M7

Reversing
OnTop Addition

Mathematics as MANYmatics
A Natural Science about Many

Material for

MicroCurriculum 7

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Curricula

Preface

M7, Reversing OnTop Addition, is the seventh of 8 micro-curricula in mathematics for preschool and home schooling. They present mathematics as MANYmatics, a natural science about the physical fact Many. They all build upon the following observation:

"How old will you be next time?" I asked the child. "Four", he answered and showed me four fingers. "Four, you said?" I asked and showed him four fingers held together two by two. "No, that is not four, that is two twos!" the child replied thus insisting upon the difference between four ones and two twos. Likewise, preschool children have no difficulties counting in other units than ten, even if they only learn how to count in tens.

The micro-curricula use activities with concrete material to obtain its learning goals in accordance with Piaget's principle 'greifen vor begrifen' (grasp to grasp).

In the first, children learn to use sticks to build the number icons up to nine, and to use strokes to draw them, thus realizing there are as many sticks and strokes in the icon as the number it represents, if written less sloppy. In the second, children learn to count a given total in icons manually, using an abacus and by using a calculator. In the third, children learn to recount a total in the same unit. In the fourth, children learn to recount a total in a different unit. In the fifth, children learn to add two icon-numbers on top of each other. In the sixth, children learn to add two icon-numbers next to each other. In the seventh, children learn to reverse on-top addition. And in the eights, children learn to reverse next-to addition

As to concrete material, anything goes in the first micro-curriculum. The others will use sticks and strokes, beads on an abacus (e.g. from IKEA), LEGO-like blocks and squares, and a calculator respecting the priority of the operations. Fingers, pegs on a pegboard and other concrete material might also be used.

Some of the curricula can use silent education where the instructor is allowed to demonstrate and guide through actions, but not through words; or by using words form a foreign language not understood by the child.

G stands for Geometry and A stands for Algebra.

2 3s + ? 5s = 4 5s

G-counting	Coding
IIIII IIIII IIIII IIIII **III III** **IIII IIIII IIIII**	**S S S S**, CII = S **CII CII S S** **CC IIII SS**
T = 4 5s = 2 3s + 2.4 5s	**T = 4 5s = 2 3s + 2.4 5s**

Abacus

G-mode	A-mode
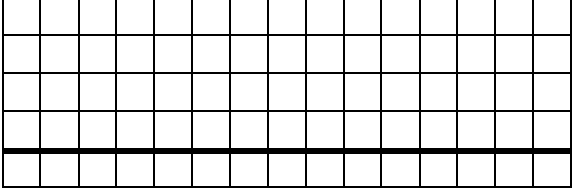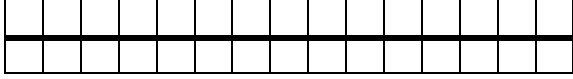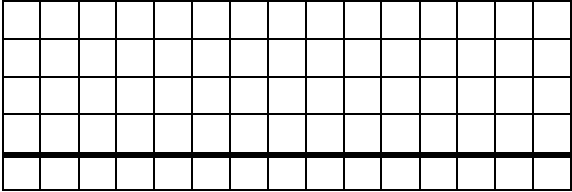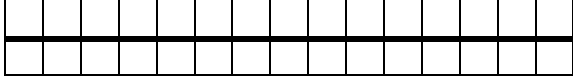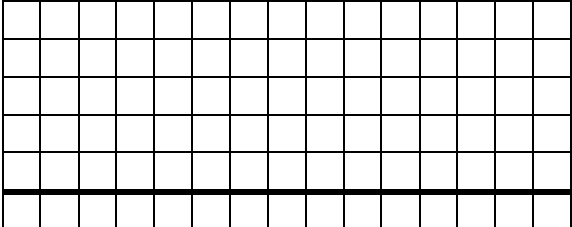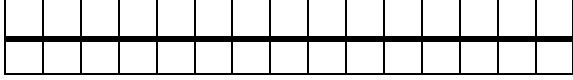
Calculator

(4x5 – 2x3)/5	2.some
(4x5 – 2x3) – 2x5	4

T = 4 5s = 2 3s + 2.4 5s

3 2s + ? 5s = 4 5s

G-counting	Coding
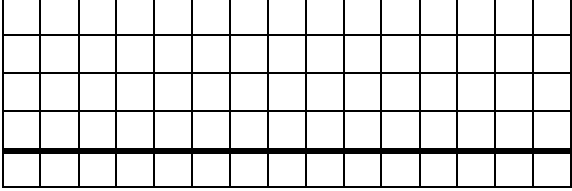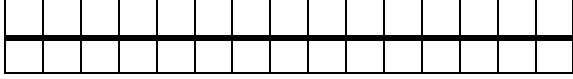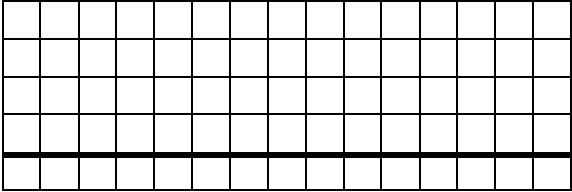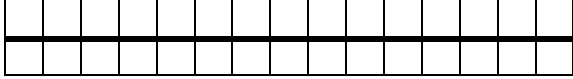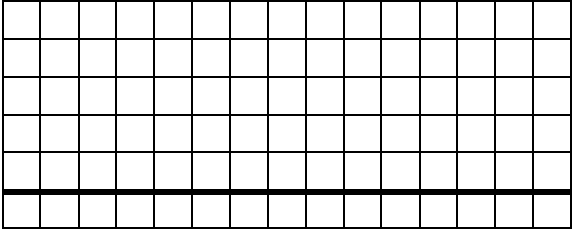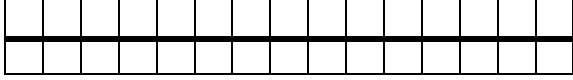
Abacus

G-mode	A-mode

Calculator

? 3s + 5 4s = 7 4s

G-counting	Coding
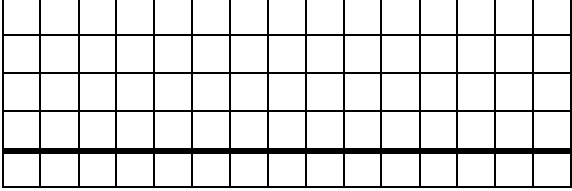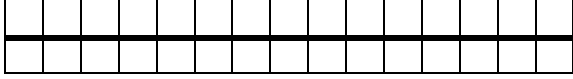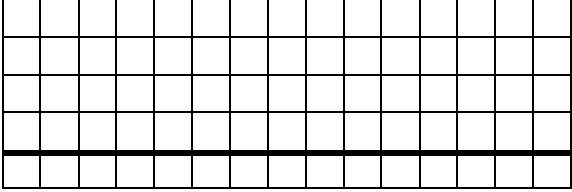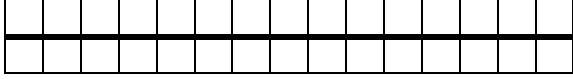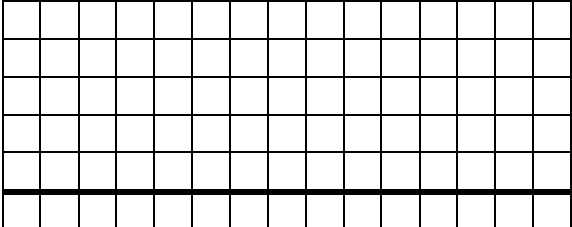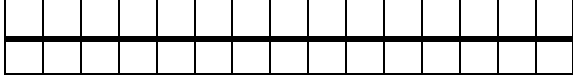
Abacus

G-mode	A-mode

Calculator

3 2s + ? 4s = 4 4s

G-counting	Coding
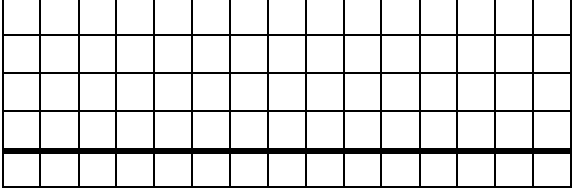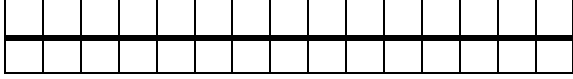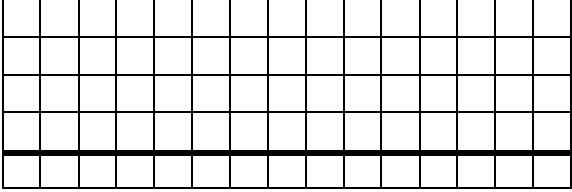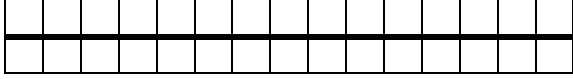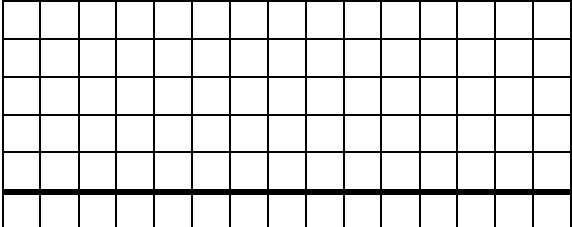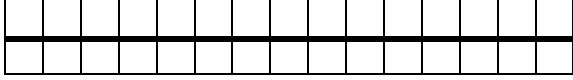
Abacus

G-mode	A-mode

Calculator

4 3s + ? 5s = 5 5s

G-counting	Coding
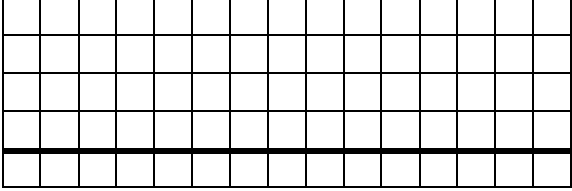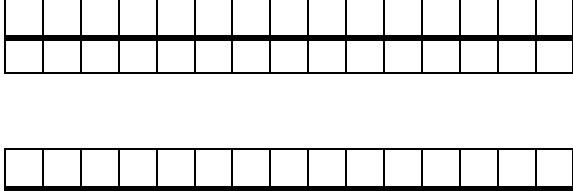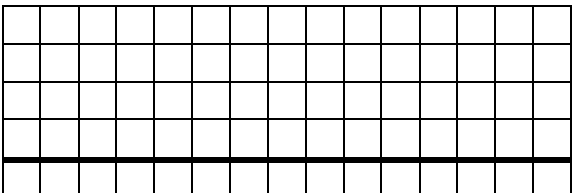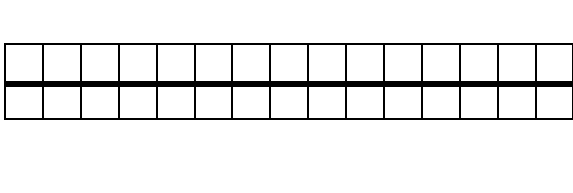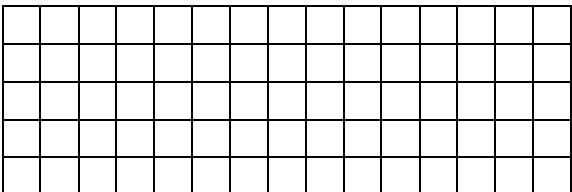
Abacus

G-mode	A-mode

Calculator

? 4s + 2 5s = 6 4s

G-counting	Coding

Abacus

G-mode	A-mode

Calculator

2.1 3s + ? 5s = 4 5s

G-counting	Coding
IIIII IIIII IIIII IIIII III III I III IIIII IIIII	S S S S, CII = S CII CII S S CC I III SS
T = 4 5s = 2.1 3s + 2.3 5s	T = 4 5s = 2.1 3s + 2.3 5s

Abacus

G-mode	A-mode
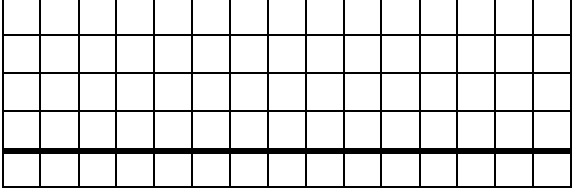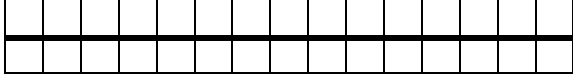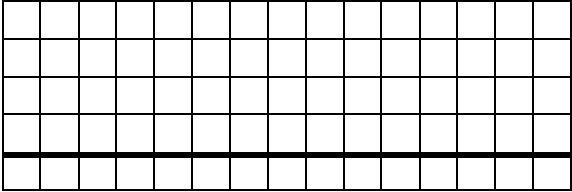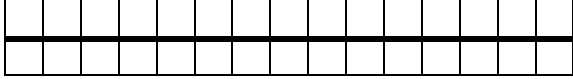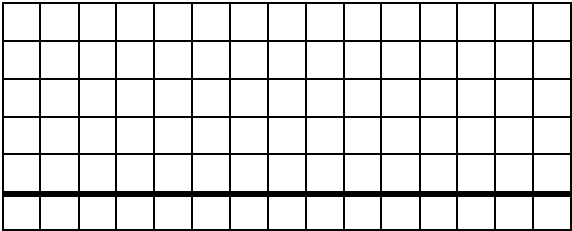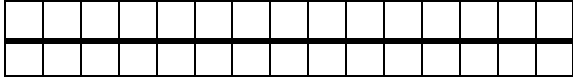
Calculator

(4x5 – 2x3+1)/5	2.some
(4x5 – 2x3+1) – 2x5	4

T = 4 5s = 2 3s + 2.4 5s

4.2 3s + ? 5s = 4 5s

G-counting	Coding
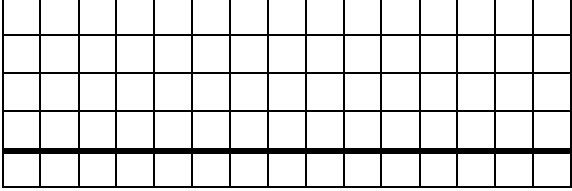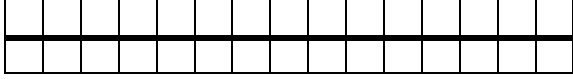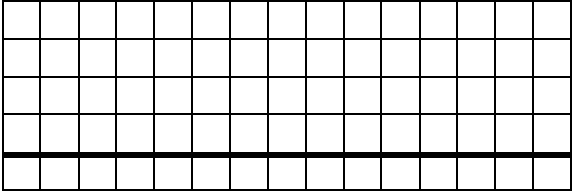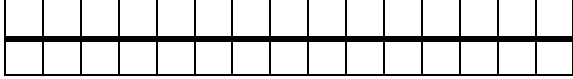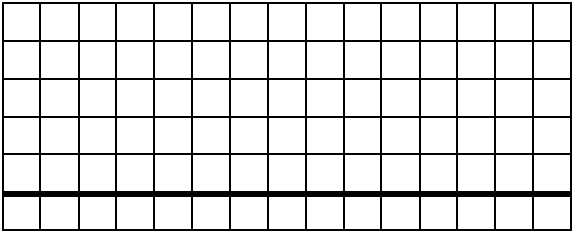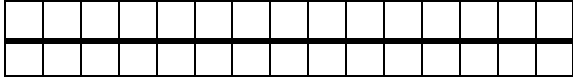
Abacus

G-mode	A-mode

Calculator

2.1 3s + ? 4s = 5 4s

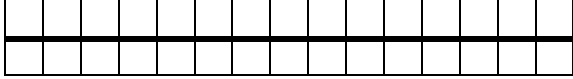| G-counting	Coding
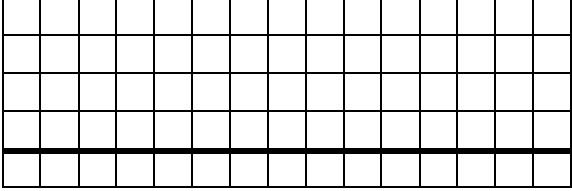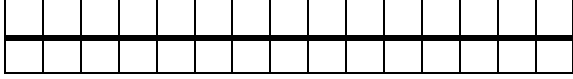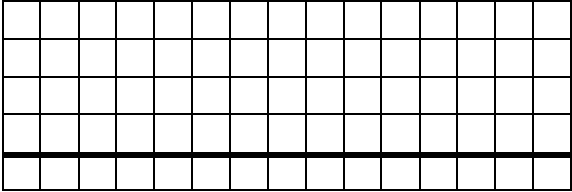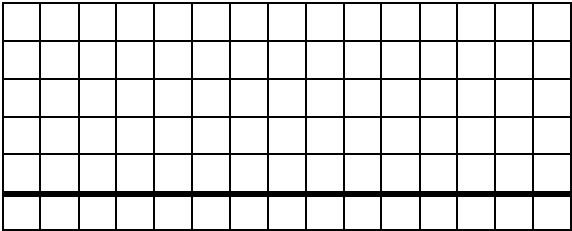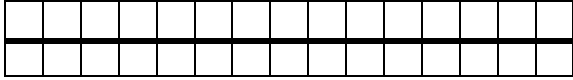
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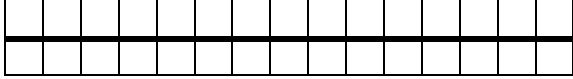| G-mode	A-mode

Calculator

2.2 3s + ? 4s = 5 3s

G-counting	Coding
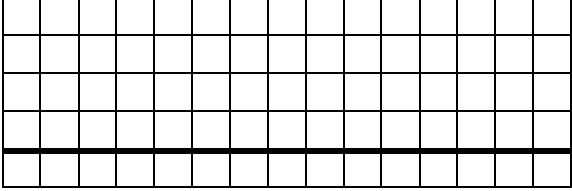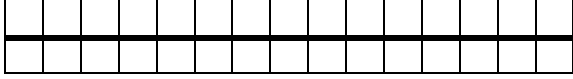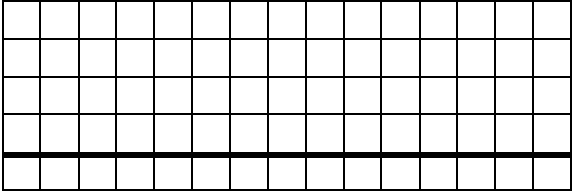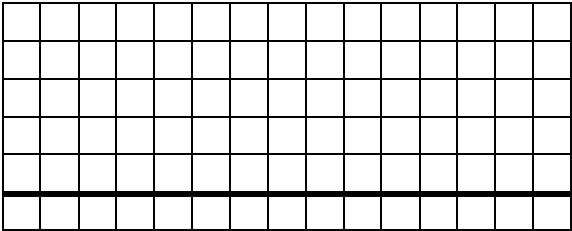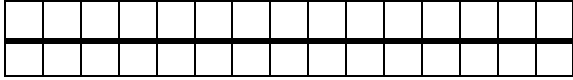
Abacus

G-mode	A-mode

Calculator

2.1 4s + ? 5s = 4 5s

G-counting	Coding
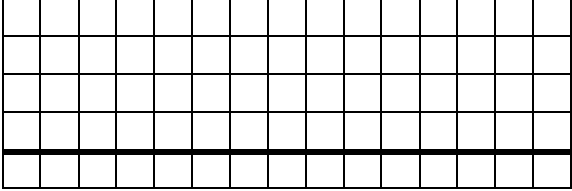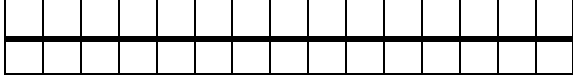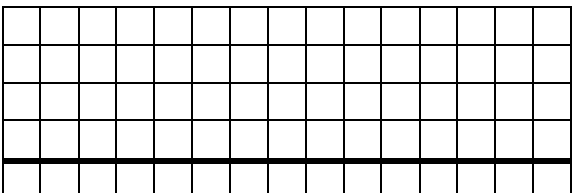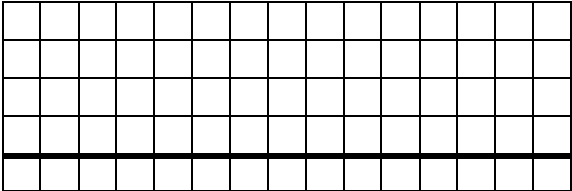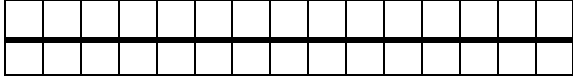
Abacus

G-mode	A-mode

Calculator

? 4s + 1.4 5s = 4 4s

G-counting	Coding

Abacus

G-mode

A-mode

Calculator