Contents

Editors’ Preface vii
Preface to the Russian Edition ix
Introduction xi

1. Problem and Goals of the Study 1
   1. The Theoretical and Practical Importance of the Problem of Mathematical Abilities in Contemporary Soviet Science and Education 3
   2. Foreign Psychological Literature on Mathematical Abilities 8
   3. Prerevolutionary and Soviet Psychological Literature on Mathematical Abilities 47
   4. Statement of the Problem and Goals of the Study 60

2. Methods and Organization of the Study 79
   5. General Method and Organization 81
   6. Hypothesis concerning the Components of Mathematical Abilities 84
   7. Methods Used in the Experimental Investigation 89
   8. The System of Experimental Problems for Investigating Schoolchildren’s Mathematical Abilities 98
   9. Organization of the Experimental Investigation 175

3. An Analysis of the Structure of Schoolchildren’s Mathematical Abilities 181
   10. An Analysis of Nonexperimental Data on the Components of Schoolchildren’s Mathematical Abilities 185
   12. Characteristics of Information Gathering (Initial Orientation to a Problem) by Mathematically Capable Pupils 224
   13. Characteristics of Information Processing during Problem-solving by Mathematically Capable Pupils 237
15. Some Special Issues in the Structure of Schoolchildren's Mathematical Abilities 302
16. Type, Age, and Sex Differences in the Components of Mathematical Abilities 313
17. Mathematical Abilities and Personality 344
18. General Questions concerning the Structure of Mathematical Abilities 350

References 365
Author Index 401
Subject Index 412