CERME 13: Thematic Working Group 11
Algorithmics

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Scope and focus of the Working Group

Algorithms have always been at the heart of mathematics, and their importance has grown continuously since the beginnings of theoretical computer science. Accordingly, the science of algorithms – or *algorithmics* – lies at the intersection of mathematics and computer science, focusing on the design and analysis of algorithms, that is on questions such as their correctness, complexity or efficiency. Therefore, various algorithms and algorithmic activities have their place in mathematics curricula at all levels. As the teaching and learning of algorithms can be theorized in various ways, this TWG welcomes contributions from a variety of different frameworks.

Call for papers and poster proposals

We invite papers addressing (but not necessarily limited to) questions such as the following:

· *Algorithms in mathematics classrooms and curricula*: Which subject matter from mathematics curricula can be learned and taught algorithmically? Which approaches to teaching algorithms support conceptual learning and avoid rote learning? What mathematical knowledge and skills shall or can be acquired by which algorithmic activities? How is the teaching of algorithms in mathematics education related to the teaching of algorithms in computer science education in different countries? What role do programming or unplugged activities play for teaching and learning algorithms in maths education? How do different theoretical frameworks (e.g., a cognitive or a semiotic perspective) interact with the teaching and learning of algorithms?

· *Concepts of algorithms and algorithmic thinking*: In which areas of mathematics do algorithms play a prominent role? How are algorithms related to mathematical proofs? How are algorithms analysed in computer science and what does this mean for their analysis in mathematics? What are the specifics of algorithm as a concept and of algorithmics as a scientific domain? What are the specifics of algorithmic activities? What does algorithmic thinking have in common with algebraic thinking, computational thinking, or problem solving? How does it differ?

All contributions are welcome, provided that they focus on algorithms in classrooms and curricula and / or on the concept of algorithm and algorithmic thinking (see questions above). In distinction to TWG-15 and TWG-16 (technology), our TWG focuses specifically on the study of algorithms in the context of mathematics education, not on the use of computers or technology in general.

> Papers and poster proposals should use the CERME template, and conform to the guidelines at https://cerme13.renyi.hu/. CERME 13 uses an electronic submission system https://www.conftool.pro/cerme13/. The authors submit the initial version of their paper on the website (uploading it both as a .doc and a .pdf file, and providing the required information, in particular the TWG number).

Reviews and decisions

Each paper will be peer-reviewed by two persons from among those who submit papers to this TWG. Please expect to be asked to review up to two papers yourself. The group leaders will decide about the acceptance of posters.

Important dates

- **15 February 2023:** Deadline for submission of papers and posters.
- **5 April 2023:** Preliminary decisions on papers and posters.
- **10-14 July 2023:** CERME 13 takes place.
- **See** https://cerme13.renyi.hu/deadlines **for other important dates**