SECOND TERM EXAMINATION

MATHEMATICS

(Class IX)

(Number System, Triangles, Quadrilateral, Heron's Formula and Statistics)

Question Paper

SECTION –A **(10x1=10)**

1) In ΔABC and ΔPQR, if $AB = QR$, $BC = PR$ and $CA = PQ$, then

(a) $\Delta ABC \cong \Delta PQR$ (b) $\Delta CBA \cong \Delta PRQ$

(c) $\Delta BAC \cong \Delta RPQ$ (d) $\Delta PQR \cong \Delta BCA$

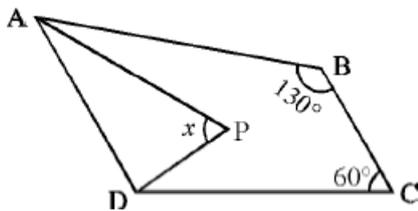2) A number is irrational if and only if its decimal representation is:

(a) non-terminating   (b) non-terminating and repeating

(c) non-terminating and non-repeating   (d) terminating

3) ABCD is a quadrilateral and AP and DP are bisectors of $\angle A$ and $\angle D$. The value of x is:

(a) $60°$ *(b)* $85°$ *(c)* $95°$ *(d)* $100°$

4) The ratio between upper limit and lower limit of a class is 3: 2. If the class mark is 15, then lower limit of the class-interval is:

(a) 9   *(b)* 12   *(c)* 15   *(d)* 18

5)If $8^{x+1} = 64$ then the value of 3^{2x+1} is

a)1   b)3   c)9   d27

6)The base of the isosceles right triangle is 30cm its area is _____

7)If ABCD is rectangle with ∠BAC = 32, find the measures of ∠DBC

8)If the mode of scores 3,4,3,5,4,6,6, x is 4, find the value x

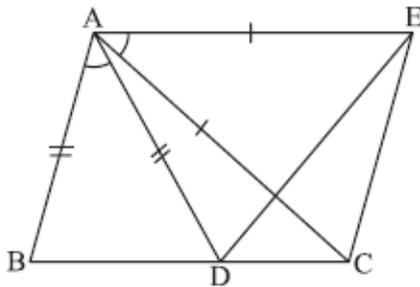9)In two congruent triangles ABC and DEF, if AB= DE and BC = EF. Name the pairs of equal angles.

10)Express 1.272727……….. in the form of p/q where p and q are integers and q $\neq$0

SECTION –B   (5x2=10)

11)If $1176 = 2^a \times 3^b \times 7^c$, find the values of a, b and c. Hence find the value of $2^a \times 3^b \times 7^{-c}$

12) In the figure, AC = AE, AB = AD and ∠BAD = ∠EAC. Show that BC = DE.

13)If ABCD is a parallelogram and X, Y are the mid-points of sides AB and CD respectively. Show that quadrilateral AXCY is parallelogram.

14) The mean of 70 observations was found to be 150. While checking, it was detected that one value 210 was wrongly copied as 140, while calculating the mean. Find the correct mean.

15) In the figure, P is the mid-point of side BC of a parallelogram ABCD such that ∠BAP = ∠DAP. Prove that AD = 2CD.
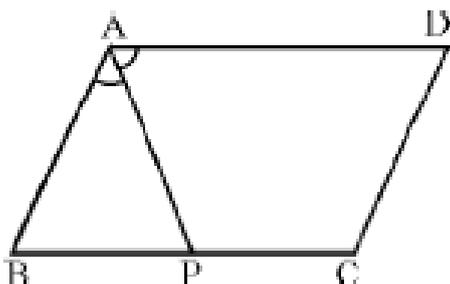
16) The following table gives the distribution of students of two sections according to the marks obtained by them.

| SECTION-A		SECTION-A	
Marks	No.Of students	Marks	No.Of students
0-10	3	0-10	5
10-20	9	10-20	19
20-30	17	20-30	15
30-40	12	30-40	10
40-50	9	40-50	1

Prepare frequency polygon of above data with same axes.

17)In triangle ABC, AD is median through A and E is mid-point of AD, BE produced meets AC in F. Prove that $AF = \frac{1}{3}AC$

18) In the figure, two sides AB and BC and the median AM of ΔABC are respectively equal to sides DE and EF and the median DN of ΔDEF. Prove that ΔABC ≅ ΔDEF
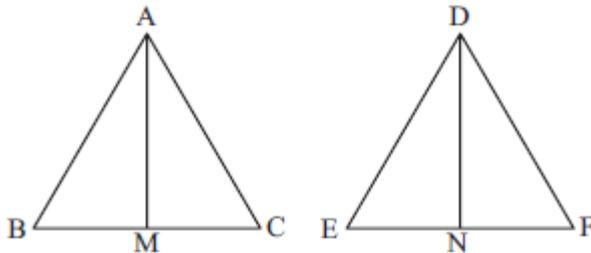
19)Find the area of the trapezium whose parallel sides are 25m and 13m and non parallel sides are 15m and 15m.

20) If x=2+$2^{1/3}$ +$2^{2/3}$ find x^3 +$6x^2$+6x-2

21)Prove that any two sides of a triangle of a triangle are together greater than twice the median drawn to the third side

SECTION-D   (3x4=12)

22) Prove that the line segment joining the mid-points of diagonals of a trapezium is parallel to each of the parallel sides and is equal to half the difference of the sides

23)If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ find $x^2 + y^2$

24)If two isosceles triangles have common base, prove that the line joining vertices bisects them at right angles