

SUMMATIVE ASSESSMENT - I, 2015-16
MATHEMATICS
Class - IX

Time Allowed : 3 hours

Maximum Marks: 90

General Instructions:

- All questions are compulsory.
- The question paper consists of 31 questions divided into four sections A, B, C and D. Section-A comprises of 4 questions of 1 mark each; Section-B comprises of 6 questions of 2 marks each; Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each.
- There is no overall choice in this question paper.
- Use of calculator is not permitted.

SECTION-A

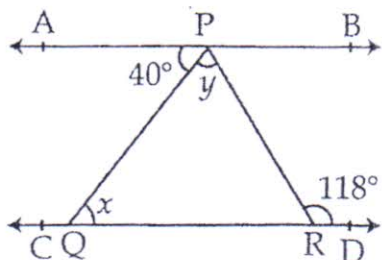
Question numbers 1 to 4 carry one mark each.

- ✓ Simplify: $[7(81^{1/4} + 256^{1/4})^{1/4}]^4$ 1
- ✓ If $3x - 1$ is a factor of the polynomial $6x^2 + x - 1$, then find the other factor. 1
- ✓ Write ASA congruence rule for two triangles. 1
- ✓ In which quadrants do points have abscissa and ordinate with same sign? 1

SECTION-B

Question numbers 5 to 10 carry two marks each.

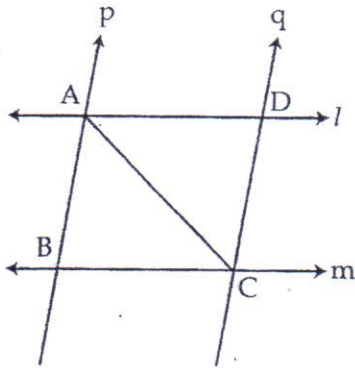
- ✓ Express $3\frac{4}{5}$ in the decimal form and state the kind of decimal expansion. 2
- ✓ Find the remainder when $x^3 - 4x^2 + 12x + 7$ is divided by $x + \frac{1}{2}$. 2
- ✓ In the figure, if $AB \parallel CD$, $\angle APQ = 40^\circ$ and $\angle PRD = 118^\circ$, find x and y . 2



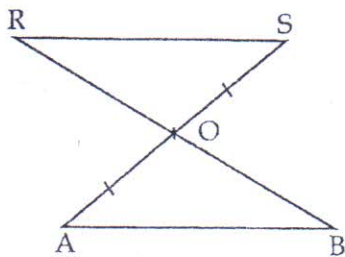
- 8 State Euclid's fifth postulate.
- 9 A point is at a distance of 4 units from x -axis and 5 units from the y -axis. Represent the position of the point in the Cartesian plane and also write its co-ordinates.
- 10 Find the area of an equilateral triangle whose perimeter is 18 cm, using Heron's formula. (Use $\sqrt{3} = 1.73$)

SECTION-C

- 11 Question numbers 11 to 20 carry three marks each.
- 11 If $a = 1 + \sqrt{7}$, find the value of $\frac{-6}{a}$ 3
- 12 Expand the following : 3
- $(a - 2b - 3c)^2$
- 13 If $f(x) = 5x^2 - 4x + 5$, find $f(1) + f(-1) + f(0)$. 3
- 14 Using a suitable identity, evaluate : $(-28)^3 + (9)^3 + (19)^3$ 3
- 15 l and m are two parallel lines intersected by another pair of parallel lines p and q as shown in the figure. Show that $\triangle ABC \cong \triangle CDA$. 3

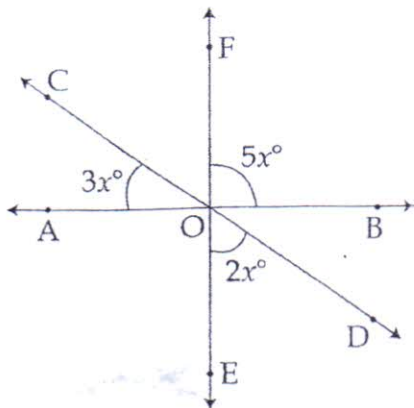


- 16 In the given figure, if the line segment AB is parallel to another line segment RS and O is the mid-point of AS, then Show that : 3
- (i) $\triangle AOB \cong \triangle SOR$ (ii) O is also mid-point of BR



17

In the given figure, lines AB, CD and EF meet at O. Find the value of x , hence find all the three indicated angles. 3

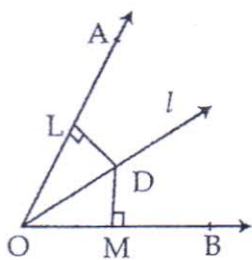


18

In the figure, line l is the bisector of $\angle AOB$. D is a point on l . $DL \perp OA$ and $DM \perp OB$. Prove that : 3

(i) $\triangle OMD \cong \triangle OLD$

(ii) $DM = DL$

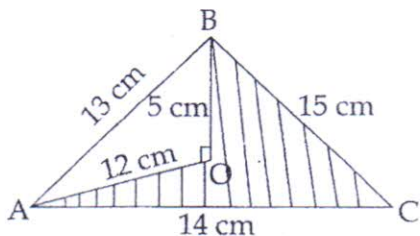


19

Plot the points $(-3, -4)$, $(-5, 0)$ and $(\frac{-3}{2}, \frac{1}{2})$. Also, write the quadrant / axes in which these points lie. 3

20

In the figure given below, calculate the area of the shaded region. (angle $AOB = 90^\circ$) 3



SECTION-D

Question numbers 21 to 31 carry four marks each.

21

Express $0.\overline{3178}$ in the form of p/q where p and q are integers and $q \neq 0$. 4

22

Give an example of two irrational numbers whose : 4

(i) difference is an irrational number

- (ii) sum is an irrational number
- (iii) product is an irrational number
- (iv) division is an irrational number

Justify also.

23 Simplify: $\frac{(x^2 - y^2)^3 + (y^2 - z^2)^3 + (z^2 - x^2)^3}{(x - y)^3 + (y - z)^3 + (z - x)^3}$ 4

24 What are the possible expressions for the dimensions of a cuboid, whose volume = $36kx^2 - 21kx + 3k$? 4

25 Verify if $-\frac{1}{2}$ and $\frac{5}{2}$ are zeroes of the polynomial $4x^3 - 21x - 10$. If yes, then factorise the polynomial. 4

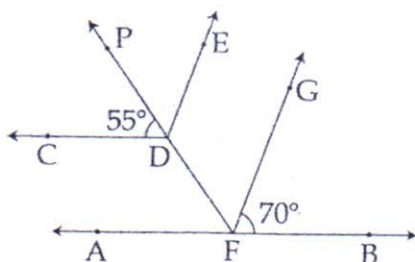
26 Find the value of $a^3 + 8b^3$ if $a + 2b = 10$ and $ab = 15$. 4

27 For spreading the message "Save environment Save Future" a rally was organized by some students of a school. They were given triangular cardboard piece ABC which they divided in to two parts by drawing the angle bisectors BO and CO of base angles B and C. Prove that $\angle BOC = 90 + \frac{1}{2} \angle A$. What is the benefit of these types of rallies? 4

28 "A square is a polygon made up of four line segments, out of which, length of three line segments are equal to the length of fourth one and all its angles are right angles". 4

Define the terms used in this definition which have been highlighted/underlined.

29 In given figure $AB \parallel CD$ and $DE \parallel FG$. Determine $\angle PDE$, $\angle AFD$ and $\angle DFG$. 4



30 The angles of a triangle are in the ratio 2 : 4 : 3. Find the largest angle of the triangle. 4

31 The angles of a triangle are $(x - 40)^\circ$, $(x - 20)^\circ$ and $\left(\frac{x}{2} - 10\right)^\circ$. Find the value of x and then the angles of the triangle. 4

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