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Solving math problems through the principles of scientific creativity

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Abstract

© 2020 by the authors. Ongoing changes in mental and personal characteristics of the modern child initiate the updating of means and forms of education. And they, in their turn, update methodological techniques and approaches to the use of methods during the math class. The source of updating methodological techniques may be the principles used when solving scientific problems. Scientific creativity traditionally systematizes knowledge and skills for their use to a wide range of sciences. Therefore, the principles of scientific creativity have a lot in common with different subjects, showing the student the unity of approaches in working with knowledge. In this regard, the article is aimed at substantiating the principles of scientific creativity as effective methodological techniques for finding solutions to math problems and, on their basis, developing recommendations for conducting classes that prepare for final certification at school in mathematics. The leading research methods in this case are: observation of the methodological work of teachers of mathematics, conversations with teachers, analysis of guidance papers and questionnaires of teachers, statistical processing of research results. In 2018-2019 the experiment in which 19 mathematics teachers took part was conducted. Based on its results the authors of the article succeeded in: highlighting the principles of finding solutions to math problems based on the approaches used in scientific creativity; developing and implementing on the basis of these principles recommendations for conducting classes that prepare for final certification at school in mathematics. The effectiveness of using the principles of finding solutions to math problems was assessed. It allowed the authors to conclude that students have an increase in the speed of finding solutions to math problems by an average of 11%. Practical use of the proposed principles makes it possible to organize training for schoolchildren in solving math problems in traditional forms of teaching, but taking into account the particularities of the development of the modern schoolchild. Methodological recommendations developed by the authors can be used to teach students how to find solutions to math problems during classes that prepare for final certification at school in mathematics.

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Keywords

Creative tasks, Math problems, Methods of teaching mathematics, Scientific creativity, Search for problem solving

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