

Introduction

About This Book

Since state assessments must be aligned with the National Assessment of Educational Progress (NAEP) as part of the NCLBA, administering these tests tied to the NAEP 2005 Mathematics Assessment Framework on a regular basis will allow you to monitor your students' proficiency levels. To be sure that all students will achieve success, student performance on these "benchmark" tests should be linked to review and practice activities.

This book provides you with tests to detect gaps in your students' content knowledge and skills. The **Benchmark Tests** will provide assessment *at regular two-chapter intervals throughout the school year* so that you can monitor each student's progress toward high levels of achievement on high-stakes testing. Each test is accompanied by a comprehensive report so that you are able to track benchmark progress throughout the year.

Recommended Benchmark Testing

Benchmark Test	1	2	3	4	5
Administer after Chapter	2	4	6	8	10

Reading the Reports

For each test contained in this book, there is a comprehensive test report that provides valuable information for you and your students. Each test item is referenced to a mathematics concept and to a NAEP (National Assessment of Educational Progress) objective. Each test item is also referenced to Scott Foresman-Addison Wesley Mathematics Student Book lessons and Math Diagnosis and Intervention System (MDIS) for further review and practice. Here is a brief overview of how each report has been constructed:

Mathematics Concepts
This column contains a list of the concepts from the NAEP 2005 Mathematics Assessment Framework that were used to develop the test items.

NAEP Objective
This column contains the number of NAEP objectives that correlate to each math concept.

Test Items
This column contains a list of test items that assess each math concept.

Number Correct
This column allows you to record the number of the student's correct items for each specific concept on the test.

Name _____ Date _____

Benchmark Test 1 Report

Mathematics Concepts	NAEP* Grade 4 Obj.	Test Items	Number Correct	Check (✓) if OK	Student Book Lessons	MDIS**
Number Properties and Operations						
Identify the place value and actual value of digits in whole numbers.	N1a	1, 2, 3	3	<input type="checkbox"/>	1-2, 1-4, 1-5	A47, A55, A56, F4, F6, F7
Compose or decompose whole quantities by place value.	N1a					
Connect model, number word, or number using various models and representations for whole numbers...	N1a	4, 5, 6	3	<input type="checkbox"/>	1-2, 1-4, 1-5	A47, A55, A56, F4, F6, F7
Write or rename whole numbers.	N1a	7, 8, 9	3	<input type="checkbox"/>	1-3	A5A, F5
Order or compare whole numbers...	N1j	10, 11, 12	3	<input type="checkbox"/>	1-2, 1-4	A57, F8
Use benchmarks for whole numbers... in contexts.	N2a	13, 14, 15	3	<input type="checkbox"/>	2-7, 2-11, 2-12	C31, C36, E17, F23, F29, M17
Make estimates appropriate to a given situation with whole numbers... by... * selecting the appropriate method of estimation	N2b	16, 17, 18	3	<input type="checkbox"/>	2-8	C39, F24
Make estimates appropriate to a given situation with whole numbers... by... * selecting the appropriate type of estimate, including overestimate, underestimate, and range of estimate...	N2b					
Interpret whole number operations and the relationships between them.	N3f	19, 20, 21	3	<input type="checkbox"/>	2-2, 2-10	B52, C41, F21, F25
Identify odd and even numbers.	N5a	22, 23, 24	3	<input type="checkbox"/>	1-9	C27, F19
Recognize, describe, or extend numerical patterns.	A1a					
Apply basic properties of operations.	N5e	25, 26, 27	3	<input type="checkbox"/>	2-1, 2-5, 2-6	B51, C26, F20, F22
Explain or justify a mathematical concept or relationship.	N5f	28, 29, 30	3	<input type="checkbox"/>	2-12	E17, M17
Algebra						
Given a pattern or sequence, construct or explain a rule that can generate the terms of the pattern or sequence.	A1b	31, 32, 33	3	<input type="checkbox"/>	2-3	B53, J8

Benchmark Test 1 Report R 1

Test Report Title
This identifies the test that corresponds to each individual report.

Student Book Lessons and MDIS
These columns contain lesson references to provide students, especially those students who have not yet reached proficiency, with additional reviews and practice.

Check (✓) if OK
This column allows you to identify whether a student has reached proficiency on each specific concept assessed within each test.

Comments
This space at the end of the report allows you to add your own comments.

NAEP 2005 Mathematics Assessment Framework

Grade 4

Number Properties and Operations

1) Number sense

- a) Identify the place value and actual value of digits in whole numbers.
- b) Represent numbers using models such as base 10 representations, number lines, and two-dimensional models.
- c) Compose or decompose whole quantities by place value (e.g., write whole numbers in expanded notation using place value: $342 = 300 + 40 + 2$).
- d) Write or rename whole numbers (e.g., $10: 5 + 5$, $12 - 2$, 2×5).
- e) Connect model, number word, or number using various models and representations for whole numbers, fractions, and decimals.
- j) Order or compare whole numbers, decimals, or fractions.

2) Estimation

- a) Use benchmarks (well known numbers used as meaningful points for comparison) for whole numbers, decimals, or fractions in contexts (e.g., $\frac{1}{2}$ and $.5$ may be used as benchmarks for fractions and decimals between 0 and 1.00).
- b) Make estimates appropriate to a given situation with whole numbers, fractions, or decimals by:
 - knowing when to estimate,
 - selecting the appropriate type of estimate, including overestimate, underestimate, and range of estimate, or
 - selecting the appropriate method of estimation (e.g., rounding).
- c) Verify solutions or determine the reasonableness of results in meaningful contexts.

3) Number operations

- a) Add and subtract:
 - whole numbers, or
 - fractions with like denominators, or
 - decimals through hundredths.
- b) Multiply whole numbers:
 - no larger than two-digit by two-digit with paper and pencil computation, or
 - larger numbers with use of calculator.
- c) Divide whole numbers:
 - up to three-digits by one-digit with paper and pencil computation, or
 - up to five-digits by two-digits with use of calculator.
- d) Describe the effect of operations on size (whole numbers).
- f) Interpret whole numbers operations and the relationships between them.
- g) Solve application problems involving numbers and operations.

4) Ratios and proportional reasoning

- a) Use simple ratios to describe problem situations.

5) Properties of number and operations

- a) Identify odd and even numbers.
- b) Identify factors of whole numbers.
- e) Apply basic properties of operations.
- f) Explain or justify a mathematical concept or relationship (e.g., explain why 15 is an odd number or why $7 - 3$ is not the same as $3 - 7$).

Measurement

1) Measuring physical attributes

- a) Identify the attribute that is appropriate to measure in a given situation.
- b) Compare objects with respect to a given attribute, such as length, area, volume, time, or temperature.
- c) Estimate the size of an object with respect to a given measurement attribute (e.g., length or perimeter).
- g) Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments.
- h) Solve problems involving perimeter of plane figures.
- i) Solve problems involving area of rectangles.

2) Systems of measurement

- a) Select or use appropriate type of unit for the attribute being measured such as length, time, or temperature.
- b) Solve problems involving conversions within the same measurement system such as conversions involving inches and feet or hours and minutes.
- d) Determine appropriate size of units of measurement in problem situation involving such attributes as length, time, capacity, or weight.
- e) Determine situations in which a highly accurate measurement is important.

Geometry

1) Dimension and shape

- a) Explore properties of paths between points.
- b) Describe (informally) real world objects using simple plane figures (e.g., triangles, rectangles, squares and circles) and simple solid figures (e.g., cubes, spheres, and cylinders).
- c) Identify or draw angles and other geometric figures in the plane.
- f) Describe attributes of two- and three-dimensional shapes.

2) Transformation of shapes and preservation of properties

- a) Identify whether a figure is symmetrical, or draw lines of symmetry.
- c) Identify the images resulting from flips (reflections), slides (translations) or turns (rotations).
- d) Recognize which attributes (such as shape and area) change or don't change when plane figures are cut up and rearranged.
- e) Match or draw congruent figures in a given collection.

3) Relationships between geometric figures

- a) Analyze or describe patterns of geometric figures by increasing number of sides, changing size or orientation (e.g., polygons with more and more sides).
- b) Assemble simple plane shapes to construct a given shape.
- c) Recognize two-dimensional faces of three-dimensional shapes.

4) Position and direction

- a) Describe relative positions of points and lines using the geometric ideas of parallelism or perpendicularity.
- d) Construct geometric figures with vertices at points on a coordinate grid.

5) Mathematical reasoning

- a) Distinguish which objects in a collection satisfy a given geometric definition and explain choices.

Data Analysis and Probability

1) Data representation

The following representations of data are indicated for each grade level. Objectives in which only a subset of these representations is applicable are indicated in the parenthesis associated with the objective.

Pictograms, bar graphs, circle graphs, line graphs, line plots, tables, and tallies.

- a) Read or interpret a single set of data.
- b) Given a set of data, complete a graph (limits of time make it difficult to construct graphs completely).
- c) Solve problems by estimating and computing within a single set of data.

2) Characteristics of data sets

- b) Given a set of data or a graph, describe the distribution of the data using median, range, or mode.
- d) Compare two sets of related data.

3) Experiments and samples

4) Probability

- a) Use informal probabilistic thinking to describe chance events (i.e., likely and unlikely, certain and impossible).
- e) List all possible outcomes of a given situation or event.
- g) Represent the probability of a given outcome from pictures of spinners and other devices.

Algebra

1) Patterns, relations, and functions

- a) Recognize, describe, or extend numerical patterns.
- b) Given a pattern or sequence, construct or explain a rule that can generate the terms of the pattern or sequence.
- c) Given a description, extend or find a missing term in a pattern or sequence.
- d) Create a different representation of a pattern or sequence given a verbal description.
- e) Recognize or describe a relationship in which quantities change proportionally.

2) Algebraic representations

- a) Translate between the different forms of representations (symbolic, numerical, verbal, or pictorial) of whole number relationships (such as from a written description to an equation or from a function table to a written description).
- c) Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.
- e) Verify a conclusion using algebraic properties.

3) Variables, expressions, and operations

- a) Use letters and symbols to represent an unknown quantity in a simple mathematical expression.
- b) Express simple mathematical relationships using number sentences.

4) Equations and inequalities

- a) Find the value of the unknown in a whole number sentence.