

Table of Contents

Preface	vii
Tenets on the Teaching of Computation	ix
1. How Computational Skills Contribute to the Meaningful Learning of Arithmetic	1
<i>Katherine B. Hamrick</i> , Augusta College, Augusta, Georgia <i>William D. McKillip</i> , University of Georgia, Athens, Georgia	
The changing role of computational skills is discussed. A level of computational skill desirable in light of predictable future needs is proposed, and four reasons for advocating that level are discussed.	
2. Using Thinking Strategies to Teach the Basic Facts	13
<i>Edward C. Rathmell</i> , University of Northern Iowa, Cedar Falls, Iowa	
A framework for organizing instruction on the basic facts is presented. Guidelines are given for blending work with concrete materials, thinking strategies, and drill into a meaningful program.	
3. Games: Practice Activities for the Basic Facts	39
<i>Robert B. Ashlock</i> , University of Maryland, College Park, Maryland <i>Carolynn A. Washbon</i> , University of Maryland, College Park, Maryland	
The use of games to provide practice on specified objectives is discussed. Four games are described in relation to several guidelines.	

4. Suggestions for Teaching the Basic Facts of Arithmetic 51
Edward J. Davis, University of Georgia, Athens, Georgia
 Ten principles to apply in teaching children to memorize basic facts are discussed.
5. Using Materials and Activities in Teaching Addition and Subtraction Algorithms 61
Katherine Klippert Merseeth, Chelmsford Public Schools, North Chelmsford, Massachusetts
 Helping teachers to build a strong bridge from concrete experiences to algorithms is the focus. A detailed sequence of activities is described.
6. Computation: Implications for Learning Disabled Children 78
John C. Moyer, Marquette University, Milwaukee, Wisconsin
Margaret Bannochie Moyer, University of Wisconsin—Milwaukee, Milwaukee, Wisconsin
 Assumptions frequently made about learning disabled children are discussed, with many teaching suggestions provided.
7. Teaching Multiplication and Division Algorithms 96
Donald W. Hazekamp, Central Michigan University, Mount Pleasant, Michigan
 Instructional sequences are presented for teaching two-digit multiplication and division with one- and two-digit divisors using a base-oriented approach.
8. A Teaching Sequence from Initial Fraction Concepts through the Addition of Unlike Fractions 129
Larry W. Ellerbruch, Montana State University, Bozeman, Montana
Joseph N. Payne, University of Michigan, Ann Arbor, Michigan.
 A teaching sequence provides a guide to instruction on initial concepts of fractions, equivalent fractions, and addition with fractions.
9. Assessing the Development of Computation Skills 148
George W. Bright, Northern Illinois University, De Kalb, Illinois
 Assessment data on student achievement are analyzed to trace performance on some computational skills, with areas of needed improvement identified.

10. Diagnosing Computational Difficulty in the Classroom 163
James E. Inskeep, Jr., San Diego State University, San Diego,
 California
- How teachers can diagnose difficulties with computation is discussed, with emphasis on how to develop diagnostic tests. How to use such tests to plan remediation is considered in terms of several types of errors.
11. Analyzing Children's Work Procedures 177
Carl A. Backman, University of West Florida, Pensacola,
 Florida
- A variety of student work procedures and answer patterns for whole-number computation is examined. Specific suggestions for helping students who make each type of error are offered.
12. Estimation and Mental Arithmetic: Important Components of
 Computation 196
Paul R. Trafton, National College of Education,
 Evanston, Illinois
- The need to include proficiency with estimation and mental arithmetic as goals for the study of computation is presented. Approaches and guidelines are described for developing these skills.
13. Computation and More 214
Diane J. Thomas, University of Louisville, Louisville,
 Kentucky
- Capturing junior high school students' interest in computation is the aim. Three activities are described in which computation acts as a needed tool within a problem-solving context.
14. Teaching Computational Skills with a Calculator 226
Edward C. Beardslee, Seattle Pacific College,
 Seattle, Washington
- Ways to use a calculator as an integral part of mathematics instruction in existing curricula are provided. Activities are proposed that will help children think about mathematics rather than merely push buttons.
- Index 243