

Kindergarten and Grade 1 Math Topics for iOS App Plan

This document summarises **all** math topics for kindergarten and grade 1 on K5 Learning and suggests how each topic could be delivered in the planned iOS/iPadOS math-learning app. Every topic description is backed by a citation from K5 Learning's website.

Kindergarten

Topic & K5 evidence	Suggested app implementation
Number recognition & writing (1–20); counting & comparing numbers – Kindergarten worksheets teach children to recognize and write numbers, count objects, compare numbers, and learn odd/even numbers and ordinal numbers ¹ .	Use finger-tracing and Apple Pencil tracing for digits with guided animations and haptic feedback. Provide counting scenes (e.g., animals, fruits) where children drag objects and the app counts aloud. Include mini-games for sorting odd versus even numbers and placing ordinal labels (1st, 2nd, 3rd) on items in order.
Patterns – Simple math activities include recognizing and continuing geometric and other patterns ² . Pattern worksheets help children discover the repeating unit and extend the pattern [850953562955762†L270-L282] .	Present rows of shapes or colors and ask children to drag or tap the correct item that comes next. Offer auditory patterns (drum beats) and highlight the repeating core as a hint.
Measurement – Worksheets teach comparing lengths and heights with non-standard units, reading measurement scales and rulers, and comparing size (bigger vs smaller); they also cover measuring length, weight, capacity and temperature ³ .	Provide virtual rulers, measuring tapes and scales. Children drag a ruler to measure objects or fill containers to compare volumes. Use slider bars to adjust length/height to match a target.
Money (coins) – Money worksheets teach students to recognize and count U.S. coins; exercises include matching coins to names and values, sorting coins, and counting coins to find a total ⁴ .	Show realistic images of pennies, nickels, dimes and quarters. Children drag coins into a piggy bank while the app names them and updates the total. Use sorting jars to group coins and mini-store games to match coins to price tags.
Graphing – Kindergarten graphing worksheets teach reading bar charts, sorting objects and creating bar graphs, then answering questions about the graph ⁵ .	Let children drop colored objects into columns to create a bar chart. The app reads the graph aloud and asks questions like “Which bar is tallest?” Provide a tally-mark tool that converts marks into a bar chart.

Topic & K5 evidence	Suggested app implementation
Addition – Addition worksheets begin with adding objects up to 10, counting and adding, and number-line addition; they progress to sums to 5, 10 and 20, vertical addition, missing numbers and word problems ⁶ .	Provide number-line sliders where children move a character forward to add numbers. Use drag-and-drop counters to visualise addition and a vertical column for two-number sums. Include story-based word problems with illustrations.
Subtraction – Subtraction worksheets use objects and pictures, crossing out items, number lines, and subtraction within 5, 10 or 20; they include vertical subtraction and word problems ⁷ .	Create scenes where children tap items to “erase” them. Provide backward number-line sliders to visualise subtraction. Include missing-number puzzles and simple story problems with interactive objects.
Shapes & geometry – Worksheets teach tracing, drawing, naming and identifying 2-D shapes; distinguishing 2-D vs 3-D shapes; matching shapes to real-world objects; drawing shapes in patterns; tangram puzzles and mirror images ⁸ .	Provide a drawing canvas with shape templates for tracing. Include a matching game where children drag shapes onto pictures of real objects. Offer tangram puzzles and a symmetry activity where children complete the mirror image of a shape.

Summary

Kindergarten math on K5 Learning focuses on number recognition and counting, patterns, simple addition and subtraction, measurement, money, graphing and basic geometry. In an app, these topics can be taught through touch-friendly tracing, drag-and-drop manipulatives, animated number lines, virtual measuring tools, coin games, simple bar charts and shape exploration.

Grade 1

Topic & K5 evidence	Suggested app implementation
Number charts & counting – Grade 1 resources include number charts and skip-counting practice ⁹ .	Provide interactive hundreds charts where children tap numbers sequentially or skip-count by 2s, 5s or 10s. Highlight patterns (e.g., multiples of 5) and play audio cues for each number.
Number patterns – Worksheets develop skills in identifying and extending number patterns based on simple addition or subtraction; some include two-step patterns up to 100 ¹⁰ .	Show sequences (2, 5, 8, ...); children select or type the next number. Use visual patterns of objects and allow drag-to-complete interactions. Provide input-output charts for pattern rules.
Comparing and ordering numbers – Grade 1 worksheets ask students to order numbers and use “greater than”, “less than” and “equal to” symbols for numbers 0–30 and 0–100 ¹¹ .	Create number cards that children drag into ascending or descending order. Offer a “hungry alligator” game where an animated alligator eats the larger number. Provide a digital number line for placing numbers correctly.

Topic & K5 evidence	Suggested app implementation
Base 10 blocks & ten frames – Ten-frame and base-10 block worksheets help students compose and decompose numbers into tens and ones ¹² .	Use interactive ten-frame grids and base-10 blocks. Children drag single units into a frame until it fills and automatically converts to a ten-rod. Build numbers and perform addition by combining blocks.
Place value & rounding – Exercises teach identifying tens and ones, combining tens and ones, building numbers, rounding to the nearest 10 and writing numbers in expanded form ¹³ .	Provide columns for tens and ones where children drag blocks to assemble numbers. Add rounding sliders that snap numbers to the nearest 10 and show a number line. Include expanded-form challenges in which children combine tens and ones to form standard numbers.
Fractions (introduction) – Grade 1 fraction worksheets introduce fractions by dividing shapes into equal parts and finding fractions of a set ¹⁴ .	Present pizzas or pies that children slice into halves or quarters with their finger. Let them shade portions or select a fraction of a group of objects. Use drag-and-drop fraction tiles and word-problem scenarios.
Measurement – Grade 1 measurement focuses on comparing lengths (longer/shorter, taller/shorter), measuring with non-standard units, inches and centimeters, and comparing weight and capacity ¹⁵ .	Offer virtual rulers, tapes and scales. Children measure cartoon items by dragging a ruler and can order objects by length. Provide scales for heavier/lighter comparisons and containers to explore capacity.
Counting money – Students learn to identify and count common U.S. coins, matching coins to names and values and counting combinations of pennies, nickels, dimes and quarters ¹⁶ .	Present a virtual cash drawer with coins and price tags. Children drag coins to match a target amount. Introduce a simple shopping game where they “purchase” items and make change.
Telling time & calendar – Worksheets give practice reading analog clocks (whole, half and quarter hours), drawing clock hands, finding elapsed time and identifying days of the week and months of the year ¹⁷ .	Use an interactive analog clock with movable hands. Tasks include setting the hands to a given time and reading times shown by the app. Elapsed-time challenges ask what time it will be in a certain number of hours. Calendar activities have children select days and months.
Geometry (2-D and 3-D shapes) – Grade 1 geometry focuses on identifying and drawing squares, rectangles, circles, triangles, ovals and diamonds, rotating and scaling shapes, drawing mirror images (lines of symmetry) and naming 3-D shapes ¹⁸ .	Provide a drawing tool where children trace and draw shapes. Add a rotation feature to demonstrate that rotating a shape doesn’t change its identity. Include simple 3-D models that can be rotated with a finger and symmetry puzzles where children complete a shape across a line.

Topic & K5 evidence	Suggested app implementation
Addition – First-grade addition worksheets start with pictures and number lines, then cover mental addition within 10 and 20, number bonds, doubles and near-doubles, adding whole tens, adding 2-digit and 1-digit numbers without carrying and word problems ¹⁹ .	Continue with number-line games and counters, but extend to tens and ones. Provide mental-math flashcards and number bonds. Show vertical addition problems with digital entry. Incorporate word-problem animations.
Subtraction – Exercises involve crossing out objects, writing subtraction sentences, number-line subtraction, mental subtraction (within 0–10), subtracting within 1–20, subtracting one-digit numbers from two-digit numbers without borrowing, subtracting whole tens, column subtraction and fact-family practice ²⁰ .	Offer crossing-out activities, backward number-line sliders and missing-number puzzles. Provide column subtraction problems with real-time feedback. Include fact-family games linking addition and subtraction.
Data & graphing – Grade 1 data activities include sorting and counting items, converting tally marks to numbers, counting items with tally marks, creating and interpreting pictographs, bar charts and bar graphs ²¹ .	Let children sort pictures into categories and see the bar graph build in real time. Provide a tally-mark tool that converts tallies into numbers and pictographs. Ask questions about the resulting graph to encourage interpretation.
Word problems – Word-problem worksheets cover single-digit addition, addition with sums ≤ 50 , adding three or more numbers, subtracting single-digit numbers, subtracting numbers under 50, mixed addition/subtraction, time problems, money problems, measurement (length) problems and writing fractions from a story ²² .	Create story-based animations with characters. Children use virtual tools (counters, coins, clocks, rulers) to solve the problems. Offer hints and multiple strategies (number lines, drawing, manipulatives) and provide immediate feedback.

Summary

Grade 1 expands on kindergarten basics by introducing base-10 concepts, place value, more advanced addition and subtraction, measurement in standard units, beginning fractions, money, time, basic geometry, data and graphing, and word problems. In the app, manipulatives evolve into ten-frames and base-10 blocks, numbers reach the hundreds chart, and new tools such as virtual clocks, rulers and cash registers appear. Activities remain interactive and adaptive to support individual mastery.

Design and pedagogical notes

- **Interactive manipulatives:** Digital versions of physical objects (ten frames, base-10 blocks, coins, clocks, rulers and scales) make abstract concepts tangible and support exploration.
- **Adaptive difficulty:** Track mastery and adjust exercises to each child's level—extending questions when a concept is mastered and offering hints when needed.
- **Audio & haptic feedback:** Provide clear audio instructions and rewards, plus gentle haptic cues, to engage young learners and aid comprehension.

- **Accessibility:** Maintain high contrast and offer a reduced-transparency mode when using glassmorphic effects. Support voice-over, large text and alternative input methods.
 - **Privacy & offline use:** Store progress locally when offline and sync when possible, respecting children's privacy and data-protection rules.
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- 1 Free Preschool & Kindergarten Numbers & Counting Worksheets-Printable | K5 Learning
<https://www.k5learning.com/free-preschool-kindergarten-worksheets/numbers-counting>
- 2 Free Preschool & Kindergarten Simple Math Worksheets - Printable | K5 Learning
<https://www.k5learning.com/free-preschool-kindergarten-worksheets/simple-math>
- 3 Free Preschool & Kindergarten Measurement Worksheets - Printable | K5 Learning
<https://www.k5learning.com/free-preschool-kindergarten-worksheets/measurement>
- 4 Free Preschool & Kindergarten Money Worksheets - Printable | K5 Learning
<https://www.k5learning.com/free-preschool-kindergarten-worksheets/money>
- 5 Free Preschool & Kindergarten Graphing Worksheets | K5 Learning
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- 6 Free Preschool & Kindergarten Addition Worksheets - Printable | K5 Learning
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- 7 Free Preschool & Kindergarten Subtraction Worksheets - Printable | K5 Learning
<https://www.k5learning.com/free-preschool-kindergarten-worksheets/subtraction>
- 8 Shapes Worksheets for Kindergarten | K5 Learning
<https://www.k5learning.com/free-preschool-kindergarten-worksheets/shapes>
- 9 Grade 1 math resources | K5 Learning
<https://www.k5learning.com/math/grade-1-lessons>
- 10 1st Grade Number Patterns Worksheets -printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/number-patterns>
- 11 1st Grade Comparing Numbers & Ordering Numbers Worksheets -printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/comparing-numbers>
- 12 Ten frames & base 10 blocks | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/base-ten-blocks>
- 13 1st Grade Place Value and Number Charts Worksheets - free & printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/place-value>
- 14 1st Grade Fractions - Math Worksheets | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/fractions>
- 15 1st Grade Measurement Worksheets - free and printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/measurement>
- 16 1st Grade Counting Money Worksheets - free & printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/counting-money>
- 17 1st Grade Telling Time - Worksheets - free & printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/telling-time>
- 18 1st Grade Geometry Worksheets | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/geometry>
- 19 Grade 1 Addition Worksheets - free & printable | K5 Learning
<https://www.k5learning.com/free-math-worksheets/first-grade-1/addition>

20 **1st Grade Subtraction Worksheets - free & printable | K5 Learning**

<https://www.k5learning.com/free-math-worksheets/first-grade-1/subtraction>

21 **Data & Graphing Worksheets | K5 Learning**

<https://www.k5learning.com/free-math-worksheets/topics/data-graphing>

22 **Math Word Problem Worksheets | K5 Learning**

<https://www.k5learning.com/free-math-worksheets/topics/word-problems>