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Abstract

Mathematical problem solving has proven to be valuable for students' learning. Yet, problem solving is often referred to and discussed without distinguishing between creative and conceptual aspects. The purpose of this study is to advance understanding of mathematical problem solving through the analysis of students' work with mathematical problems in terms of the creative and conceptual challenges they encounter. It is proposed that the characteristics of creative challenges can be used to obtain a more detailed description of the problem-solving process. Furthermore, the characteristics of conceptual challenges can provide a basis for discussion of what conceptual understanding may entail. Moreover, the analytic framework developed in this study is proven to be of assistance in the visualization of challenges and may be useful in future efforts to investigate challenges and students' problem solving in mathematics.

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