DELHI PUBLIC SCHOOL, JAMMU
SESSION 2018-19
Assignment-I

Class: IX   **Subject: Maths**

Topics: Number system, Polynomials, Coordinate geometry, Euclid geometry, Line and Angles, Heron's Formula, Triangles.

Multiple Choice Questions:-

1) Area of triangle with sides 3cm, 4c, and 5cm is

   a) $2cm^2$ b) $4cm^2$ c) $6cm^2$ d) $8cm^2$

2) Degree of polynomials $6x^4 - 4x^3y^3 + 2x^5 + 7$ is :-

   a) 4   b) 5   c) 6   d) 7

3) If $x + \dfrac{1}{x} = 7$, then $x^2 + \dfrac{1}{x^2}$ is :

   a) 45   b) 47   c) 49   d) None of these

4) Factors of $x^2 + x - 12$ are:

   a) (x-4) (x+3)   b) (x+4) (x-3)   c) (x-4) (x-3)   d) None

5) Coordinates (-7, 6) of point P lies in which quadrant in Cartesian plane:

   a) 1st Quadrant   b) 2nd Quadrant

   c) 3rd Quadrant   d) 4th Quadrant

Very Short Answer Type:

1) Find 5 Rational Numbers between 5/6 and 6/7.

2) Show that 1, 2 and 3 are zeros of

   $F(x) = x^3 - 6x^2 + 11x - 6$.

3) Find the value of 'x' if (3x +20) and (4x-36) forms a linear pair.

4) Find the coordinates of the vertices of the square ABCD (side= 2 units), taking AB and AD as axis.

5) Name the quadrant or axis in which the points (-2,4), (3,-1), (-1,0) and (0,2) lies.

Short Answer Type:-

1. Locate the following on Number line:

   a) $\sqrt{13}$ b) $\sqrt{8}$ c) $\sqrt{5}$

2. Represent the following on Number line by successive magnification:-

   a) 4.987   b) 9.819   c) 4.92

3. If a = $9-4\sqrt{5}$, find the value of $a^2 + \dfrac{1}{a^2}$

4. Find the value of 'a' and 'b' if :-

   $$\dfrac{7+3\sqrt{5}}{3+\sqrt{5}} - \dfrac{7-3\sqrt{5}}{3-\sqrt{5}} = a + \sqrt{5}b$$

5. Prove that

   $$\dfrac{a^{-1}}{a^{-1}+b^{-1}} + \dfrac{a^{-1}}{a^{-1}-b^{-1}} = \dfrac{2b^2}{b^2-a^2}$$

6. Find area of a rhombus whose perimeter is 200 cm and one of the diagonal is 80m.

7. Find the value of K for which $(x^4 - K^2x + 3 - K) \div (x-3)$

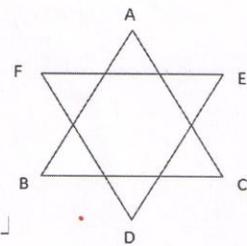8. If $x + y = \sqrt{11}$, $x^2 + y^2 = 5$ find the value of xy.

9. Simplify

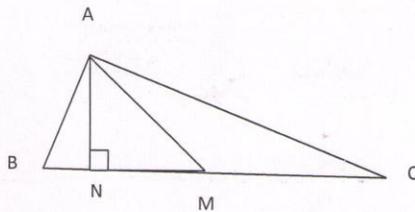 $$(\tfrac{1}{3}a + \tfrac{2}{3}b)^3 + (\tfrac{1}{3}a - \tfrac{2}{3}b)^3$$

10. The perimeter of a triangle field is 420 m and its sides Are in the ratio of 6:7:8. Find the area of triangle.
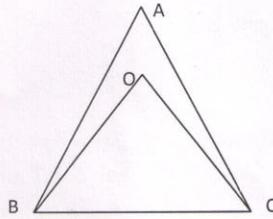
Long answer type questions

1. In figure, show that $\angle A + \angle B + \angle C + \angle D + \angle E + \angle F = 360^\circ$

2. In figure shown below, $\angle B < \angle C$. If AM is bisector of $\angle BAC$ and AN ⌐ prove that $\angle MAN = \tfrac{1}{2}(\angle B - \angle C)$

3. BO and CO are bisectors of $\angle B$ and $\angle C$ of a $\triangle$ ABC. Prove that $\angle BOC = 90^0 + \frac{1}{2} \angle A$.

4. Diagonals PR and QS of a quadrilateral PQRS intersect each other at point O. prove that PQ + QR + RS + SP < 2 (PR+QS).

5. Prove that perimeter of a triangle is greater that sum of its three medians.

6. A trapezium has parallel sides of length 18 cm and 10 cm. Find its area, if the other two sides are each of length 5cm.

7. Plot the points (-1, 0), (1 , 0) , (1 , 1) and (-1 , 1). Join them in order. What figure do you get?

8. Find the value of 'a', when $x^4 - 2x^3 + 3x^2 - ax + 3a -7$ divided by x+1 , leaves the remainder 19.

9. Simplify:

$$\frac{(4x^2 - 9y^2)^3 + (9y^2 - 16z^2)^3 + (16z^2 - 4x^2)^3}{(2x - 3y)^3 + (3y - 4z)^3 + (4z - 2x)^3}$$

10. Prove that :

$$\left(\frac{x^a}{x^b}\right)^{\frac{1}{ab}} - \left(\frac{x^b}{x^c}\right)^{\frac{1}{bc}} \cdot \left(\frac{x^c}{x^a}\right)^{\frac{1}{ca}} = 1$$

11. If $x = 3 + \sqrt{2}$, then find whether $x + \frac{1}{x}$ is rational or irrational ?