

ADRE MATHEMATICS

Master Topic → Subtopic → Sub-subtopic Map

Assam Direct Recruitment Examination (ADRE)

A structured mathematics preparation blueprint designed to turn a broad syllabus into a finite checklist.

WHAT THIS PDF DOES	HOW TO USE IT
Breaks Mathematics into 12 major domains, then into exam-relevant subtopics and micro-topics.	Study in order of priority, mark weak areas, and revise from the micro-topic level.
Target: Grade III / Grade IV style General Mathematics preparation.	Rule: Accuracy first; speed comes after concept control.

Scope note: The published ADRE 2024 pattern allocated General Mathematics separately for Grade III and HSSLC/HSLC-level posts. This document is a preparation map rather than a claim that every listed micro-topic is explicitly printed in a single official notification. Always cross-check the latest SLRC notification for the specific recruitment cycle.

1. EXAM-ORIENTED MATHEMATICS FRAMEWORK

The 2024 ADRE pattern reported General Mathematics as approximately 30 questions for Bachelor's-level Grade III posts, 35 for HSSLC-level Grade III posts, and 30 for HSLC Driver posts. The papers were objective/MCQ based, with negative marking. [\[cite\]](#)[\[turn1search2\]](#)[\[turn1search14\]](#)

For preparation, the important distinction is not simply “easy vs hard”. It is frequency × scoring potential × calculation load × error risk.

Priority	Meaning	Typical treatment
A — Core	Must master	Repeated practice + timed MCQs
B — Important	Strong command needed	Concept + mixed questions
C — Supporting	Do after core topics	Formula + selected practice
D — Stretch	Only after core is secure	Selective advanced practice

High-value principle: Do not start with random chapters. Build a chain: Number System → Arithmetic → Algebra → Geometry/Mensuration → Data Interpretation → Mixed Practice.

2. NUMBER SYSTEM & FUNDAMENTAL ARITHMETIC

Priority: A — Core / high-return

SUBTOPIC	SUB-SUBTOPICS / RELEVANT TOPICS
Natural, whole, integer and rational numbers	Number classification and comparison • Positive/negative numbers • Fractions and decimals • Recurring and terminating decimals
Factors, multiples, primes	Prime and composite numbers • Factors and factor pairs • Multiples • Prime factorisation
HCF & LCM	HCF by factorisation • LCM by factorisation • HCF/LCM using division method • Applications in cyclic events and grouping • Relationship between HCF and LCM for two numbers
Divisibility	Tests for 2, 3, 4, 5, 6, 8, 9, 10, 11 • Finding missing digits using divisibility • Remainders in basic divisibility problems
Simplification & approximation	BODMAS/DMAS • Fractions and mixed operations • Decimal calculations • Approximation and estimation • Squares and cubes of common numbers

3. RATIO, PROPORTION & VARIATION

Priority: A — Core / high-return

Subtopic	Sub-subtopics / Related Topics
Ratio	Equivalent ratios • Simplest form • Comparison of ratios • Division of quantities in a ratio
Proportion	Direct proportion • Inverse proportion • Unitary method • Missing term in a proportion
Variation	Direct variation • Inverse variation • Combined/basic applications
Partnership	Capital-time concept • Profit sharing • Changing investments • Admission/retirement style basics

4. PERCENTAGE

Priority: A — Core / high-return

Subtopic	Sub-subtopics / Related Topics
Core percentage	Fraction ↔ percentage • Decimal ↔ percentage • Percentage increase • Percentage decrease
Successive percentage	Successive increase • Successive decrease • Increase followed by decrease • Net percentage change
Applications	Population change • Marks and results • Consumption/expenditure • Income and savings • Price change
Reverse percentage	Original value after increase/decrease • Finding base quantity

5. PROFIT, LOSS & DISCOUNT

Priority: A — Core / high-return

Subtopic	Sub-subtopics / Related Topics
Basic terms	Cost Price (CP) • Selling Price (SP) • Marked Price (MP) • Profit and loss
Percent calculations	Profit % • Loss % • Discount % • Equivalent discount
Successive discount	Two successive discounts • Net discount • Discount + profit/loss combinations
Applied problems	False weight • Dishonest dealer • Marked price and discount • Cost-price based comparisons

6. AVERAGE & AGGREGATION

Priority: A — Core / high-return

Subtopic	Sub-subtopics / Related Topics
Arithmetic average	Mean • Total = average × number of observations • Missing value • Combined average
Replacement problems	One value replaced • Several values replaced • Change in average
Weighted/combined average	Group averages • Weighted average basics • Mixture-style average reasoning

7. TIME, WORK & PIPES

Priority: A — Core / high-return

Subtopic	Sub-subtopics / Related Topics
Work fundamentals	Work-rate concept • Work = rate × time • One-person work • Fraction of work
Combined work	Two persons together • Three persons together • Efficiency comparison • Alternate working
Pipes & cisterns	Filling pipe • Emptying pipe • Combined pipes • Leak problems
Efficiency	Efficiency ratio • Time-efficiency inverse relation • Wages and work share basics

8. TIME, SPEED & DISTANCE

Priority: A — Core / high-return

Subtopic	Sub-subtopics / Related Topics
Core relationship	Distance = Speed × Time • Unit conversion • Average speed
Relative speed	Same direction • Opposite direction • Meeting/catching problems
Trains	Train crossing a person • Train crossing a platform • Two trains crossing
Boats & streams	Upstream speed • Downstream speed • Still-water speed • Stream speed
Races	Lead • Relative speed • Track-based basics

9. SIMPLE & COMPOUND INTEREST

Priority: B — Important

Subtopic	Sub-subtopics / Related topics
Simple Interest	Principal, rate, time • Interest calculation • Amount • Finding missing P/R/T
Compound Interest	Annual compounding • Half-yearly/quarterly basics • Amount and CI • Difference between SI and CI
Applications	Population/growth-style problems • Depreciation basics • Successive growth/decay

10. ALGEBRA

Priority: B — Important

Subtopic	Sub-subtopics / Related topics
Algebraic basics	Variables and constants • Terms and coefficients • Like/unlike terms • Simplification
Identities	$(a+b)^2$ • $(a-b)^2$ • a^2-b^2 • Basic factorisation using identities
Linear equations	One-variable equations • Transposition • Fractions in equations • Word problems
Pair of linear equations — basics	Substitution • Elimination • Simple word problems
Indices & surds	Laws of indices • Positive/negative powers • Square roots • Basic surd simplification
Quadratic basics	Standard form • Factorisation • Roots by factorisation • Simple word problems

11. GEOMETRY

Priority: B — Important

Subtopic	Sub-subtopics / Related topics
Lines & angles	Types of angles • Complementary/supplementary angles • Vertically opposite angles • Parallel lines and transversals
Triangles	Types of triangles • Angle sum • Exterior angle • Congruence basics • Similarity basics • Pythagoras theorem
Quadrilaterals	Parallelogram • Rectangle • Square • Rhombus • Trapezium • Angle and diagonal properties
Circles	Radius/diameter/chord • Circumference • Area • Arc/sector basics • Tangent basics
Polygons	Interior angles • Exterior angles • Regular polygons • Number of sides from angle information

12. MENSURATION

Priority: B — Important

SUBTOPIC	SUB-SUBTOPICS / RELATED TOPICS
2D perimeter & area	Square • Rectangle • Triangle • Parallelogram • Rhombus • Trapezium • Circle
Composite figures	Split into simple shapes • Area difference • Shaded regions
3D solids	Cube • Cuboid • Cylinder • Cone basics • Sphere basics
Surface area & volume	CSA/LSA • TSA • Volume • Unit conversion
Applied mensuration	Tank/capacity • Path around a field • Room/floor problems • Cost of flooring/painting

13. TRIGONOMETRY & BASIC COORDINATE GEOMETRY

Priority: C — Supporting

SUBTOPIC	SUB-SUBTOPICS / RELATED TOPICS
Trigonometric ratios	sin, cos, tan • Opposite/adjacent/hypotenuse • Standard angles 0° , 30° , 45° , 60° , 90°
Right-triangle applications	Height and distance basics • Angle-based length finding
Coordinate geometry	Cartesian plane • Coordinates and quadrants • Distance between simple points • Midpoint basics
Linear graphs	Graph of a linear equation • Slope concept at basic level • Reading intercepts and coordinates

14. DATA INTERPRETATION & BASIC STATISTICS

Priority: B — Important

SUBTOPIC	SUB-SUBTOPICS / RELATED TOPICS
Tables	Reading rows/columns • Totals • Difference • Ratio/percentage from tables
Bar graphs	Single bar • Multiple bar • Comparison • Percentage-based questions
Pie charts	Sector-angle relationship • Value from sector • Percentage from sector • Comparative sectors
Line graphs	Trend • Increase/decrease • Difference • Average from plotted values
Statistics	Mean • Median • Mode • Range • Basic interpretation

15. MIXTURE, ALLEGATION & APPLIED ARITHMETIC

Priority: B — Important

SUBTOPIC	SUB-SUBTOPICS / MICRO-TOPICS
Mixture	Combining quantities • Average concentration • Replacement basics
Alligation	Mean-price method • Ratio of quantities • Simple mixture problems
Age problems	Present age • Past/future age • Ratio of ages • Family-age relationships
Unitary method	Cost per unit • Quantity-price relation • Work/time applications

16. EXAM CALCULATION & MCQ SKILLS

Priority: A — Core / high-return

SUBTOPIC	SUB-SUBTOPICS / MICRO-TOPICS
Mental calculation	Fraction-percent equivalents • Common squares • Common cubes • Fast multiplication/division
Option-based solving	Elimination • Back-solving options • Approximation • Checking units
Error control	Sign errors • Unit errors • Percentage-base errors • Average-speed trap • Area vs perimeter confusion
Timed practice	Easy-first scanning • Question triage • Time per question • Skip-and-return discipline

17. THE SMART ORDER TO STUDY MATHEMATICS

Do not study the chapters in textbook order. Use dependency order: concepts that unlock many other chapters come first.

Phase 1 — Foundation

Number System → Simplification → Fractions/Decimals → HCF/LCM

Phase 2 — Core Arithmetic

Ratio/Proportion → Percentage → Profit/Loss/Discount → Average

Phase 3 — Work & Motion

Time & Work → Pipes → Time/Speed/Distance → Trains → Boats/Streams

Phase 4 — Commercial Maths

Simple Interest → Compound Interest → Partnership → Mixture/Alligation

Phase 5 — Algebra

Algebraic basics → Identities → Linear equations → Indices/Surds → Quadratic basics

Phase 6 — Geometry

Lines/Angles → Triangles → Quadrilaterals → Circles → Polygons

Phase 7 — Mensuration

2D areas/perimeters → Composite figures → 3D surface area/volume

Phase 8 — Data & Graphs

Tables → Bar graphs → Pie charts → Line graphs → Mean/Median/Mode

Phase 9 — Supporting

Trigonometry → Coordinate geometry → selected advanced applications

Phase 10 — Exam Mode

Mixed sets → timed sets → error log → full mocks → revision

18. TOPIC PRIORITY MATRIX

Topic	Priority	Why it matters	Preparation target
Number System & Simplification	A	Foundation + frequent calculation	Master
Ratio / Proportion	A	Feeds percentage, partnership, mixtures	Master
Percentage	A	High transfer to many word problems	Master
Profit / Loss / Discount	A	Standard arithmetic application	Master
Average	A	Short, scoring, highly reusable	Master
Time & Work / Pipes	A	Formula + rate reasoning	Master
Time-Speed-Distance	A	Common application family	Master
Algebra	B	Conceptual but manageable	Strong
Geometry	B	Properties + direct application	Strong
Mensuration	B	Formula-driven scoring	Strong
Data Interpretation	B	Fast marks if calculation is controlled	Strong
SI / CI	B	Formula + application	Strong

Domain	Priority	Why it matters	Preparation target
Mixture / Alligation	B	Useful but narrower	Strong
Trigonometry / Coordinate	C	Supporting coverage	Selective
MCQ calculation strategy	A	Direct effect on score	Daily

19. PERSONAL CHECKLIST — FROM ZERO TO EXAM READY

Use this as your master tracker. A topic is “done” only when you can solve it accurately under time pressure.

☐ Number System & divisibility	☐ HCF & LCM
☐ Simplification & approximation	☐ Fractions & decimals
☐ Ratio & proportion	☐ Percentage
☐ Profit, loss & discount	☐ Average
☐ Partnership	☐ Time & work
☐ Pipes & cisterns	☐ Time, speed & distance
☐ Trains	☐ Boats & streams
☐ Simple interest	☐ Compound interest
☐ Mixture & alligation	☐ Age problems
☐ Algebraic simplification	☐ Identities & factorisation
☐ Linear equations	☐ Indices & surds
☐ Quadratic basics	☐ Lines & angles
☐ Triangles	☐ Quadrilaterals
☐ Circles	☐ Polygons
☐ 2D mensuration	☐ 3D mensuration
☐ Data interpretation	☐ Mean/median/mode
☐ Trigonometry basics	☐ Coordinate geometry
☐ Mental calculation	☐ MCQ elimination
☐ Timed sectional tests	☐ Mixed mathematics sets
☐ Full mocks + error log	

20. SOURCES & SCOPE

The 2024 ADRE examination pattern reported General Mathematics as a dedicated section for the relevant Grade III and HSLC/HSSLC-level examinations, with MCQ format and negative marking. [\[cite\turn1search2\turn1search14\]](#)

Published ADRE preparation references commonly list areas such as LCM/HCF, linear-equation graphs, ratio/proportion, percentage, profit/loss, square roots, geometry, trigonometric ratios, mixture/alligation, partnership, time & work, and time & distance. This PDF expands those areas into a study hierarchy so that preparation is actionable rather than a loose list. [\[cite\turn1search1\turn1search9\]](#)

Assam government education resources also provide mathematics learning materials and class-level mathematics curricula, which are useful for rebuilding fundamentals where needed. [\[cite\turn0search0\turn0search2\]](#)

Important: This is deliberately a Mathematics-only document. The next subject can be built with the same Topic → Subtopic → Sub-subtopic → Priority structure.