The Architect's Blueprint

K-12 learning roadmap

Planning edition 0.3 | September 29, 2026

This is a plan of topics and their order, not a textbook. It contains 13 levels and 52 proposed unit slots. The two introductory sections currently available provide seven lessons. They do not complete kindergarten. The remaining 50 proposed units need research, detailed instruction, practice, and review.

Four books follow one sequence

The Student Book supplies reading and illustrated explanations. The Adult Teaching Guide supports instruction. The Student Workbook contains matched activities and checks. The Answer and Assessment Guide supplies keys and criteria. Each component uses the same unit and lesson IDs.

Levels and readiness

Grade labels organize increasing complexity, not age deadlines. Beginning readers need adult read-aloud and support. Detailed placement instruments and a comprehensive topic coverage audit remain in development. Proposed demonstrations below are planning targets, not released assessments.

Kindergarten entry

Entry uses adult-led play; the learner can indicate an object. Teach one-to-one matching before symbols or written sums.

Reading and page design

One picture and one concrete idea at a time. Short phrases and sentences, usually 2-6 words. Adult introduces unfamiliar labels; independent reading uses explicitly taught sounds and words.

Begin with quantities that can be checked directly; symbols record ideas already demonstrated with objects.

MATH-K-01 | Counting and quantities

3 introductory lessons available; full strand coverage remains unfinished.

MATH-K-02 | Comparing, joining, and separating

4 introductory lessons available; full strand coverage remains unfinished.

MATH-K-03 | Shapes, positions, and patterns

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-K-04 | Measuring and grouping into tens

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Match and count small groups accurately, then extend the counting sequence when those groups are secure

- Join and separate groups with objects and explain what changed

- Sort shapes, continue a repeating pattern, and compare two lengths

Research priorities

- Check each task with actual counters rather than rely on a recited sequence

- Trial picture labels and adult prompts with beginning readers

Level 1

Requires reliable counts, matching, and joining or separating small groups. Introduce groups of ten before multi-digit notation.

Reading and page design

Short familiar sentences and brief decodable passages. Picture support, repeated sentence patterns, and one clear direction per activity.

Relationships between parts and whole support arithmetic; bundled quantities give larger numerals meaning.

MATH-1-01 | Addition and subtraction relationships

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-1-02 | Tens, ones, and larger counts

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-1-03 | Length, time, and practical measures

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-1-04 | Shapes, equal shares, and picture data

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Explain small addition and subtraction stories with objects and drawings

- Build and read tens-and-ones quantities and extend a count across a ten boundary

- Measure using equal repeated units and interpret a simple picture record

Research priorities

- Check that counting words, written numerals, and place value are assessed separately

- Confirm equal-unit use before ruler or clock conventions

Level 2

Requires tens-and-ones models and explanations of joining and separating; repeat concrete work before written regrouping.

Reading and page design

Short paragraphs with familiar vocabulary. Introduce new words beside concrete pictures and examples; support a gradual move from decoding to fluent meaning.

Multiplication begins with equal groups; early division begins with sharing, both grounded in existing addition knowledge.

MATH-2-01 | Regrouping and written arithmetic

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-2-02 | Equal groups and repeated addition

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-2-03 | Sharing wholes into equal parts

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-2-04 | Money, measures, and geometric figures

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Explain regrouping with exchanged tens and ones

- Represent equal groups as repeated addition and share objects fairly into equal groups

- Identify equal parts of a stated whole and use money or length units consistently

Research priorities

- Check the exchange model before introducing a written algorithm

- Distinguish equal-size shares from merely equal counts of pieces

Level 3

Requires equal-group and sharing models, place value, and repeated addition. Fractions require a clearly named whole.

Reading and page design

Connected paragraphs and short sections. Explain subject words in context; use labeled pictures, simple tables, and worked examples.

Division is linked to multiplication before procedural shortcuts; fractions extend measurement beyond whole units.

MATH-3-01 | Multiplication and division relationships

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-3-02 | Written products and quotients

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-3-03 | Fractions as quantities and distances

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-3-04 | Area, perimeter, and measurement records

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Connect multiplication and division through equal groups and missing-factor problems

- Explain written product or quotient steps using place value

- Locate simple fractions and distinguish boundary length from covered area

Research priorities

- Check remainder meanings in context and prohibit zero divisors

- Use equal subdivisions and fixed wholes when comparing fractions

Level 4

Requires fraction units, multiplication/division relationships, and rectangular area models. Teach equivalence before unlike-unit sums.

Reading and page design

Several linked paragraphs with headings. Define new terms, explain diagrams, and connect concrete examples to simple generalizations.

Equivalent units make fraction operations coherent; decimal place value extends the already understood base-ten system.

MATH-4-01 | Equivalent fractions and common units

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-4-02 | Fraction sums, differences, and decimals

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-4-03 | Factors, multiples, and numerical patterns

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-4-04 | Angles, area, volume models, and data

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Construct equivalent fractions and find common units for addition and subtraction

- Connect decimal notation with base-ten fractions and compare quantities

- Use factors and multiples to justify numerical choices and calculate geometric measures

Research priorities

- Check that fraction addition combines like units rather than denominators

- Distinguish visual volume models from memorized formulas

Level 5

Requires equivalence, fraction sums, multiplication, and division meanings. Teach fraction-division models before a reciprocal rule.

Reading and page design

Longer explanations broken into purposeful sections. Introduce comparisons, multi-step examples, and simple source notes with guided practice.

Fraction operations prepare proportional reasoning; signed positions prepare later integer operations without rushing symbolic rules.

MATH-5-01 | Fraction products and quotients

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-5-02 | Decimal computation and estimation

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-5-03 | Ratios, scaling, and signed quantities

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-5-04 | Coordinates, volume, and multistep problems

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Explain fraction multiplication and division with models and inverse relationships

- Estimate and check decimal computations in practical contexts

- Describe a ratio, a scale change, and a signed position using suitable representations

Research priorities

- Verify general fraction division with several model types and nonzero divisors

- Check that signed location is not confused with signed-number computation

Level 6

Requires fraction and decimal operations, signed-number locations, and multiplication as scaling. Diagnose unit reasoning before rate problems.

Reading and page design

Clear middle-grade prose. Define technical vocabulary, separate facts from inferences, and scaffold multi-step reasoning with diagrams and examples.

Algebra formalizes numerical relationships; units and rational computation are needed before reliable symbolic modeling.

MATH-6-01 | Rational-number operations

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-6-02 | Ratios, rates, percentages, and units

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-6-03 | Expressions, equations, and inequalities

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-6-04 | Geometry and data distributions

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Compute with rational numbers and explain sign or size using a representation

- Solve ratio, rate, and percentage problems with consistent units

- Translate relationships into expressions and simple equations and describe a data distribution

Research priorities

- Check signed operations separately from memorized sign rules

- Verify equal-treatment reasoning for equation transformations

Level 7

Requires rational computation, simple equation solving, coordinates, and ratios. Model linear change before simultaneous equations.

Reading and page design

More sustained explanatory reading. Build arguments from evidence and model how to read charts, excerpts, and multi-step procedures.

Multiple representations connect calculation to structure; probability and sampling add explicit attention to uncertainty.

MATH-7-01 | Linear relationships and proportional models

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-7-02 | Equations, systems, and coordinate graphs

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-7-03 | Similarity, geometric reasoning, and area

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-7-04 | Probability, samples, and data comparisons

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Connect a linear relationship across words, tables, graphs, and equations

- Solve simple systems and check solutions in both original relations

- Use similarity and probability models with stated conditions

Research priorities

- Check intercept versus rate of change and association versus causation

- Confirm sample selection and equally likely outcome assumptions

Level 8

Requires linear equations, systems, signed rational operations, and exponent meaning. Factor products before solving quadratics.

Reading and page design

Longer texts and increasingly independent analysis. Explain abstract ideas through examples before formal language and applications.

Polynomial structure and functions extend linear work; solutions are checked in the original problem to catch invalid transformations.

MATH-8-01 | Powers, roots, and polynomial structure

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-8-02 | Factoring and quadratic relationships

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-8-03 | Functions, inverses, and exponential growth

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-8-04 | Algebraic models and evidence checks

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Manipulate powers and polynomials while explaining valid operations

- Connect quadratic factors, roots, and graphs

- Compare function models and check domains and predictions against context

Research priorities

- Verify restrictions introduced by roots, division, and inverse operations

- Test whether model predictions exceed the available evidence

Level 9

Requires equations, ratios, coordinates, and basic shape properties. Build arguments from definitions before asking for formal proofs.

Reading and page design

High-school subject prose with precise definitions, worked methods, source context, and explicitly labeled interpretation.

Geometry gives a sustained setting for deductive reasoning; algebra and ratios support coordinate and triangle applications.

MATH-9-01 | Definitions, constructions, and proof

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-9-02 | Congruence, similarity, and transformations

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-9-03 | Coordinate geometry and circles

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-9-04 | Right triangles, area, and volume

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Construct and justify a geometric argument from stated premises

- Use transformations and similarity to solve geometric problems

- Apply right-triangle relationships and coordinate methods with correct units

Research priorities

- Verify theorem dependencies and avoid circular reasoning

- Check diagrams that are not to scale and distinguish measurements from proofs

Level 10

Requires factoring, functions, inverse reasoning, and right-triangle ratios. Introduce radians and the circle model before identities.

Reading and page design

Extended explanations and evidence comparison. Scaffold unfamiliar specialist terms while increasing independent synthesis and application.

Function families are connected through transformations and inverse relationships; periodic models extend triangle ratios.

MATH-10-01 | Polynomial and rational functions

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-10-02 | Exponential and logarithmic relationships

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-10-03 | Periodic functions and trigonometry

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-10-04 | Sequences and analytic geometry

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Analyze polynomial and rational functions with excluded inputs stated
- Use exponential and logarithmic relationships as inverse descriptions
- Represent periodic change and connect sequences with functions

Research priorities

- Check logarithm bases, domains, and rational-function restrictions
- Verify radian and unit-circle understanding before symbolic identities

Level 11

Requires functions, probability basics, graphs, and unit reasoning. Separate observed variation from assumptions about a population.

Reading and page design

Sustained analysis, complex sources, and multi-step projects. Explain assumptions, limits, and alternative interpretations supported by evidence.

Applications require choosing and questioning models, not only performing calculations; uncertainty and assumptions receive explicit treatment.

MATH-11-01 | Statistical investigations and probability

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-11-02 | Financial and quantitative decisions

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-11-03 | Advanced function models

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-11-04 | Research, computation, and mathematical arguments

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Design a data investigation and state limits on its conclusions

- Compare financial scenarios using explicit assumptions and changing quantities

- Evaluate a quantitative model and communicate a justified solution

Research priorities

- Verify inference conditions and the difference between prediction and causal claims

- Refresh financial conventions and data provenance when lessons are drafted

Level 12

The main route requires secure algebra, geometry, functions, data reasoning, and evidence-based explanation. The calculus extension additionally requires advanced functions and limit reasoning.

Reading and page design

Advanced secondary reading and independent inquiry. Use precise subject language, transparent sources, and capstone applications; optional extensions remain labeled.

A capstone consolidates the core route; calculus is an optional extension, not a requirement for every learner.

MATH-12-01 | Independent modeling and synthesis

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-12-02 | Statistics, decisions, and capstone communication

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-12-03 | Optional calculus: limits and change

Planned. Topic research, lessons, exercises, and assessments are not yet released.

MATH-12-04 | Optional calculus: accumulation and applications

Planned. Topic research, lessons, exercises, and assessments are not yet released.

Proposed demonstrations

- Complete a documented modeling project with checked calculations and limitations
- Compare competing solutions using evidence and stated decision criteria
- If pursuing the extension, connect derivative and integral ideas to change and accumulation

Research priorities

- Validate the non-calculus completion route with independent subject review
- Check function, trigonometry, and limit prerequisites before calculus

Research and production gates

Each future topic requires authoritative evidence, explicit prerequisites, taught-before-tested content, cumulative practice, keyed assessment, illustrations that support the concept, and editorial and educational review. Framework references do not establish full coverage. No complete KDP edition is ready.

Sources for current sections

Adding It Up (2001), Chapter 5: The Mathematical Knowledge Children Bring to School

Research background for counting, matching quantities, and early arithmetic. The authored examples and pictures are original. This chapter does not prescribe this thirteen-level sequence or establish its completeness.

https://www.nationalacademies.org/read/9822/chapter/7