

# JEE Main Mathematics Chapter-wise Weightage Analysis

## JEE Main Mathematics - Official Weightage Distribution

Topic/Chapter	Number of Questions	Total Marks
Coordinate Geometry	5	20
Limits, Continuity and Differentiability	3	12
Integral Calculus	3	12
Complex Numbers and Quadratic Equation	2	8
Matrices and Determinants	2	8
Statistics and Probability	2	8
Three Dimensional Geometry	2	8
Vector Algebra	2	8
Sets, Relation and Function	1	4
Permutations and Combinations	1	4
Binomial Theorem and Its Application	1	4
Sequences and Series	1	4
Trigonometry	1	4
Mathematical Reasoning	1	4
Differential Equation	1	4
Statics and Dynamics	1	4
Differential Calculus	1	4

## Detailed Chapter Analysis - Class 11

### High Probability Chapters (> 1.0)

Chapter	Class	Avg. Difficulty	Probability
Sequences And Series	Class 11	3.92	1.63
Binomial Theorem	Class 11	4.17	1.44
Circle	Class 11	4.20	1.25
Point And Straight Line	Class 11	3.58	1.19
Functions	Class 11	4.06	1.00
Parabola	Class 11	4.19	1.00

### Medium Probability Chapters (0.5-1.0)

Chapter	Class	Avg. Difficulty	Probability
Mathematical Reasoning	Class 11	3.60	0.94
Quadratic Equations	Class 11	4.13	0.94
Limits	Class 11	4.14	0.88
Statistics	Class 11	3.93	0.88
Hyperbola	Class 11	3.92	0.75
Permutation And Combination	Class 11	4.08	0.75
Ellipse	Class 11	4.09	0.69
Trigonometric Ratios & Identities	Class 11	3.75	0.50

### Low Probability Chapters (<0.5)

Chapter	Class	Avg. Difficulty	Probability
Heights And Distances	Class 11	3.83	0.38
Properties Of Triangle	Class 11	4.17	0.38
Trigonometric Equations	Class 11	3.50	0.38
Mathematical Induction	Class 11	2.00	0.06

## Detailed Chapter Analysis - Class 12

### High Probability Chapters (>1.0)

Chapter	Class	Avg. Difficulty	Probability
Three Dimensional Geometry	Class 12	4.24	2.06
Matrices And Determinants	Class 12	3.97	2.00
Application Of Derivatives	Class 12	4.19	1.31
Definite Integration	Class 12	4.35	1.25
Probability	Class 12	4.00	1.19
Complex Numbers	Class 12	4.00	1.06
Differential Equation	Class 12	4.25	1.00
Indefinite Integration	Class 12	4.06	1.00

### Medium Probability Chapters (0.5-1.0)

Chapter	Class	Avg. Difficulty	Probability
Area Under Curves	Class 12	4.20	0.94
Vector	Class 12	4.20	0.94
Continuity And Differentiability	Class 12	3.85	0.81
Differentiation	Class 12	4.10	0.63
Inverse Trigonometric Functions	Class 12	4.38	0.50

### Low Probability Chapters (<0.5)

Chapter	Class	Avg. Difficulty	Probability
Set Theory And Relations	Class 12	4.00	0.31

## Strategic Chapter Classification

### HIGH OUTPUT LOW INPUT CHAPTERS (High Return on Investment)

- Matrices And Determinants (Class 12)
- Sequences And Series (Progressions) (Class 11)
- Point And Straight Line (Class 11)
- Probability (Class 12)
- Complex Numbers (Class 12)
- Functions (Class 11)
- Indefinite Integration (Class 12)
- Mathematical Reasoning (Class 11)
- Statistics (Class 11)

### HIGH OUTPUT HIGH INPUT CHAPTERS (High Effort, High Return)

- Three Dimensional Geometrical System (Class 12)
- Binomial Theorem (Class 11)
- Application Of Derivatives (Class 12)
- Circle (Class 11)
- Definite Integration (Class 12)
- Differential Equation (Class 12)
- Parabola (Class 11)
- Area Under Curves (Class 12)
- Quadratic Equations (Class 11)

- Vector (Class 12)
- Limits (Class 11)

### **LOW OUTPUT LOW INPUT CHAPTERS (Optional Study)**

- Continuity And Differentiability (Class 12)
- Hyperbola (Class 11)
- Trigonometric Ratios And Identities (Class 11)
- Heights And Distances (Class 11)
- Trigonometric Equations (Class 11)
- Set Theory And Relations (Class 12)
- Mathematical Induction (Class 11)

### **LOW OUTPUT HIGH INPUT CHAPTERS (Avoid if Time-Constrained)**

- Permutation And Combination (Class 11)
- Ellipse (Class 11)
- Differential Coefficient (Class 12)
- Inverse Trigonometric Functions (Class 12)
- Properties Of Triangle (Class 11)

### **Top 10 Most Important Concepts**

1. **Integration by Substitution** - Essential for Integral Calculus
2. **Finding  $n$ th Term, Sum to  $n$  terms, Sum of Infinite Terms** - Core of Sequences and Series
3. **Special Functions  $|x|$ ,  $\{x\}$ ,  $[x]$**  - Important for Functions chapter
4. **Arithmetic Progressions (AP)** - Foundation of Sequences and Series
5. **Mean in Statistics** - Key statistical concept
6.  **$r$ th Term of Binomial Expansion** - Central to Binomial Theorem
7. **Geometric Progressions (GP)** - Essential sequence type
8. **Integrating Factor** - Critical for Differential Equations
9. **Trigonometric Integrals** - Important integration technique
10. **Area between curves** - Key application of integration

### **Study Strategy Recommendations**

#### **Priority 1: HIGH OUTPUT LOW INPUT Chapters**

Focus on these chapters first as they provide maximum marks with moderate effort.

## **Priority 2: HIGH OUTPUT HIGH INPUT Chapters**

These require significant preparation but offer high marks potential.

## **Priority 3: LOW OUTPUT LOW INPUT Chapters**

Study these only after completing Priority 1 and 2 chapters.

## **Priority 4: LOW OUTPUT HIGH INPUT Chapters**

These should be studied last or skipped if time is limited.

## **Difficulty Analysis**

### **Most Difficult Chapters (Avg. Difficulty > 4.2)**

- Inverse Trigonometric Functions (4.38)
- Definite Integration (4.35)
- Differential Equation (4.25)
- Three Dimensional Geometry (4.24)

### **Moderate Difficulty Chapters (3.5 - 4.2)**

Most chapters fall in this range, requiring consistent practice.

### **Easier Chapters (< 3.5)**

- Mathematical Induction (2.00) - Very low probability, skip if time-constrained