

*Title:* Quantitative Physics Tasks  
*Author:* Mgr. Marie Snětinová  
*Department:* Department of Physics Education  
*Supervisor of the doctoral thesis:* doc. RNDr. Leoš Dvořák, CSc.,  
Department of Physics Education

*Abstract:* The doctoral thesis concerns with problem solving in physics, especially on students' attitudes to solving of quantitative physics tasks, and various methods how to develop students' problem solving skills in physics. It contains brief overview of the theoretical framework of problem solving in physics with emphasis on differences between expert and novice problem solvers. Furthermore, it describes a questionnaire research focused on students' and teachers' perception of problem solving in physics at secondary schools and its results. Large part of the thesis involves description of development and verification of class the activities oriented to improvement of selected students' problem solving skills in physics. A set of seven activities suitable for secondary school students is described. The activities contain methodical materials, worksheets and solutions of the worksheets. The activities were tested on secondary school students and were evaluated by the students' physics teachers in a case study. Findings of the questionnaire research and the case study, as well as the activities themselves are described in detail. The Czech and English versions of the created materials are enclosed in appendices.

*Keywords:* problem solving, quantitative physics tasks, classroom activities