

Mathematics Basic

Original practice in 9 topic units, with explanations, worked examples and answer guidance. Use alongside the prescribed texts and syllabus.



9 practice units

54 tasks with answer guidance

Name / नाम: _____

Original selected-topic practice. Use alongside school lessons and the prescribed textbook. The contents define this book's scope.

CBSE course 241 · 2026–27 · Selected practice, not a complete syllabus or official examination paper.

UNIT 01 / 09 · LEARN & TRY

Number factors and polynomial zeros

Name: _____ Date: _____

Goal: Find prime-factor HCF/LCM and connect quadratic zeros to coefficients.

Learn

Prime factorisation expresses an integer greater than one as a product of prime numbers. Apart from their order, these factors are unique. To find the highest common factor, take the smaller exponent of each common prime. To find the least common multiple, take the larger exponent of every prime present. For two positive integers, their product equals the product of their HCF and LCM. This does not extend unchanged to three integers. A quadratic polynomial has the form $ax^2 + bx + c$ with a nonzero. Its zeros are the values making it zero. If the zeros are α and β , then $\alpha + \beta = -b/a$ and $\alpha\beta = c/a$. Factorisation gives the zeros when the factors are accessible. Check every proposed zero by substitution, and keep a polynomial distinct from an equation that has been set equal to zero.

Worked example

Find HCF and LCM of 48 and 72. Since $48 = 2^4 \times 3$ and $72 = 2^3 \times 3^2$, $\text{HCF} = 2^3 \times 3 = 24$ and $\text{LCM} = 2^4 \times 3^2 = 144$. Check: $24 \times 144 = 48 \times 72 = 3456$.

1. Express 90 as a product of prime powers. [1 marks]

2. Find the HCF and LCM of 18 and 30. [2 marks]

3. Find both zeros of $x^2 - 9$. [2 marks]

UNIT 01 · PRACTISE · 4–6

Number factors and polynomial zeros

4. For $x^2 - 7x + 12$, state the sum and product of its zeros. [2 marks]

5. Write a monic quadratic polynomial whose zeros are 2 and 5. [2 marks]

6. A student says the HCF of 12 and 20 is 8. Explain the error and give the correct HCF.

[2 marks]

Explain one answer. Choose a question to revisit after a few days.

UNIT 01 · ANSWER GUIDANCE

Number factors and polynomial zeros

1. $90 = 2 \times 3^2 \times 5$.
2. $18 = 2 \times 3^2$; $30 = 2 \times 3 \times 5$. HCF = 6 and LCM = 90. Their product is $540 = 18 \times 30$.
3. $x^2 - 9 = (x - 3)(x + 3)$. The zeros are 3 and -3 .
4. Sum = $-(-7)/1 = 7$; product = $12/1 = 12$.
5. $(x - 2)(x - 5) = x^2 - 7x + 10$. Monic means the leading coefficient is 1.
6. 8 does not divide 12, so it cannot be a common factor. Since $12 = 2^2 \times 3$ and $20 = 2^2 \times 5$, the HCF is 4.

Teaching note

Check a factor by division and a zero by substitution.

Curriculum reference: https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart1/Maths_SecP1X_2026-27.pdf

Selected practice; outcomes are publisher-defined. School practicals, projects and prescribed readings require separate preparation.