



Addition and Subtraction up to 100 without Regrouping

Analysis of Second Grade
Mathematics Textbooks in Bulgaria

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Context and Objectives of the Study



Context

Educational Reform: Synchronizing Bulgarian educational standards with European requirements.

Focus: Building sustainable mathematical competencies and logical thinking in primary education.



Aim of the Analysis

Object: Study of 9 officially approved educational kits by the Ministry of Education and Science (MES) for 2nd grade.

Task: Analysis of theoretical frameworks and identification of best practices, similarities, and differences in teaching methodology.

Methodological Sequence: 4 Groups of Cases

1 Basic Operations with Tens and Units.

Examples: $20 + 3$; $23 - 3$; $23 - 20$

Focus: Understanding the
Decitinal Composition.

2 Operating with Single-Digit Numbers.

Examples: $21 + 5$; $26 - 5$

Focus: Operations with
Units Only.

3 Operating with Round Tens.

Examples: $27 + 10$; $37 - 10$

Focus: Change Only in the
Tens, Units Remain
Unchanged.

4 Arbitrary Two-Digit Numbers

Examples: $32 + 26$; $58 - 26$

Focus: Full Algorithm
(Units First, Then Tens).

Analyzed Study Kits (MES, 2nd Grade)

The research covers all 9 officially approved textbooks, demonstrating a variety of didactic approaches.

“Prosveta Plus”
(V. Angelova et al.)

“Prosveta”
(Y. Garcheva et al.)

“Bulvest 2000”
(M. Bogdanova et al.)

“Anubis”
(T. Vitanov et al.)

“Arhimed”
(Z. Paskaleva et al.)

“Pitagor”
(I. Mincheva et al.)

“Skorpio”
(R. Petrova et al.)

“Riva”
(L. Aleksieva et al.)

“Bit i tehnika”
(T. Valkova et al.)

Concept 1: Approaches to Structuring Educational Content

Differentiated Approach (Separate Lessons)

Publishers: Prosveta Plus, Prosveta, Pythagoras, Archimedes

Characteristic: Separate lessons for each case group and each operation.

Advantages: Allows for gradual learning, step-by-step mastery, reduces cognitive load.

Integrated Approach (Combined Lessons)

Publishers: Anubis, Bit i Tehnika, Bulvest, Scorpio

Characteristic: Combining different cases in a single lesson (or contextual introduction).

Advantages: Encourages flexible thinking, understanding connections between concepts, better application in different contexts.

Concept 2: Evolution of Visualization



1	2	3	4
5	8	9	10
11	12	13	14
17	18	19	20

$$\begin{array}{r} \text{ЦН} \quad \text{ТО} \\ 3 \quad 4 \\ + 1 \quad 7 \\ \hline = 5 \quad 1 \end{array}$$

Concrete Visualization (Concreteness)

Publishers: Prosveta Plus, Bulvest, Bit and Tehnika.

Effect: Clear physical understanding of the decimal composition.

Schematic Models (Transition)

Publishers: Anubis, Prosveta, Pitagor, Riva.

Effect: Visual representation of the direction and order of actions.

Abstract Algorithms (Formalization)

Publishers: All (with nuances for Scorpio and Pitagor).

Effect: Building accurate computational skills.

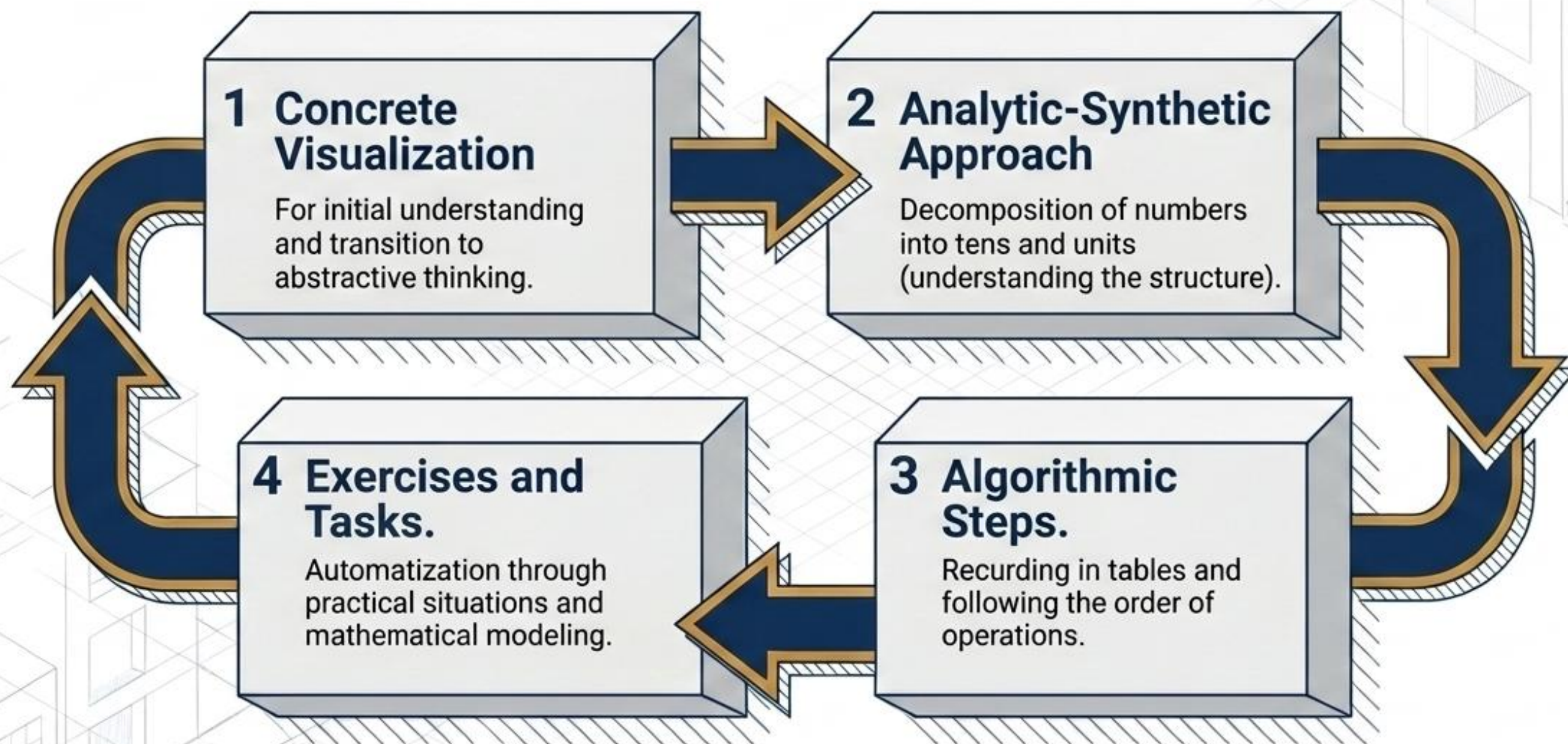


Comparative Analysis of Methodological Solutions

Publisher	Differentiated Lessons	Object Visualization	Written Algorithm in Table	Word Problems
Prosveta Plus	Yes, ✓	High, ●	Yes, ✓	Yes, ✓
Bulvest 2000	No, ✗ (Integrated)	High, ●	No, ✗ (Oral/Distributive)	No, ✗
Anubis	No, ✗ (Integrated)	Medium, ◐ (Schemes)	Yes, ✓	Yes, ✓
Pitagor	Yes, ✓	Medium, ◐ (Schematic)	No, ✗ (Only orally)	Yes, ✓
Scorpio	No, ✗ (Contextual)	Low, ○ (Only abacus)	No, ✗ (Only orally)	Yes, ✓
Prosveta	Yes, ✓	Medium, ◐ (Schematic)	Yes, ✓	Yes, ✓
Arhimed	Yes, ✓	Medium, ◐ (Schematic)	Yes, ✓	Yes, ✓
Bit i tehnika	No, ✗ (Integrated)	High, ●	Yes, ✓	Yes, ✓
Riva	Yes, ✓	Medium, ◐ (Schematic)	Yes, ✓	Yes, ✓

Synthesis: The Optimal Model for Building Competencies

The most effective learning is achieved through a sequential combination of didactic approaches.



Conclusions and Recommendations



All textbooks successfully cover the state standard, but use different didactic trajectories.



The variety of approaches is a key advantage – it meets different cognitive needs (from strong visualization to abstract schemes).



Recommendation: Teachers should flexibly combine methods (e.g., visual models from one publisher with logical tasks from another) to achieve maximum effect.



Educational materials must be continuously updated in the context of European educational innovations.

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Thank you for your attention!
Questions and discussion are welcome.