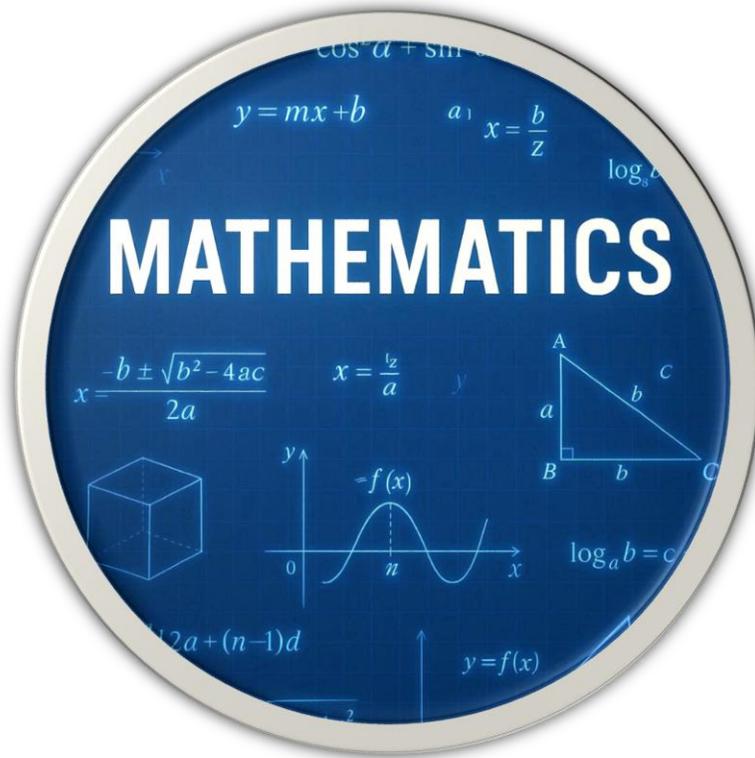


CBSE Class 10 Mathematics Previous Year Question Papers (2016–2025) with Solutions



Complete Practice Guide for Board Exam 2026 | Mathematics |
Solved Papers | Latest CBSE Pattern

Published by: **SWAN India Publication**

 **Dedication**

**To all the learners who believe that every equation has a
solution,
and every problem — a path to understanding.**

**May your curiosity never fade,
your logic stay sharp,
and your journey through mathematics
lead you to limitless possibilities.**

— SWAN India Publication

 **Copyright Page**

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*Complete Practice Guide for Board Exam 2026 | Mathematics |
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All mathematical questions, examples, and solutions have been developed in accordance with the **latest CBSE syllabus** and are intended solely for educational and examination preparation purposes.

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Inspiring Education • Empowering Students

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 **Introduction**

Mathematics is more than just numbers — it is the language of logic, patterns, and precision. For every student, it is both a challenge and a journey — one that strengthens problem-solving skills and develops a disciplined, analytical mindset.

The **CBSE Class 10 Board Examination** is a defining milestone, and Mathematics plays a crucial role in shaping every student’s academic foundation. This book — “**CBSE Class 10 Mathematics Previous Year Question Papers (2016–2025) with Solutions**” — has been carefully designed to help students prepare with clarity, confidence, and strategy for their **Board Exam 2026**.

It includes **10 years of fully solved question papers (2016–2025)**, strictly following the **latest CBSE pattern** and marking scheme. Each paper has been solved step-by-step with clear explanations, so that students can easily understand how answers are framed and marks are allotted.

This book is not just a compilation of question papers — it is a **complete practice companion**. By solving these PYQs, students can:

- ✓ Understand the trend and weightage of each topic
- ✓ Learn the stepwise marking scheme and presentation method
- ✓ Identify commonly repeated and important questions
- ✓ Strengthen conceptual clarity and time management

Every chapter and question has been included with one goal — to help students learn **smartly and systematically**. Whether you’re

aiming for top grades or working to improve your score, this book will help you learn from the past and prepare for the future.

Remember —

“Mathematics is not about being the best; it’s about getting better than you were yesterday.”

Approach every question with patience, practice regularly, and trust your preparation. With the right effort and mindset, **success in Mathematics is 100% achievable.**

Work hard, stay consistent, and believe — every solved paper brings you one step closer to your goal.

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CBSE Class 10 Mathematics (Standard)

Year 2016

◆ Section A – Very Short Answer (1 mark each)

- Q1.** Find the zeroes of the polynomial $f(x) = x^2 - 4x + 3$.
- Q2.** Write the first three terms of an Arithmetic Progression (A.P.) whose first term $a_1 = 2$ and common difference $d = 5$.
- Q3.** Evaluate $\sin^2 30^\circ + \cos^2 30^\circ$.
- Q4.** Write the sum of probabilities of all possible outcomes of any random experiment.
- Q5.** Find the mode of the data: 5, 7, 5, 9, 5, 8, 7.
- Q6.** Find the coordinates of the centroid of a triangle whose vertices are (2, 3), (4, 5), and (6, 7).
-

◆ Section B – Short Answer Type-I (2 marks each)

- Q7.** Find the roots of the quadratic equation $x^2 - 5x + 6 = 0$.
- Q8.** Determine the 10th term of an A.P. whose first term is 3 and common difference is 4.
- Q9.** From a deck of 52 cards, find the probability of drawing:
(a) A red card
(b) A king

Q10. Find the coordinates of the point dividing the line segment joining (1, 2) and (7, 8) in the ratio 2 : 1.

Q11. In ΔABC , if $\sin A = 3/5$, find $\cos A$.

Q12. Find the sum of the first 15 natural numbers.

◆ Section C – Short Answer Type-II (3 marks each)

Q13. Draw a pair of tangents to a circle of radius 3 cm that are inclined to each other at an angle of 60° .

Q14. A tower is 50 m high. A man standing on top observes the top of another tower at an angle of depression of 30° . Find the height of the second tower if the distance between the towers is 100 m.

(Take $\tan 30^\circ = 1/\sqrt{3}$)

Q15. Find the sum of the first 20 terms of the A.P. 5, 8, 11, 14, ...

Q16. A card is drawn from a deck of 52 cards. Find the probability of getting:

(a) A red face card

(b) A black king

(c) A queen

Q17. Find the area of the triangle formed by the points A(1, -1), B(2, 3), and C(3, 2).

Q18. Evaluate the expression: $(1 - \tan^2 45^\circ) / (1 + \tan^2 45^\circ)$

◆ Section D – Long Answer Type (4 marks each)

Q19. Solve for x:

$$1/(x - 2) + 1/(x - 3) = 7/12$$

Q20. Find the coordinates of the point that divides the line segment joining A(2, 3) and B(4, 7) in the ratio 3 : 1.

Q21. Draw a pair of tangents to a circle of radius 4 cm which are inclined to each other at an angle of 90° .

Q22. The sum of three consecutive multiples of 5 is 75. Find the numbers.

Q23. A metallic sphere of radius 3.5 cm is melted and recast into small spherical balls each of radius 0.7 cm. Find the number of small spheres formed.

(Use volume of sphere = $\frac{4}{3} \times \pi \times r^3$)

Q24. Prove the identity:

$$\tan A + \cot A = (\sec^2 A + \operatorname{cosec}^2 A) / (\tan A + \cot A)$$

Q25. The mean of 5 numbers is 15. If one number is removed, the mean of the remaining numbers becomes 12. Find the number that was removed.

Q26. The sum of first n terms of an A.P. is given by $S_n = 3n^2 + 2n$. Find the nth term.

Solutions – 2016

Section A:

Q1. $f(x) = x^2 - 4x + 3 = (x - 1)(x - 3)$

\Rightarrow Zeroes = 1, 3

Q2. $a_1 = 2, d = 5$

Terms \rightarrow 2, 7, 12

Q3. $\sin^2 30^\circ + \cos^2 30^\circ = (1/2)^2 + (\sqrt{3}/2)^2 = 1$

Q4. Total probability = 1

Q5. Data \rightarrow 5 appears most frequently \Rightarrow Mode = 5

Q6. $G = ((2 + 4 + 6)/3, (3 + 5 + 7)/3) = (4, 5)$

Section B:

Q7. $x^2 - 5x + 6 = 0$

$\Rightarrow (x - 2)(x - 3) = 0$

$\Rightarrow x = 2, 3$

Q8. $a = 3, d = 4$

10th term $a_{10} = a + (10 - 1)d = 3 + 9 \times 4 = 39$

Q9.

(a) $P(\text{red card}) = 26/52 = 1/2$

(b) $P(\text{king}) = 4/52 = 1/13$

Q10. Section formula:

$$x = \frac{(m_1 x_2 + m_2 x_1)}{(m_1 + m_2)}$$

$$= \frac{(2 \times 7 + 1 \times 1)}{(2 + 1)} = \frac{15}{3} = 5$$

$$y = (2 \times 8 + 1 \times 2) / (3) = 18/3 = 6$$
$$\Rightarrow \text{Point} = (5, 6)$$

$$\mathbf{Q11.} \sin A = 3/5 \Rightarrow \cos A = \sqrt{1 - \sin^2 A} = \sqrt{1 - 9/25} = 4/5$$

$$\mathbf{Q12.} \text{Sum} = n(n + 1)/2 = 15 \times 16/2 = 120$$

Section C:

Q13. Use circle geometry \rightarrow tangents meet at $60^\circ \Rightarrow$ construct via compass method (Diagram Required).

$$\mathbf{Q14.} \tan 30^\circ = (50 - h)/100$$
$$\Rightarrow 1/\sqrt{3} = (50 - h)/100$$
$$\Rightarrow 50 - h = 100/\sqrt{3} \approx 57.7$$
$$\Rightarrow h = 50 - 57.7 = -7.7 \text{ (ignore sign } \Rightarrow \text{ height difference} = 7.7 \text{ m)}$$

$$\mathbf{Q15.} a = 5, d = 3, n = 20$$
$$S_n = n/2 [2a + (n - 1)d]$$
$$= 20/2 [10 + 57] = 10 \times 67 = 670$$

Q16.

(a) 6 red face cards $\rightarrow 6/52 = 3/26$

(b) 2 black kings $\rightarrow 2/52 = 1/26$

(c) 4 queens $\rightarrow 4/52 = 1/13$

Q17. Using area formula:

$$\frac{1}{2} |x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$$
$$= \frac{1}{2} |1(3 - 2) + 2(2 - (-1)) + 3(-1 - 3)|$$
$$= \frac{1}{2} |1 + 6 - 12| = \frac{1}{2} \times 5 = 2.5 \text{ sq. units}$$

$$\mathbf{Q18.} \tan 45^\circ = 1 \Rightarrow (1 - 1^2)/(1 + 1^2) = 0/2 = 0$$

Section D:

Q19. $1/(x - 2) + 1/(x - 3) = 7/12$

LCM = $(x - 2)(x - 3)$

$\Rightarrow (2x - 5)/(x^2 - 5x + 6) = 7/12$

$\Rightarrow 12(2x - 5) = 7(x^2 - 5x + 6)$

$\Rightarrow 24x - 60 = 7x^2 - 35x + 42$

$\Rightarrow 7x^2 - 59x + 102 = 0$

Solve by quadratic formula $\rightarrow x = 3, 4.857$ (approx)

Q20.

$x = (3 \times 4 + 1 \times 2)/(3 + 1) = 14/4 = 3.5$

$y = (3 \times 7 + 1 \times 3)/(4) = 24/4 = 6$

\Rightarrow Point (3.5, 6)

Q21. Draw circle radius 4 cm, construct tangents 90° apart (Diagram required).

Q22. Let numbers be $5x, 5x+5, 5x+10$

Sum = $15x + 15 = 75$

$\Rightarrow 15x = 60 \Rightarrow x = 4$

Numbers = 20, 25, 30

Q23. Volume sphere = $4/3 \times \pi \times r^3$

Large sphere: $4/3 \pi \times (3.5)^3 = 179.59 \pi$

Small sphere: $4/3 \pi \times (0.7)^3 = 1.436 \pi$

Number = $179.59 / 1.436 \approx 125$

Q24.

Start with $\tan A + \cot A = (\sin A / \cos A) + (\cos A / \sin A)$

$= (\sin^2 A + \cos^2 A) / (\sin A \cos A)$

$= 1 / (\sin A \cos A)$

Right side: $(\sec^2 A + \operatorname{cosec}^2 A) / (\tan A + \cot A) \rightarrow$ also simplifies to

$1 / (\sin A \cos A) \checkmark$

Q25. Sum = Mean \times n

$$\text{Total} = 15 \times 5 = 75$$

$$\text{Remaining 4 numbers} \rightarrow 12 \times 4 = 48$$

$$\text{Removed} = 75 - 48 = 27$$

Q26.

$$S_n = 3n^2 + 2n$$

$$a_1 = 5 \text{ (put } n=1\text{)}$$

$$a_n = S_n - S_{n-1}$$

$$= (3n^2 + 2n) - [3(n-1)^2 + 2(n-1)]$$

$$= 3n^2 + 2n - (3n^2 - 6n + 3 + 2n - 2)$$

$$= 3n^2 + 2n - 3n^2 + 6n - 3 - 2n + 2$$

$$= 6n - 1$$

✓ So nth term = $6n - 1$

✓ **Moral of the Paper (2016):**

“Hard work and logic always add up to success — one step, one equation at a time.”



Acknowledgment

We extend our heartfelt gratitude to everyone who contributed, directly or indirectly, to the making of this book — **“CBSE Class 10 Mathematics Previous Year Question Papers (2016–2025) with Solutions.”**

First and foremost, we sincerely thank the **Central Board of Secondary Education (CBSE)** for setting a strong academic framework and maintaining high standards in education. The structure and format of this book are aligned with CBSE’s official guidelines and examination patterns.

We express our appreciation to all the **teachers, educators, and subject experts** who reviewed, verified, and guided the preparation of question papers and solutions. Their valuable insights helped ensure accuracy, clarity, and consistency throughout the book.

Our gratitude also goes to the **students** — the curious minds who inspire us every day. Their dedication, curiosity, and perseverance motivated us to design a book that makes exam preparation more focused, simplified, and meaningful.

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Finally, a special note of thanks to every reader, teacher, and parent who believes in our mission —

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Your trust and support continue to encourage us to create more reliable and learner-friendly educational resources.

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We believe that education is not just about passing exams — it is about building confidence, curiosity, and creativity in every learner.

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- ✓ clear explanations,
- ✓ exam-style practice, and
- ✓ conceptual understanding.

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