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Learning Mathematics Supported by Computational Thinking

In this presentation, we focus on applying computational thinking mental tools to specific topics in school mathematics. Our goal is twofold. On the one hand, we suggest how to extend and enrich traditional topics in school mathematics by applying computational thinking and, as a result, obtain solutions which use and are supported by the power of computer science as a discipline, as well as computers as computing tools. On the other hand, our approach to dealing with topics in mathematics using computational thinking and computing tools contributes to constructionist learning, which is learning by doing and making meaningful objects in the real world – here, computer solutions in computing environments. The mental tools used herein, dealing with specific topics in mathematics, include: number representations, reductive thinking, approximation of numerical and intractable problems, recursive and logarithmic thinking, heuristics.

Keywords: computational thinking, constructionist learning, problem solving, heuristics