HERITAGE SCHOOL JAMMU

SAMPLE PAPER (HALY YEARLY EXAM)

(SESSION 2017–2018)

SUBJECT : MATHEMATICS

CLASS : IX **M.M : 80**

TIME : 3 hr

General Instructions:

SECTION - A

1) What is the distance of point (0,-5) from the origin?

2) Tell whether the equation $x(x-2)-x^2+y(y-3)-y^2=0$ is an equation of linear equation in two variables or not.

3) Name the line segments determined by three collinear points P,Q and R.

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

5) It is given that $\Delta ABC \cong \Delta FDE$ and AB=6cm,$\angle B = 40^0$ and $\angle A = 80^0$. What is the length of side DF of triangle FDE and its $\angle E$?

6) Diagonals AC and BD of parallelogram ABCD intersect at O. If $\angle BOC = 40^0$ and $\angle BDC = 50^0$ find$\angle OAB$.

SECTION – B

7) A point is at a distance of 4 units from the x-axis and 5 units from y-axis. Represent the position of point in the Cartesian plane and also write its coordinates.

8) Draw the graph of linear equation in two variables x+2y=4.

9) Ram and Ravi have the same weight. If they each gain weight by 2kg, how will their new weights be compared?

10) The side BC of triangle ABC is produced in both the directions. Prove that the sum of two exterior angles so formed is greater than 180^0.

11) In triangle ABC, AB=AC, D and E are points on side BC such that BE=CD. Prove that AD=AE.

12) Prove that the diagonals of a rhombus bisect each other at right angles.

SECTION – C

13) Find the values of a and b if

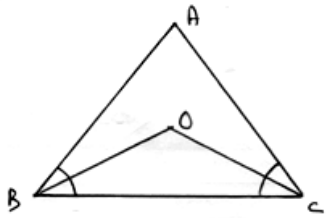
$$\frac{7+\sqrt{5}}{7-\sqrt{5}}-\frac{7-\sqrt{5}}{7+\sqrt{5}}=a+\frac{7}{11}\sqrt{5}b$$

14) If $z^2+1/z^2=34$ find the value of z^3+1/z^3 using only the positive value of $z+1/z$.

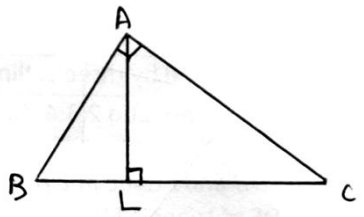
15) Find the values of a and b so that x+1 and x-1 are factors of $x^4+ax^3+2x^2-3x+b$.

16) Draw the graph of linear equation 3x+4y=6. At what points, the graph cuts the x-axis and the y-axis.

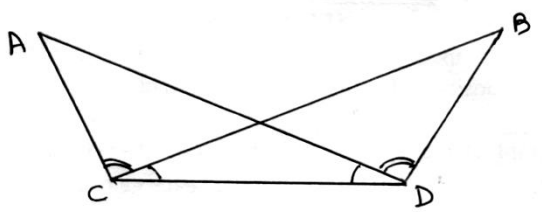
17) In triangle ABC, the internal bisectors of $\angle B$ and $\angle C$ meet at point O. Prove that $\angle BOC = 90 + \angle A/2$



18) A triangle ABC is right angled at A . L is a point on BC such that AL is perpendicular to BC. Prove that $\angle BAL = \angle ACB$.



19 In the given fig. $\angle BCD = \angle ADC$ and $\angle ACB = \angle BDA$. Prove that AD=BC and $\angle A = \angle B$.



20 Prove that the sum of angle of triangle 180^0.

21 Two parallel lines l and m are intersected by a transversal p. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.

22 Prove that the line segment joining the mid points of two sides of triangle is parallel to third side and half of it.

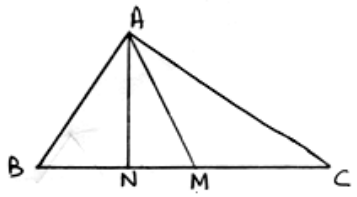
SECTION – D

23 It is given that 3a+4b=5c, then find the value of $27a^3+8b^3-125c^3$ if abc=0.

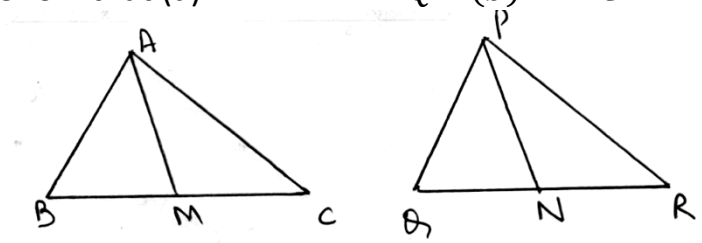
24 Simplify $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$

25 The force exerted to pull a cart is directly proportional to the acceleration produced in the body. Express the statement as a linear equation of two variables and draw the graph of same by taking the constant mass equal to 6kg. Read from the graph, the force required when the acceleration produced is (a) $5m/s^2$ (b) $6m/s^2$

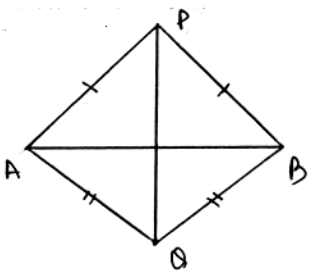
26 In triangle ABC, $\angle B > \angle C$, AM is bisector of $\angle BAC$ and AN is perpendicular to BC, prove that $\angle MAN = \frac{1}{2}(\angle B - \angle C)$ See fig.



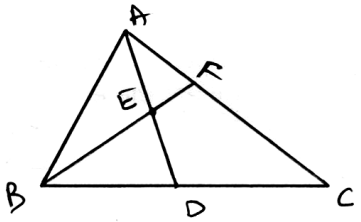
27 Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of triangle PQR. Show that (a) $\Delta ABM \cong \Delta PQN$ (b) $\Delta ABC \cong \Delta PQR$



28 In fig, AB is a line segment and points P and Q are on opposite sides of AB such that each of them is equidistant from points A and B. Show that the line PQ is perpendicular bisector of AB.



29 AD is median of triangle ABC, E is mid point of AD, BE produced meet AC at F, show that AF=1/3AC.



30 A and B are two points on same side of line l. AD and BE are perpendiculars on line l intersecting at D and E respectively. C is mid point of AB. Prove that CD=CE.