

Syllabus

General Mathematics IX

Maximum Marks: 75

General Information

The paper of General Mathematics Class-IX consists of THREE Sections.

Section 'A': It consists of **15 Multiple Choice Questions (MCQs)** and **ALL** MCQs are to be answered. Each MCQ carries **1 mark**. The total marks for this section are **15**.

Section 'B': It consists of **10 Short-Answer Questions (SAQs)** out of which **6 (Six)** questions are to be answered. Each SAQ carries **5 marks**.
The total marks for this section are **30**.

Section 'C': It consists of **5 Detailed-Answer Questions (DAQs)** out of which **3 (Three)** questions are to be answered. Each DAQ carries **10 Marks**. The total marks for this section are **30**.

Subject: General Mathematics

Class: IX

Theme		Distribution of Questions		
		Multiple Choice Questions	Short Answer Questions	Detailed Answer Questions
Number System	Topics	MCQs 0-3	SAQs 0-2	DAQs 0-2
	- Define the Decimal system, Base two system, and Base five system - Convert binary numbers into decimal numbers or vice versa - Solve Addition and subtraction sums of binary numbers - Convert base five system numbers into decimal numbers or vice versa			

	-Solve addition and subtraction sums of base five system			
Percentage, Ratio, and Proportion	Topics	MCQs 0-3	SAQs 0-3	DAQs 0-2
	<ul style="list-style-type: none"> -Concept of Percentage -Convert percentage to a fraction and vice versa -Convert percentage to a decimal and vice versa -Calculate quantities when percentage is given -Solve real-life problems involving percentage -Concept of Ratio -Solve real-life problems involving ratio -Concept of Proportion -Direct, inverse, and compound proportion -Solve problems involving direct, inverse, and compound proportion 			
Zakat, Ushr and Inheritance	Topics	(MCQs) 0-3	(SAQs) 0-3	(DAQs) 0-2
	<ul style="list-style-type: none"> -Concept of Zakat, rate of zakat and nisab of zakat -Calculate the amount of zakat -Concept of Ushr and nisab of ushr -Calculate the amount of Ushr -Concept of Inheritance -Calculate the amount of the share of each legal inheritor 			
Business Mathematics	Topics	(MCQs) 0-3	(SAQs) 0-2	(DAQs) 0-2
	<ul style="list-style-type: none"> -Concept of Profit and Loss (cost price, selling price, profit (SP>CP), Loss (SP<CP)) -Calculate profit or loss -Solve real-life problems involving profit and loss -Concept of Discount -Calculate discount -Solve real-life problems involving discount -Concept of business partnership -Distribute the profit/loss among the partners 			

Financial Mathematics	Topics	(MCQs) 0-3	(SAQs) 0-3	(DAQs) 0-2
	<ul style="list-style-type: none"> -Concept of commercial bank deposits and types of bank account (PLS saving bank account, current deposit account, PLS term deposit account, and foreign currency account) -Concept of negotiable instruments like cheques, demand draft, and pay order -Concept of online banking, transactions through ATM, Debit, and Credit cards -Concept of Exchange of Currencies -Convert the value of a given amount of the currency of one country in terms of another currency -Concept of Profit/Markup -Calculate the profit/markup, the principal amount, the profit/markup rate, the period -Solve problems related to commercial banking and national saving schemes -Concept of sales tax, excise duty, property tax and income tax -Calculate the amount of sales tax, excise duty, property tax and income tax 			
Exponents and Logarithm	Topics	(MCQs) 0-4	(SAQs) 0-3	(DAQs) 0-2
	<ul style="list-style-type: none"> -Identify radicals and radicands -Distinguish between the radical form and exponential form of an expression -Convert an expression given in radical form to an exponential form or vice versa -Identify base and exponent -Apply the law of exponents to simplify expressions with real exponents -Convert a number in an ordinary form (common form) to scientific notation or vice versa -Concept of Logarithm and exponential form and relationship with each other -Convert logarithmic form to exponential form or vice versa -Define a common logarithm, characteristic, and mantissa of a log number - Find the log of a number by using a table -Find the antilog of a number by using the antilog table -Prove the laws of logarithm: $\log_a(mn) = \log_a m + \log_a n$ $\log_a \frac{m}{n} = \log_a m - \log_a n$			

	$\log_a m^n = n \log_a m$ -Apply logarithm laws to solve related problems			
Arithmetic and Geometric Sequence	Topics	(MCQs) 0-3	(SAQs) 0-3	(DAQs) 0-2
	<ul style="list-style-type: none"> -Define a sequence (progression) and its terms -Identify arithmetic sequence -Find the nth or general term of an arithmetic sequence -Solve problems involving arithmetic sequence -Identify the arithmetic mean between two numbers -Insert n arithmetic mean between two numbers -Identify a geometric sequence -Find the nth or the general term of a geometric sequence -Solve problems involving geometric sequence -Identify the geometric mean between two numbers -Insert n geometric means between two numbers 			
Sets and Functions	Topics	(MCQs) 0-3	(SAQs) 0-3	(DAQs) 0-2
	<ul style="list-style-type: none"> -Identify operations on set (U, \cap, \cup or /) -Apply the operations on sets: union, intersection, difference, and complement -Verify the fundamental properties of union and intersection of two or three given sets: Commutative Property of Union and Intersection Associative Property of Union and Intersection -Draw a Venn Diagram to represent the union and Intersection of sets, the Complement of a set -Draw a Venn Diagram to verify: Commutative Laws for Union and Intersection of sets, Associative Laws for Union and Intersection of Sets -De-Morgan's Laws -Describe the Binary Relation -Find the domain and range of binary relation -Define functions and identify their Domain and Range -Demonstrate the functions: into function, one-one function, onto function, into and one-one function (injective), onto function (surjective), one-one and onto function (bijective) function 			
Linear Graphs	Topics	(MCQs)	(SAQs)	(DAQs)

		0-3	0-2	0-2
	<ul style="list-style-type: none"> -Identify a pair of real numbers as an ordered pair -Describe rectangular and cartesian plane -Locate an ordered pair (a, b) as a point in the rectangular plane -Draw different geometrical shapes (i.e. line segment, triangle, rectangle, etc.) by joining a set of given points -Construct a table for pairs of values satisfying a linear equation in two variables 			
Basic Statistics	Topics	(MCQs) 0-3	(SAQs) 0-3	(DAQs) 0-2
	<ul style="list-style-type: none"> -Construct a grouped frequency table -Construct histograms with equal and unequal class intervals -Construct a frequency polygon -Construct a cumulative frequency table -Construct a cumulative frequency polygon -Calculate (for ungrouped and grouped data) Arithmetic Mean by definition and using deviations from assumed means -Recognize properties of arithmetic mean -Calculate weighted mean and moving averages -Estimate median, quartiles, and mode graphically -Measure range, variance and standard deviation 			

11. Formula $\frac{\sum x}{n}$ is used for calculating:
A) Arithmetic Mean B) Median C) Mode D) Frequency
12. In 0, 2, 3, 2, 5, 6 the mode will be:
A) 0 B) 2 C) 3 D) 6
13. _____ = 2 times of radius
A) Circumference B) Diameter C) Chord D) Area
14. Formula for measuring Circumference of a Circle is:
A) $2 \pi r$ B) πr^2 C) $2 \pi r^2$ D) πr
15. The sum of interior angles of a triangle is:
A) 90° B) 180° C) 270° D) 360°

END OF SECTION 'A'

SECTIONS B & C

Time: 2 hours 35 minutes

Total Marks: 60

SECTION 'B'

Total Marks: 30

(Short Answer Questions)

Note: Attempt any **SIX** questions from Section 'B'. Each question carries **FIVE** marks.

Q.2 Add $435_5 + 107_5$

Q.3 Find the value of "x" in $\log_3 27 = x$

Q.4 The Arithmetic Mean of the ages of 10 girls is 14 years and 2 months. Find the sum of their ages.

Q.5 Find the log of $(25 \times 37)^2$

Q.6 Convert $(1101)_2$ into decimal number.

Q.7 Calculate the amount payable as zakat by Haleem who saves rupees 9,20,000 for one year.

Q.8 Distribute amount of profit Rs. 50, 000 among three partners A, B and C in the ratio of 2 : 3 : 5

Q.9 A car travels 75 km in 5 liters of petrol. How far will it travel in 7 liters of petrol?

Q.10 How many terms are in the arithmetic series:

$$5 + 7 + 9 + \dots + 99 + 101?$$

Q.11 A shopkeeper gives 10% discount on all items. If the discounted price of the dining table is Rs. 18, 000, find the original price of the dining table.

END OF SECTION 'B'

SECTION 'C'

Total Marks: 30

(Detailed Answer Questions)

Note: Attempt any **THREE** questions from Section 'C'. Each question carries **TEN** marks.

Q. 12 The table below shows the masses (kg) of members in sport club. Calculate the mean of the given distribution:

Masses	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 - 99
Frequency	6	8	12	14	7	3

Q. 13 Prove De Morgan's Laws if:

$$U = \{1, 2, 3, \dots, 12\}, A = \{1, 2, 3, 4, 6, 12\} \text{ and } B = \{2, 4, 6, 8\}$$

Q. 14 Indicate one-one and onto functions with the help of examples.

Q. 15 Find the variance and standard deviation of the average temperatures recorded over a five-day period last winter: 18, 22, 19, 25, 12

Q. 16 According to the survey made among 200 students, 140 students like cold drinks, 120 students like milkshakes and 80 like both. How many students like at least one of the drinks. Show the results through Venn Diagram.

END OF PAPER