

HOW TO HELP STUDENTS CONVERT WRITTEN PROBLEM-SOLVING INTO MATHEMATICAL LANGUAGE?

MathemaTIC Blocks is a tool designed to facilitate student thinking in problem-solving planning and execution.



MathemaTIC Blocks, developed with teachers and researchers, came out of the assessment that students needed a hands-on approach to problem-solving.

WHAT?

The MathemaTIC Blocks emerged from innovative item developments in the Luxembourgish Cycle 3 working group.

The tool is designed to support the cognitive process associated with planning when young students are engaged in the problem solving process.

The use of these blocks in the MathemaTIC Problem Solving module is also influenced by research relating to Guy Brousseau and Raymond Duval who state that extracting mathematical data from a literacy context turns out to be difficult for most students regardless of their general abilities, and thus the cognitive load must be managed and reduced in the right places. MIT Scratch Blocks also served as a design inspiration given its proven ability to provide an intuitive and flexible way for every children to engage directly with mathematical objects in an authentic way.

The challenge is to help students develop reasoning skills such as **identification** and **recognition** of relationships

HOW?

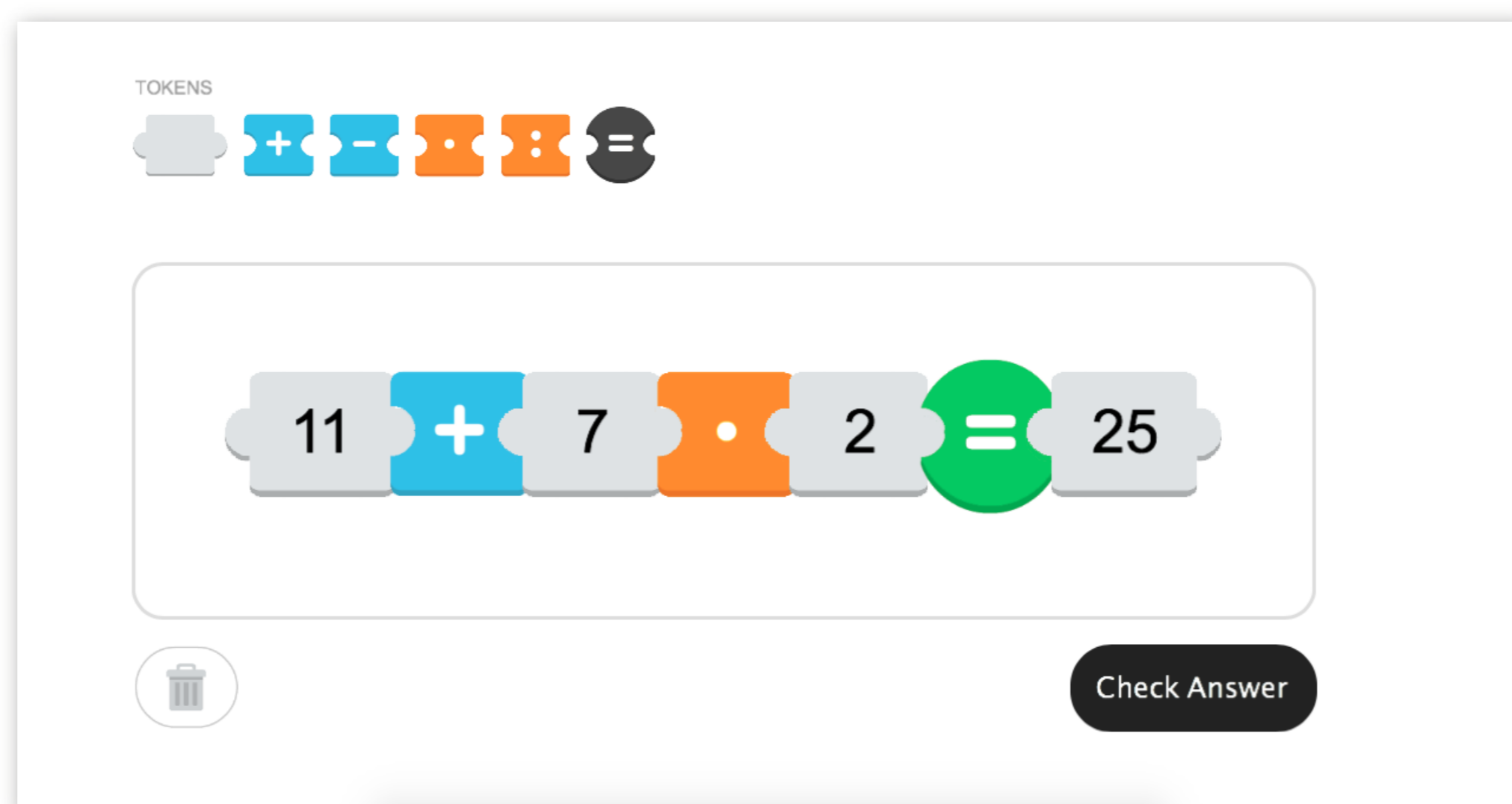
MathemaTIC Blocks offers flexibility for students to create an equation through a structured process.

The blocks, shaped as puzzle pieces, encourage students to manipulate and use strategies such as trial-and-error or decomposition in order to proceed to the operation. Everything is carefully studied and revised, even the blocks themselves, shaped as puzzle pieces to illustrate how it all works together, or the feedback given by clicking on the equal sign.



“*People learn better from a multimedia lesson presented in user-paced segments rather than as a continuous unit*”

Richard E. Mayer, Educational psychologist, *The 12 Principles of Multimedia Learning.*



WHY?

The genesis of the module was to create a tool that will help students seize the cognitive process in problem-solving execution. The initial idea was to find a way to help students learn how to extract informations and create a process on their own in order to solve a problem.

MathemaTIC Blocks acts as a transition tool to shape students reasoning and teach them how to translate literacy information into numeracy data. MathemaTIC Blocks encourages students to use various strategies in resolving a problem: guess and check, eliminate possibilities by decomposition etc.

WHO?

The tool is intended for Cycle 3 students (8 to 9 years old), even though it was designed for problem-solving execution, it actually can be used in many other modules such as mental arithmetic or space and shapes.

