

MATHS
CLASS-IX

MAX. MARKS- 100

TIME- 3 Hrs

SECTION-A (Each questions of 03 marks)

- 1) Express 3.3333... as a rational number.
- 2). Find three rational numbers between $\frac{1}{4}$ and $\frac{3}{4}$.
- 3) A page from the pass book of Mr. Abhay is given as below:-

Date	Particulars	Withdrawn (Rs.)	Deposits(Rs.)	Balance(Rs.)
22-08-2004	By cash	--	150000.00	160000.00
22-08-2004	By cash	--	20000.00	190000.00
07-10-2004	By cheque	14,000.00	--	50000.00
10-10-2004	By cash	--	170000.00	220000.00
20-11-2004	By cheque	5,000.00	--	17000.00
30-10-2004	By cash	--	30000.00	200000.00

Abhay closed his account on 5th January 2005. Find the amount received by him if rate of interest is 10% per annum

- 4) Factorise:- $8(a+2b)^2 - 6(a+2b) + 2$.
- 5) Two numbers are in the ratio 5:6. If 40 is added to each number they become in the ratio 7:8. Find the two numbers.
- 6) If two medians of a triangle are equal, prove that triangle is isosceles.
- 7) If $AB > AC$ and D is a point on side BC of $\triangle ABC$. Prove that $AB > AD$.
OR If S is any point in the interior of $\triangle PQR$. Prove that $PQ + SR < PQ + PR$.
- 8) Find the cost of living index for the year 2002, taking 1995 as the base year from the following data :-

Items	Quantity (kg.)	Rate (In Rs.) per kg.	
		In 1995	In 2002
A	40	120	140
B	30	207	247
C	12	164	189
D	08	09	18
E	05	17	12

- 9) In $\triangle ABC$, AD is median through A and E is mid-point of AD. BE produced meets AC in F. Prove:- $AF = \frac{1}{3} AC$. OR In a parallelogram, if a diagonal bisects one angle, Prove that it also bisects the opposite angle.
- 10) ABCD is a quadrilateral. A line through D parallel to AC meets BC produced in P. Prove a $r(\triangle ABP) = a r(\square ABCD)$

SECTION-B (Each questions of 04 marks)

- 11) Solve:- $\frac{\sqrt{(2-x)} + \sqrt{(2+x)}}{\sqrt{(2-x)} - \sqrt{(2+x)}} = 3$
OR If $x = \frac{6pq}{P+q}$, Find the value of $\frac{x+3p}{x-3p} + \frac{x+3q}{x-3q}$
- 12) Find the value of a and b so that each of the following equations may have $x=3$ and $y=-2$ as a solution.
a) $5x + ay = 8$ b) $7x + by = 4b$
- 13) Find the remaining parts of a triangle ABC, right angled at B, in which $\angle C = 60^\circ$, $AB = 5\text{cm}$.
OR If $\tan\theta = 4/5$ find value of $\frac{4\sin\theta + 2\cos\theta}{3\sin\theta - 2\cos\theta}$
- 14) If $A = 45^\circ$, Verify $\cos 2A = 1 - 2\sin^2 A$
- 15) find median and mode of following data :- 24,17,13, 24, 26, 20, 26, 30, 8, 41,24.
If one 26 is replaced by 24. Find new median and mode.
- 16) The base of right prism is equilateral triangle of area 173 cm^2 and volume of prism is 10380 cm^3 . Find height and lateral surface area of prism ($\sqrt{3} = 1.73$)
- 17) Draw the graph of equation:- $-2x + y = 4$.
From the graph find the value of y when $x = 2$.
- 18) The distribution of weight (in kg) of 100 people given below:-

Weight (in kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
Frequency	163	265	248	145	182	75	72

Construct a histogram and frequency polygon for the data.

- 19) The weight (in kg) of 20 oranges are given below:-
145, 55, 34, 100, 175, 90, 40, 60, 650, 45, 80, 75, 70, 60, 70, 70, 60, 95, 85, 35.
Construct a frequency distribution table and cumulative frequency table for the above data with one of the class interval is 30-40.

SECTION-C (Each questions of 06 marks)

- 20) Prove that sum of three angles of a triangle is 180° . Using this find x and all angles if three angles of a triangle are $(2x - 70)^\circ$, $(x + 25)^\circ$, and $(3x + 12)^\circ$.
OR Prove the line segment joining the mid-points of any two sides of a triangle is parallel to the third side and equal to half of it.
Using this ABCD is a rhombus and P, Q, R, S the mid-points of AB, BC, CD and DA. resp. Show that PQRS is a rectangle.
- 21) Find the difference between compound interest on Rs.8000 for $1\frac{1}{2}$ years at 10% p.a. when compounded annually and compounded semi- annually.
OR Hari Chandan started the business with an initial investment of Rs.500000. In the first year, he incurred a loss of 4%, in second year he earned a profit of 5% and in third year it rose to 10%. Calculate the net profit for the entire period of 3 yrs.