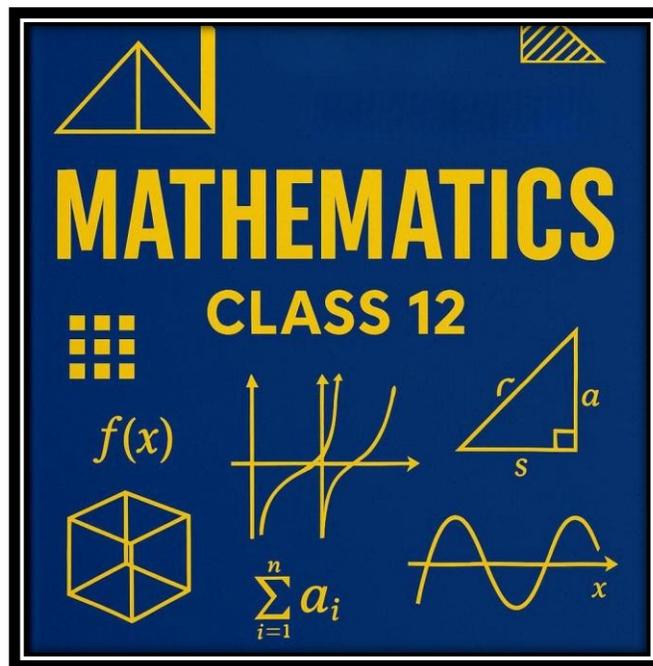


CBSE Class 12 Math's Previous Year Question Papers (2025–2016) with Solutions



Complete Practice Guide for Board Exam 2026 | Based on Latest CBSE
Pattern & Competency-Based Questions

Published By: **SWAN India Publication**

 Dedication

This book is lovingly dedicated to —

 *All the students,
who continue to challenge themselves, explore the beauty of
mathematics,
and strive for excellence in every problem they solve.
Your curiosity, patience, and persistence turn numbers into
knowledge and equations into success.*

 *To the teachers and mentors,
whose guidance, encouragement, and wisdom light the path of
understanding —
helping every learner discover the joy hidden in logic and
learning.*

 *And to all the parents,
whose faith, sacrifice, and constant support give students
the strength to keep believing in their dreams.*

*Without your inspiration and belief,
this book would not have been possible.*

*— ✍ With heartfelt gratitude
Published By: SWAN India Publication*

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CBSE Exam Pattern 2025 Overview

1. Exam Structure (As per CBSE 2025 Guidelines)

Section	Question Type	No. of Questions	Marks per Question	Total Marks
Section A	Very Short Answer (Objective Type: MCQs, Fill in the Blanks, True/False)	18	1	18
Section B	Short Answer (2–3 steps)	5	2	10
Section C	Short Answer (3–4 steps)	6	3	18
Section D	Long Answer (Detailed Solutions)	4	5	20
Section E	Case Study / Competency-Based Questions	2	4	8
Total Marks:				74 Marks
Internal Assessment:				26 Marks
Grand Total:				100 Marks

2. Internal Assessment (26 Marks)

The **Internal Assessment** in Mathematics includes:

- **Periodic Tests (10 Marks)** – Based on classroom assessments.
 - **Mathematics Activity File / Lab Work (10 Marks)** – Activities, projects, and practical math problems.
 - **Portfolio / Viva (6 Marks)** – Presentation, regularity, and overall engagement.
-

3. Types of Questions You'll Face

Question Type	Description	Skills Tested
Competency-Based	Real-life or situation-based questions.	Application & Conceptual Understanding
Case Study Questions	Based on short mathematical situations.	Analysis, Problem Solving
Objective Questions (MCQs)	Choose correct option or fill in the blanks.	Concept Recall
Descriptive Questions	Require stepwise logical presentation.	Reasoning & Accuracy

4. Key Focus Areas (As per 2025 CBSE Blueprint)

- ✓ Emphasis on **concept clarity** rather than rote learning.
 - ✓ Inclusion of **competency-based questions (20–25%)**.
 - ✓ **Balanced mix** of application, analytical, and theoretical questions.
 - ✓ Marks distribution ensures **equal weightage** to Algebra, Calculus, Geometry, Probability, and Vectors.
-

🔍 5. Recommended Strategy for Students

- Review **previous year papers (2025–2016)** to identify **repeated concepts**.
 - Focus on **NCERT examples and exercises** – 70% of board questions are based on them.
 - Practice **case study questions** to master competency-style problems.
 - During exams, **write all steps clearly** – marks are awarded stepwise.
 - Revise **formulas and theorems** regularly for accuracy and speed.
-

🏁 *“Excellence in Mathematics is not about speed — it’s about precision, logic, and consistency.”*

— SWAN India Publication Team

Mathematics

Time: 3 Hours | Maximum Marks: 80

⚡ **General Instructions:**

1. All questions are compulsory.
 2. The question paper consists of 5 sections – A, B, C, D, E.
 3. Use of scientific calculator is allowed.
 4. All steps must be shown clearly.
 5. Internal choice is provided in some questions.
-

Section A (1 Mark Each)

Q1. If $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$, find the determinant of A.

Answer:

$$|A| = (2 \times 4) - (3 \times 1) = 8 - 3 = 5$$

Q2. Differentiate $y = \sin^2 x$ with respect to x.

Answer:

$$dy/dx = 2 \sin x \times \cos x = \mathbf{\sin(2x)}$$

Q3. Write the principal value of $\tan^{-1}(\sqrt{3})$.

Answer:

$$\tan^{-1}(\sqrt{3}) = \pi/3$$

Q4. Find the order of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$.

Answer:

Matrix has **2 rows and 3 columns**, so order = **2 × 3**.

Q5. Find the slope of the line $2x - 3y + 5 = 0$.

Answer:

Compare with $y = mx + c \rightarrow m = \text{coefficient of } x / \text{coefficient of } y$

$$2x - 3y + 5 = 0 \rightarrow 3y = 2x + 5 \rightarrow y = (2/3)x + 5/3$$

$$\text{Slope} = 2/3$$

Section B (2 Marks Each)

Q6. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, find A^{-1} .

Answer:

$$|A| = (1 \times 4) - (2 \times 3) = 4 - 6 = -2$$

$$\text{Adj}(A) = \begin{bmatrix} 4 & -2 \\ -3 & 1 \end{bmatrix}$$

$$A^{-1} = (1 / |A|) \times \text{Adj}(A)$$

$$\begin{aligned} &= (-1/2) \times [4 -2; -3 \ 1] \\ &= [-2 \ 1; 1.5 -0.5] \end{aligned}$$

Q7. Evaluate $\int(2x^3 - 5x^2 + 3) dx$.

Answer:

$$\begin{aligned} \int(2x^3 - 5x^2 + 3) dx &= (2x^4 / 4) - (5x^3 / 3) + 3x + C \\ \text{Simplify: } &(\mathbf{x^4 / 2}) - (\mathbf{5x^3 / 3}) + \mathbf{3x + C} \end{aligned}$$

Q8. Find the derivative of $y = e^{(3x + 2)}$.

Answer:

$$dy/dx = e^{(3x + 2)} \times \text{derivative of } (3x + 2) = \mathbf{3e^{(3x + 2)}}$$

Q9. Solve $\log_x 16 = 4$.

Answer:

$$\log_x 16 = 4 \rightarrow x^4 = 16 \rightarrow \mathbf{x = 2}$$

Section C (3 Marks Each)

Q10. Find the area under the curve $y = x^2$ from $x = 0$ to $x = 2$.

Answer:

$$\begin{aligned} \text{Area} &= \int_0^2 x^2 dx = [x^3 / 3]_0^2 \\ &= (8/3) - 0 = \mathbf{8/3 \text{ sq. units}} \end{aligned}$$

Q11. Find the equation of a line passing through (2, 3) and perpendicular to $3x - 4y + 7 = 0$.

Answer:

Given line slope (m_1) = $3/4$

Required line slope (m_2) = $-1/m_1 = -4/3$

Equation: $y - 3 = (-4/3)(x - 2)$

$3(y - 3) = -4(x - 2)$

$3y - 9 = -4x + 8$

$4x + 3y - 17 = 0$

Q12. Find the value of k if matrix $A = \begin{bmatrix} 2 & k \\ 3 & 6 \end{bmatrix}$ is singular.

Answer:

For singular matrix, $|A| = 0$

$|A| = (2 \times 6) - (k \times 3) = 12 - 3k = 0$

$k = 4$

Section D (4 Marks Each)

Q13. Find the equation of tangent to $y = x^2 + 3x$ at $x = 1$.

Answer:

Given $y = x^2 + 3x$

$dy/dx = 2x + 3$

At $x = 1$, slope $m = 2(1) + 3 = 5$

At $x = 1$, $y = 1 + 3 = 4$

Equation: $y - 4 = 5(x - 1)$

$y = 5x - 1$

Q14. Evaluate $\int_0^1 (x^2 + 2x + 1) dx$.

Answer:

$$\begin{aligned}\int_0^1 (x^2 + 2x + 1) dx &= [x^3/3 + x^2 + x]_0^1 \\ &= (1/3 + 1 + 1) - 0 = 7/3\end{aligned}$$

Section E (6 Marks Each)

Q15. Solve the differential equation:

$$dy/dx + y = e^{-x}$$

Answer:

Given: $dy/dx + y = e^{-x}$

Integrating factor (I.F.) = $e^{\int 1 dx} = e^x$

Multiply both sides by e^x :

$$e^x(dy/dx + y) = e^x \times e^{-x}$$

$$d/dx (y e^x) = 1$$

Integrate both sides:

$$\int d(y e^x) = \int 1 dx$$

$$y e^x = x + C$$

Therefore, $y = (x + C)e^{-x}$

Q16. A die is thrown twice. Find the probability of getting:

(a) A sum of 7

(b) A doublet (same number on both throws)

Answer:

Total outcomes = $6 \times 6 = 36$

(a) Sum = 7 \rightarrow (1,6), (2,5), (3,4), (4,3), (5,2), (6,1) \rightarrow 6 outcomes

$P = 6/36 = 1/6$

(b) Doublet \rightarrow (1,1), (2,2), (3,3), (4,4), (5,5), (6,6) \rightarrow 6 outcomes

$P = 6/36 = 1/6$

Q17. Find the maximum and minimum value of $f(x) = x^2 - 4x + 5$.

Answer:

$$f'(x) = 2x - 4$$

$$\text{Set } f'(x) = 0 \rightarrow x = 2$$

$f'(x) = 2$ (positive) $\rightarrow x = 2$ is minimum point

$$f(2) = (2)^2 - 4(2) + 5 = 4 - 8 + 5 = 1$$

Therefore, **Minimum = 1 at x = 2**, no maximum (parabola opens upward).

 **Thank You Note**

As this book comes to its completion, I extend my heartfelt gratitude to everyone who has contributed to making it a reality.

First and foremost, my sincere thanks to all the **students**, whose curiosity, determination, and continuous pursuit of knowledge have been the true motivation behind this work. Your dedication to learning inspires the creation of such resources every year.

A special thank you to all the **teachers, mentors, and educators**, whose guidance, expertise, and encouragement continue to shape the path of learning for countless students. Your passion for teaching makes education meaningful and impactful.

I also express deep appreciation to **SWAN India Publication** for their trust, professionalism, and commitment to maintaining the highest standards of educational publishing. Your vision and support have helped this project take shape with precision and care.

To my **family and friends**, thank you for your patience, faith, and encouragement throughout this journey. Your support has been my greatest strength.

And finally, to every reader — thank you for choosing this book as your learning companion.

May it guide you, motivate you, and help you achieve the success you truly deserve in your **CBSE Class 12 Mathematics Board Exam 2026**.

With warm regards and best wishes,

— *✍ Author*

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