

PROJECT 2061 EVALUATION OF MIDDLE SCHOOL MATHEMATICS TEXTBOOKS

Benchmarks Used to Evaluate Textbooks

» **BENCHMARK - Number Concepts**

The expression a/b can mean different things: a parts of size $1/b$ each, a divided by b , or a compared to b . (Chapter 9A, grades 6-8, benchmark 5, pg. 213.)

» **BENCHMARK - Geometry Concepts**

Some shapes have special properties: Triangular shapes tend to make structures rigid, and round shapes give the least possible boundary for a given amount of interior area. Shapes can match exactly or have the same shape in different sizes. (Chapter 9C, grades 6-8, benchmark 1, pg. 224.)

» **BENCHMARK - Algebra Graph Concepts**

Graphs can show a variety of possible relationships between two variables. As one variable increases uniformly, the other may do one of the following: increase or decrease steadily, increase or decrease faster and faster, get closer and closer to some limiting value, reach some intermediate maximum or minimum, alternately increase and decrease indefinitely, increase or decrease in steps, or do something different from any of these. (Chapter 9B, grades 6-8, benchmark 3, pg. 219.)

» **BENCHMARK - Number Skills**

Use, interpret, and compare numbers in several equivalent forms such as integers, fractions, decimals, and percents. (Chapter 12B, grades 6-8, benchmark 2, pg. 291.)

» **BENCHMARK - Geometry Skills**

Calculate the circumferences and areas of rectangles, triangles, and circles, and the volumes of rectangular solids. (Chapter 12B, grades 6-8, benchmark 3, pg. 291.)

» **BENCHMARK - Algebra Equation Concepts**

Symbolic equations can be used to summarize how the quantity of something changes over time or in response to other changes. (Chapter 11C, grades 6-8, benchmark 4, pg. 274.)

from *Benchmarks for Science Literacy*, AAAS. © 1993. Oxford University Press.

Criteria for Evaluating the Quality of Instructional Guidance

Category I: Identifying a Sense of Purpose

- I.1 Conveying Unit Purpose
- I.2 Conveying Lesson Purpose
- I.3 Justifying Sequence of Activities

Category II: Building on Student Ideas about Mathematics

- II.1 Specifying Prerequisite Knowledge
- II.2 Alerting Teacher to Student Ideas
- II.3 Assisting Teacher in Identifying Ideas
- II.4 Addressing Misconceptions

Category III: Engaging Students in Mathematics

- III.1 Providing Variety of Contexts
- III.2 Providing First-hand Experiences

Category IV: Developing Mathematical Ideas

- IV.1 Justifying Importance of Benchmark Ideas
- IV.2 Introducing Terms or Procedures
- IV.3 Representing Ideas Accurately
- IV.4 Connecting Benchmark Ideas
- IV.5 Demonstrating/Modeling Procedures
- IV.6 Providing Practice

Category V: Promoting Student Thinking in Mathematics

- V.1 Encouraging Students to Explain Their Reasoning
- V.2 Guiding Interpretation or Reasoning
- V.3 Encouraging Students to Think about What They've Learned

Category VI: Assessing Student Progress in Mathematics

- VI.1 Aligning Assessment
- VI.2 Assessing through Applications
- VI.3 Using Embedded Assessment

Category VII. Enhancing the Mathematics Learning Environment

- VII.1 Providing Teacher Content Support
 - VII.2 Establishing Challenging Classroom Environment
 - VII.3 Supporting All Students
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