SUMMATIVE ASSESSMENT – I, 2016-17
MATHEMATICS Class – IX

Time Allowed : 3 hours **Maximum Marks: 90**

SECTION - A

1. Simplify $\left(\sqrt{x^3}\right)^{\frac{2}{3}}$

2 . Using appropriate identity, factorize $9x^2 + 6x + 1$.

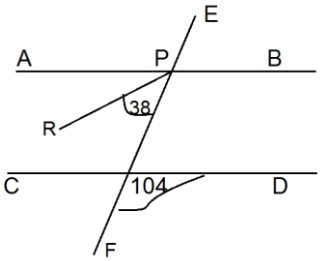
3. A transversal l intersects two lines m and n such that a pair of alternate interior angles is equal. Then, what can you say about the lines in m and n

4. The area of a parallelogram of altitude 12 cm is 108 cm2. Find the base of the parallelogram.

SECTION-B

5. Express $2.1\overline{13}$ in the form p/q, where p and q are integers and $q \neq 0$.

6. Using Remainder theorem, find the remainder when $x^4 - 3x^3 + 2x^2 - 4$ is divided by x + 2.



7. In a Δ ABC, O and P are the points on AB and AC respectively. If OA = ½ AB , PA = ½ AC and OA = PA, show that AB= AC

8. In the figure, PR is the angle bisector of <LAPQ. Prove that AB II CD

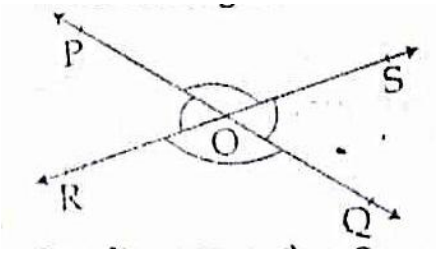
9. In which quadrant or on which axis the following points lie ? (- 2, 3), (2, 4), (4, - 3), (2, 0.)

10. Find the area of a triangle whose sides are 13 cm, 14 cm and 15 cm.

SECTION - C

11. Locate $\sqrt{13}$ on the number line.

12. Find the value of a and b if $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$

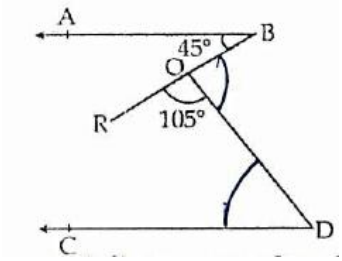


13 Simplify: $(5a + 3b)^3 - (5a - 3b)^3$.

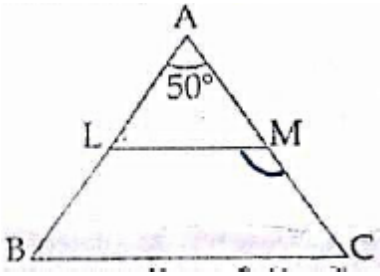
14. if $x^2 + \frac{1}{x^2} = 47$ then find the value of $x^3 + \frac{1}{x^3}$

15. In the figure, lines PQ and RS intersect each other at point 0. If <POR : <ROQ-= 5 : 7, find all the indicated angles.

16. In the figure, AB II CD. If <ABR =45° and <ROD =105", then find <ODC



17. In the figure, ABC is an isosceles triangle in which AB = AC and LM II BC. If <A = 50", find <LMC.



18. ABC is a triangle and D is the mid-point of BC. The perpendiculars from D to AB and AC are equal. Prove that triangle is isosceles.

19. Plot a point P(-3,- 4) on the Cartesian plane. Now, change the sign of its abscissa and call it Q. Plot Q. Also, plot reflections of P and Q in x-axis.

20. Find the area of the trapezium in which parallel sides are 25 cm and 10 cm and nonparallel sides are 14 cm and 13 cm.

SECTION – D

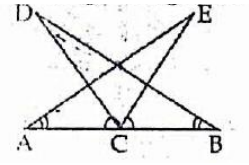
21.if $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ $and\ y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$ $then\ find\ value\ of\ x^2 + y^2 + xy$ 22. Simplify: $\left(\frac{81}{16}\right)^{-\frac{3}{4}} x \left[\left(\frac{25}{9}\right)^{-\frac{3}{2}} \div \left(\frac{5}{2}\right)^{-3}\right]$

23. If the polynomials divided ($2x^3 + ax^2 + 3x - 5$) and ($x^3 + x^2 - 2x + a$) leave the same remainder when divided by x- 2. Find the value of 'a'.

24. By long division, find the quotient and remainder. When polynomial $2x^4$ - 5x3 + 3x - 1 is divided by 2x - 1.

25. Factorise: $(x^2 - 3x)2 - 8(x^2 - 3x) - 20$ 26. Simplify : $7x^3 + 8x^2$ - (4x + 3y) ($16x^2$ – 12xy + $9y^2$)

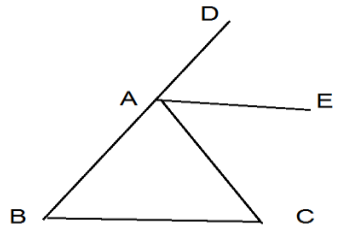
27. In the given figure, if AC = BC, < DCA = < ECB and < DBE= < EAC, Prove that DC = EC



28. Sunil and Shyam have the same weight. If they each gain weight by 5 kg, how will their new weights be compared using the axioms? Write the Euclid's axiom that best supports your answer. Also give two more axioms other than the

29 .If two parallel lines are intersected by a transversal prove that the bisectors of two co interior angle form a rectangle.

30. In figure; A ABC is an isosceles triangle in which AB = AC and AE bisects <CAD. Prove that AE II BC.



31 . A BCD is a square and BX=BY prove that: (i) Δ DCX ≅ Δ DAY (ii) DY = DX (iii) <DXC = <DYA