Summative Assessment-I
Topper Sample Paper - 8
MATHEMATICS
CLASS IX

Time: 3 to $3\frac{1}{2}$ hours Maximum Marks: 80

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. The question paper is divided into four sections
   Section A: 8 questions (1 mark each)
   Section B: 6 questions (2 marks each)
   Section C: 10 questions (3 marks each)
   Section D: 10 questions (4 marks each)
3. There is no overall choice. However, internal choice has been provided in 1 question of two marks, 3 questions of three marks and 2 questions of four marks each.
4. Use of calculators is not allowed.

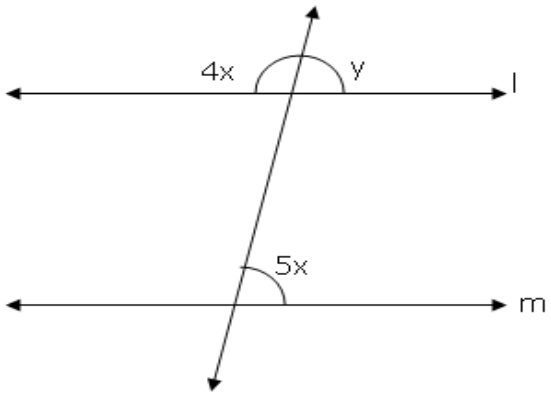
SECTION A

Q1. The value of 2.999….. in the form p/q, where p and q are integers and q≠0, is
(a) $\frac{2999}{1000}$ (b) $\frac{19}{10}$ (c) 3 (d) $\frac{26}{9}$

Q2. The value of k, if y+3 is a factor of $3y^2 + ky + 6$ is
(a)9 (b) -11 (c) 0 (d) 11

Q3. Which of the following cannot be the measurements of the three sides of a triangle
(a)7cm,3.5cm,3.6cm
(b)7cm,3.5cm,4.1cm
(c)3.4cm,3.5cm,7cm
(d)3.5cm,3.8cm,7cm

Q4. Given l ||m, the value of y is:



(a) 20 (b) 100 (c) 40 (d) 80

Q5. If $f(z)= z^2-3\sqrt{2}z-1$ then, $f(3\sqrt{2})$ is equal to

(a) $6\sqrt{2}-1$ (b) 0 (c) $3\sqrt{2}-1$ (d) -1

Q6. The area of a rectangle is $x^2+9x+14$, what are the dimensions of rectangle if x=2.

(a) 14 and 2 (b) 6 and -6 (c) 9 and 4 (d) 18 and 2

Q7. The semi perimeter of a triangle with sides 32 cm, 30 cm and 30 cm is 46 cm. Its area is

(a) $106\sqrt{6}$ cm^2 (b) $204\sqrt{7}$ cm^2 (c) $36\sqrt{161}$ cm^2 (d) $32\sqrt{161}$ cm^2

Q8. The area of an isosceles triangle with base 10 cm and perimeter 36cm is:

(a) 60 sq cm (b) 65 sq cm (c)$138\sqrt{6}$ sq cm (d) 360 sq cm

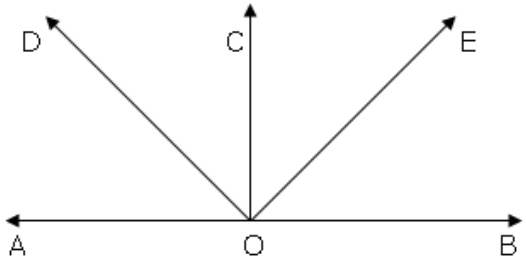
SECTION B

Q9. If $a = 2+\sqrt{3}$, find the value of $a + \frac{1}{a}$.

Q10. How many integral zeroes do the polynomial $3z^3 + 8z^2 -1$ have?

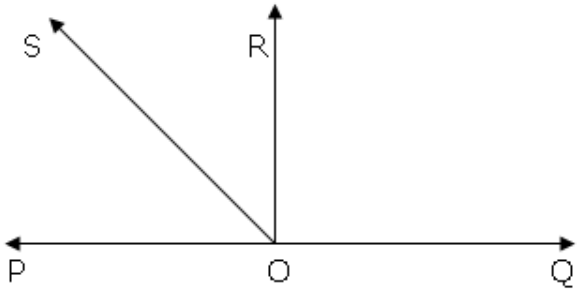
Q11. Simplify : $(-2x+5y-3z)^2$

Q12. In given figure, OD is the bisector of ∠AOC, OE is the bisector of ∠BOC and OD is perpendicular to OE. Show that the points A, O and B are collinear.

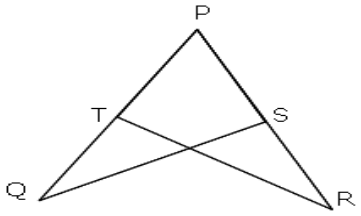


OR

In given figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$



Q13. In given figure, PQ=PR and $\angle Q = \angle R$. prove that QS = RT.



Q14. Plot the points A(2,0), B(5,0) , C(5,3) and D(2,3). What figure is this? Write its one property.

SECTION C

Q15. Find the value of $x^3-8y^3-36xy-216$ when x=2y+6.

OR

If a, b, c are all non-zero and a+b+c=0, prove that $\left(\frac{a^2}{bc}\right) + \left(\frac{b^2}{ca}\right) + \frac{c^2}{ab} = 3$

Q16. Express $0.\overline{001}$ as a fraction in simplest form.

Q17. If $(x + \frac{1}{x})^2 = 3$, find $x^2 + \frac{1}{x^2}$ where, x>0.

OR

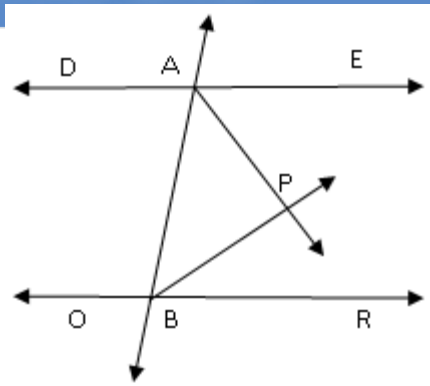
If $x = 1 + \sqrt{2}$, find the value of $(x - \frac{1}{x})^3$

Q18. Represent $\sqrt{5}$ on the number line.

OR

Represent $\sqrt{2.4}$ on the number line.

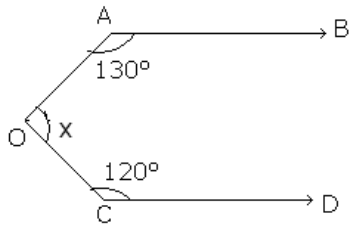
Q19. In given figure, DE||QR and AP and BP are bisectors of $\angle EAB$ and $\angle RBA$ respectively. Find $\angle APB$.



Q20. The perimeter of a triangle is 50cm. One side of the triangle is 4cm longer than the smaller side and the third side is 6cm less than twice the smaller side. Find the area of the triangle.

Q21. Prove that in an isosceles triangle the angles opposite to the equal sides are equal.

Q22. In given figure, AB||CD, find the value of x.



Q23. Given 'n' points such that no three of them are collinear, then how many lines can be drawn through them?

Q24. The bisector of the vertical $\angle A$ of an isosceles triangle ABC meets the base BC at D. If AB = AC = 5 cm, AD = 3cm, Find the length of BC.

SECTION D

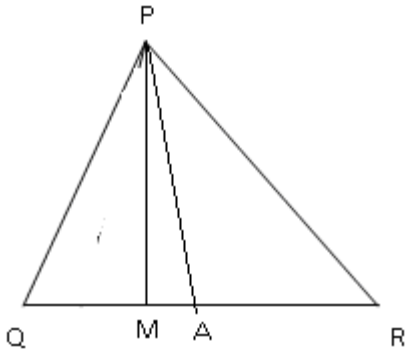
Q25. Without actual division, prove that $2x^4+x^3-14x^2-19x-6$ is exactly divisible by x^2+3x+2.

OR

If the polynomials az^3+4z^2+3z-4 and z^3-4z+a leave the same remainder when divided by z-3, find the value of a.

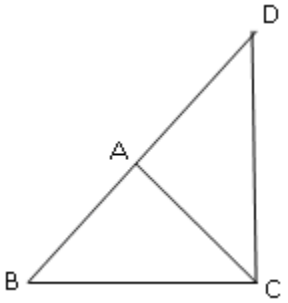
Q26. Factorise : a) $x^4+\frac{1}{x^4}-2$ b) $2x^5+432x^2y^3$

Q27. In given figure, $\angle Q > \angle R$, PA is the bisector of $\angle QPR$ and PM is perpendicular to QR. Prove that $\angle APM = \frac{1}{2}(\angle Q - \angle R)$



OR

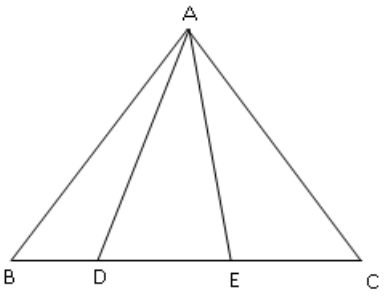
In the given figure, ABC is a triangle in which AB=AC. Side BA is produced to D such that AB=AD. Prove that $\angle BCD=90^{o}$.



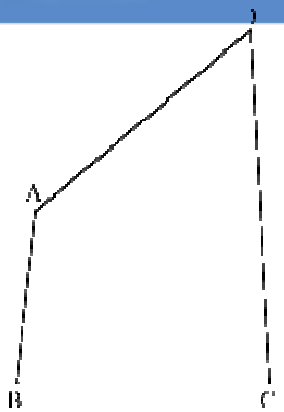
Q28. Factorise : $x^3+13x^2+32x+20$

Q29. If the bisectors of angles $\angle B$ and $\angle C$ of a triangle ABC meet at a point O, then, prove that $\angle BOC = 90^{o} + \frac{1}{2}\angle A$.

Q30. In ΔABC, points D and E are on side BC such that BD=CE and AD=AE. Prove that ΔADB is congruent to ΔAEC. Is $\angle ABC=\angle ACB$? Why?



Q31. AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD. Show that $\angle A > \angle C$ and $\angle B > \angle D$.



Q32. Find the value of $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2}$

Q33. Find $x^3 + y^3$ when $x = \frac{1}{3-2\sqrt{2}}$ and $y = \frac{1}{3+2\sqrt{2}}$

Q34. Find the area of the triangle formed by A(0,4),B(0,0),C(3,0).