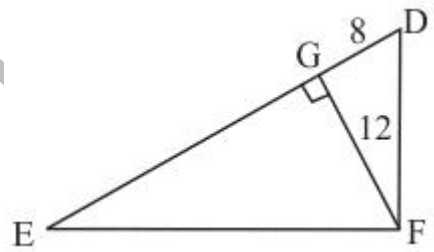
1) Corresponding arcs of congruent chords of a circle (or congruent circles) are congruent.

2) In figure below, chord MN and chord RS intersect each other at point P. If PR = 6, PS = 4, MN = 11 find PN.

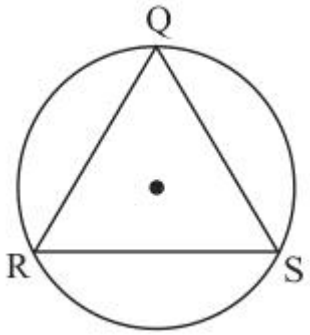


Q.4 Solve the following questions **6**

1) In figure below, ∠DFE = 90°, FG ⊥ ED, If GD = 8, FG = 12, find (1) EG (2) FD and (3) EF

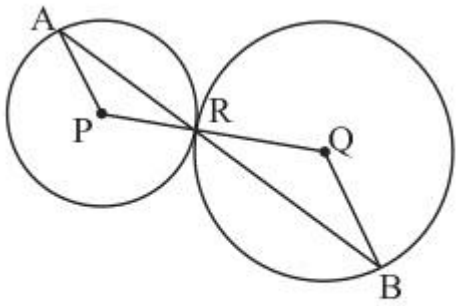


2) In fig below ΔQRS is an equilateral triangle. Prove that, (1) arc RS ≅ arc QS ≅ arc QR (2) m(arc QRS) = 240°.



Q.5 Complete the following Activities **6**

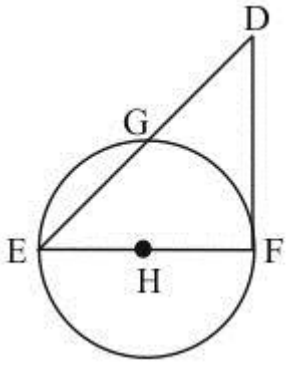
1) In figure below, the circles with centres P and Q touch each other at R. A line passing through R meets the circles at A and B respectively. Prove that-



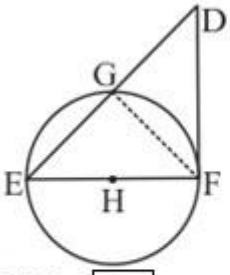
(1) seg AP // seg BQ,
(2) ΔAPR ~ ΔRQB, and
(3) Find ∠RQB if ∠PAR = 35°

P – R - Q.
[When two circles touch each other, then point of contact lies on the line joining centres]
∠PRA ≅ [ ]
.....1 [Vertically opposite angles]
In Δ PRA, seg PA ≅ seg [ ]
[Radii of same circle]
∴ ∠PRA ≅ ∠PAR
.....2 [Isosceles triangle theorem]
In ΔQRB, seg QR ≅ seg QB
[Radii of same circle]
∴ ∠QRB ≅ ∠QBR
.....3 [ ]
∴ ∠PRA ≅ ∠PAR ≅ ∠QRB ≅ ∠QBR
.....4 [From 2 & 3]
∠PAR ≅ ∠QBR [From 4]
∴ Seg AP ∥ seg BQ [Alternate angles test]
In ΔAPR and ΔRQB
(1) ∠PAR ≅ ∠QRB .....[From 4]
(2) ∠PRA ≅ ∠QBR .....[From 4]
∴ Δ APR ~ ΔRQB [AA test]
∠PAR = 35° .....5 [Given]
∠QRB = ∠QBR = [ ].....6 [From 4 & 6]
In ΔQRB,
∠RQB+∠QRB+∠QBR = 180°
[Sum of all angles of a Δ is 180°]
∴ ∠RQB + 35° + 35° = [ ] [From 6]
∴ ∠RQB = 180° - 70°
∠RQB = [ ]

2) In figure below, seg EF is a diameter and seg DF is a tangent segment. The radius of the circle is r. Prove that, DE x GE = $4r^2$



Construction: Draw seg GF



$\angle EFD =$ ☐

.....1 [Tangent and radius are perpendicular at the point of contact]

$\angle EGF = 90°$

.....2 [Diameter subtends a right angle on any point of circle]

In Δ EFD & Δ EGF

1. $\angle EFD \cong$ ☐ [Each 90°, from 1 & 2]
2. $\angle FED \cong \angle GEF$ [Common angle]

$\therefore \Delta EFD \sim \Delta EGF$ [☐]

$\therefore \frac{DE}{FE} =$ ☐ [c.s.s.t.]

$\therefore$ DE x GE = FE x FE 3

FE = ☐

.....4 [FE is diameter & 'r' is radius]

$\therefore$ DE x GE = 2r x 2r

$\therefore$ DE x GE = ☐

-------- All the Best --------