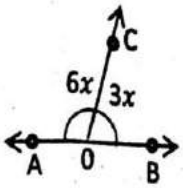
SUMMATIVE ASSESSMENT – I, 2017 MATHEMATICS Class – IX

Time Allowed: 3 hours **Maximum Marks: 80**

Section - A

(A) Question number 1 to 7 carry 1 mark each [7]

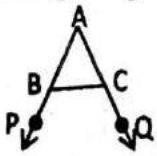
1. Find the value of K for which the polynomial $x^3 - 3x^2 + 3x + K$ has 3 as its zero.
2. What is length of side of an isosceles right Δ of hypotenuse $4\sqrt{2}$ cm.
3. Find the area of right Δ whose base and height are 4 cm and 3 cm respectively.
4. Find the value of P (-1) when $P(x) = 2x^3 - x + 7$.
5. Two supplementary angles differ by 34: Find the greater angle.
6. Write R.H.S. congruency of Δ.
7. In the figure, find the value of x



Section - B

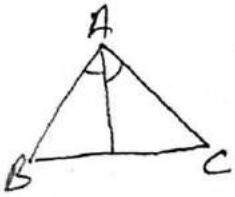
B. Question number 8 to 12 carry 2 marks each [10]

8. Ralionalise the denominator $\frac{1}{5-2\sqrt{6}}$
9. Find the remainder when $P(y) = 4y^3 - 7y^2 + 3y - 4$ is divided by $g(x) = 2y + 1$
10. In the given figure Show that AB>AC



< PBC > < QCB

11. In a Δ ABC if CA = 52° < B = 58° which are the longest and smallest side of the Δ.
12. Plot the point P(0,4) and Q(-3,0) in the Cartesian plane.



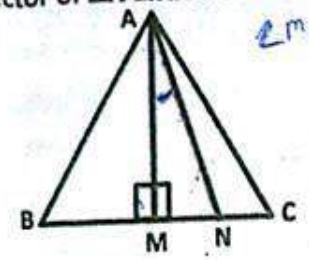
Section – C

Question number 13 to 21 carry 3 marks each. [9X3=27]

13. Draw the graph of $2x + y = 5$.
14. Find the four rational numbers between $\frac{2}{3}$ and $\frac{3}{4}$ by average method.
15. In right triangle one acute angle is twice the other. Show that hypotenuse is twice the smallest side.
16. If $x = 3 - 2\sqrt{2}$ find the value of $x^3 + \frac{1}{x^3}$.
17. Prove that the sum of the two sides of a triangle is greater than the third side.
18. In Δ ABC, AD bisects <A as well as side BC. Show that Δ ABC is an isosceles Δ.
19. The area of an isosceles triangle is 60 cm^2 and the length of its equal side is 13 cm. Find its base.
20. Draw a triangle ABC in which BC=7cm, <B=30° and AB+AC=10cm.

21. In the given Figure $\angle B > \angle C$ and AM is bisector of $\angle A$ and $AM \perp BC$.

Show that $\angle MAN = \frac{1}{2}(\angle B - \angle C)$



$\angle BAM = \angle CAM = \frac{1}{2}\angle A$

$180^\circ - (\angle B + \angle C) -$

$180^\circ - \frac{1}{2}\angle A + \angle 90^\circ$

$\angle MAN = \angle A - (\angle BAM + \angle CAN)$

$\angle AM$

Section –D

Question number 22 to 30 carry 4 marks each. **[9X4=36]**

22. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ then find the values of $x^2 + y^2$.

23. Represent $\sqrt{9.3}$ on the number line. Write steps of representation.

24. Derive remainder theorem. Find the remainder when $(x^3 - 51x - 2)$ in divided by $(x + 1)$.

25. Factories: $2x^3 - 3x^2 - 9x + 10$.

26. Show that the side opposite to larger angle is longer.

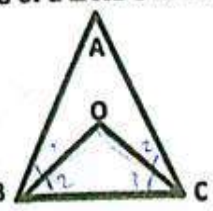
27. Plot that following point in the Cartesian plane.

(1,3) (-1,-1) (-2,-3) (2,3)

28. The sides of a triangle are in the ratio 3:5:7 and its perimeter is 300m. Find the area and height drawn on the longest side.

29. In the given Figure the bisector of $\angle B$ and $\angle C$ of a Δ ABC meet at Point O.

Prove that $\angle BOC = 90^\circ + \frac{1}{2}\angle A$



$\angle BOC = 180 - (\angle 2 + \angle 3)$ -(i)

$\angle B + \angle C + A = 180^\circ$

$\frac{1}{2}\angle A = 180 - (\angle B + \angle C)$

$\frac{1}{2}\angle A = 90^\circ - \frac{1}{2}(\angle BOC)$

$= 90^\circ - \frac{1}{2}\angle B - \frac{1}{2}\angle C$

$= 90^\circ - \angle 2 - \angle 3$

$\frac{1}{2}\angle A = 90^\circ - (\angle 2 + \angle 3$

$\frac{1}{2}\angle A = 90^\circ + \angle BOC$

30. AB and CD are smallest and greatest sides of $\square ABCD$ respectively.

Show that (i) $\angle A > \angle C$ and (ii) $\angle B > \angle D$