

## INTERSUBJECT RELATIONS OF MATHEMATICS WITH OTHER SCHOOL DISCIPLINES

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The use of intersubject communications in teaching mathematics helps the teacher to perform the following educational functions: it helps to solve purely educational problems in consolidating basic mathematical knowledge, skills and abilities in the process of their constant application in teaching different subjects, being an important factor in improving the learning process at all its levels; allows you to consolidate professionally significant knowledge and skills and create a positive emotional background for learning mathematics; increases interest in studying both mathematics and other disciplines; helps to develop thinking; contributes to the development of significant personality traits; integrates academic disciplines, showing how the same laws are applied in various scientific fields; builds a unified scientific picture of the world and thereby contributes to the formation of a scientific worldview.

The purpose of the study: to investigate the interdisciplinary connections of school mathematics with other subjects in order to develop further integral lessons in mathematics at school.

**Material and methods.** The pedagogical experiment has been carried out since 2019 at the Faculty of Physics and Mathematics of Pskov State University. This article contains information on the use of elements of the mathematical modeling method in various sciences.

**Findings and their discussion.** Let us dwell on the identified interdisciplinary connections of mathematics. When studying mathematics and physics, it is important for the teacher to draw the attention of students to the fact that mathematics is a powerful tool for summarizing physical concepts and laws, and also mathematics is an apparatus for expressing general physical laws and a method for revealing new physical phenomena and facts, and physics in turn, it stimulates the development of mathematics by setting new problems. Intersubject connections of mathematics with chemistry have rather large potential opportunities based on mathematical models of chemical processes. In addition to proportions, percentages, and many problems on mixtures that are widely used in chemistry, solving problems with chemical content provides ample opportunities for constructing mathematical models using linear equations, systems of linear equations, derivative, integrals, differential equations, etc. The study of economics at school is also closely connected with mathematics, intersubject communications are carried out in solving practical problems with economic content using mathematical modeling, properties of functions, elements of set theory and mathematical analysis. In the topic Real numbers, you can notice a connection with topics from physics, namely the

foundations of molecular kinetic theory. Using the following concepts: about the size and measurement, the mass of molecules and atoms, the determination of distances to celestial bodies based on the measurement of parallaxes, measurement errors, accuracy, rules for calculating the error. In the topic Functions and their properties, one can notice that the graphs of functions have interconnections with molecular physics, which demonstrate graphs of thermal processes and deformations, as well as functional dependencies. This topic has connections with chemistry and economics when constructing graphs that reflect the dependencies: the percentage concentration of the solution on the mass of the dissolved substance in a given mass of the solution, the thermal effect of the reaction on the mass of the formed substance, the degree of dissociation of the substance on the concentration of its solution, production curve, etc. In biology, the reproduction of bacteria. Trigonometry (identical transformations of trigonometric expressions; solving trigonometric equations and inequalities; graphs of sine and cosine functions; equations of harmonic oscillations are used in physics - oscillations and waves (alternating current, sound, equation of motion of a mathematical pendulum, displacement, amplitude, phase, frequency), in addition, trigonometry is used in biology (biorhythms) and astronomy (the technique of triangulation, which allows you to measure distances to nearby stars).

The themes of combinatorics, the theory of probability, and statistics are used in statistical physics in the topics of heat conduction, diffusion, and measurement theory. In biology, the genetics of populations, the Hardy-Weinberg law, the laws of G. Mendel, sex-linked inheritance of characters - mathematical statistics are directly used in economic research. Topics Vectors, vector analysis, vector space are used in the sections of physics: kinematics, mechanics, electrodynamics. In concepts: vectors of electric field intensities, principle of superposition of fields, magnetic field of current, electromagnetic induction, addition and decomposition of vectors to describe the electric field, in the law of conservation of momentum. Topics Exponential and logarithmic functions in physics: law of radioactive decay, half-life and biology: law of organic reproduction: under favorable conditions, living organisms would multiply according to the law of exponential function.

**Conclusion.** Thus, the use of interdisciplinary lessons in the process of subject preparation will help to solve the problem of the formation of meta-subject results among students, as well as the disconnectedness, isolation from different scientific disciplines representing the content of academic subjects.

1. Bagachuk A.V., Fomenko E.V., Kizelevich I.E. Integrated lessons as a means of forming meta-subject learning outcomes in the process of mathematical preparation of students // Modern problems of science and education. 2015.No1. S. 1008-1015