# K V RAILWAY COLONY KHARAGPUR

## WINTER BREAK HOME WORK (2022-23)

**SUBJECT – MATHEMATICS**                                                      **CLASS – IX**

**Solve the following Questions:**

1. Prove that a diagonal of a parallelogram divides it into two congruent triangles.

2. Equal chords of a circle subtend equal angles at the centre.

3. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

4. A circular park of radius 20m is situated in a colony. Three boys Ankur, Syed and David are sitting at equal distance on its boundary each having a toy telephone in his hands to talk each other. Find the length of the string of each phone.

5. In the given figure, O is the centre of the circle with chords AP and BP being produced to R and Q respectively. If ∠QPR = 35°, find the measure of ∠AOB.
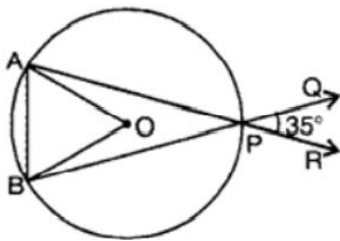


6. In a parallelogram PQRS, ∠P =110°, ∠Q= 2y+10° and ∠R= 5x+10°. Find the values of x and y.

7. In a rhombus PQRS, diagonals PR and QS meet each other at O. If $\angle PRQ = 50°$, find $\angle PSQ$.

8. The perimeter of a triangle is 30cm. Its sides are in the ratio 1 : 3 : 2, then find its area.

9. Calculate the area of the shaded region.
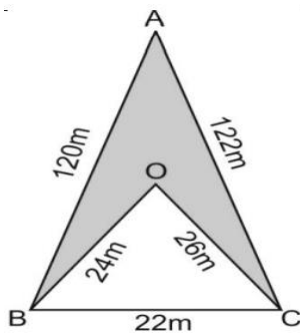


10. If the radius of a sphere is doubled, then the ratio of the volume of the original sphere to that of the new one is a)16:1 b)1:16 c)1:8 d)8:1

11. Find the capacity in litres of a conical vessel having height 8 cm and slant height 10 cm.

12. Using clay, Anant made a right circular cone of height 48 cm and base radius 12 cm. Versha reshapes it in the form of a sphere. Find the radius and curved surface area of the sphere so formed.

## ** Revise Chapter 8,10,12 & 13 from NCERT Textbook for PT-3.