

Mathematics year 1–10 (MAT01-05)

Core elements

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Exploration and problem solving

Exploration in mathematics means that the pupils search for patterns, find relationships and discuss their way to a shared understanding. The pupils shall place more emphasis on strategies and approaches than on solutions. Problem solving in mathematics means that the pupils develop a method for solving a problem not previously encountered. Computational thinking is important in the process of developing strategies and approaches to solve problems, and means breaking a problem down into sub-problems that can be solved systematically. This also includes assessing whether sub-problems can be solved best with or without digital tools. Problem solving also means analysing and reformulating known and unknown problems, solving them and assessing whether the solutions are valid.

Modelling and applications

A model in mathematics is a description of reality using mathematical language. The pupils shall gain insight into how mathematical models are used to describe everyday life, working life and society in general. Modelling in mathematics means creating such models. It also means to critically evaluate whether the models are valid and what limitations the models have, evaluate the models in view of the original situations, and evaluate whether they can be used in other situations. Applications in mathematics means giving the pupils insight into how to use mathematics in different situations within and outside of the subject.

Reasoning and argumentation

Reasoning in mathematics means the ability to follow, assess and understand mathematical chains of thought. It means that the pupils shall understand that mathematical rules and results are not random, but have clear reasons. The pupils shall formulate their own reasoning in order to both understand and problems. Argumentation in mathematics means that the pupils give reasons for their approaches, reasonings and solutions, and prove that these are valid.

Representation and communication

Representations in mathematics are ways of expressing mathematical concepts, relationships and problems. Representations can be concrete, contextual, visual, verbal and symbolic. Communication in mathematics means that the pupils use mathematical language in conversations, argumentation and reasoning. The pupils shall have the opportunity to use mathematical representations in different contexts through their own experiences and in mathematical conversations. The pupils shall have the opportunity to explain and give reasons for the choice of form of representation. The pupils must be able to switch between mathematical representations and everyday language and to switch between different representations.

Abstraction and generalisation

Abstraction in mathematics means gradually developing formalisation of thoughts, strategies and mathematical language. The development goes from concrete descriptions to formal symbol language and formal reasoning. Generalisation in mathematics refers to the pupils discovering relationships and structures without being presented a finished solution. This means that the pupils can explore numbers, calculations and figures to find relationships, and then formalise by using algebra and suitable representations.

Mathematical fields of knowledge

The mathematical fields of knowledge include numbers and understanding numbers, algebra, functions, geometry, statistics and probability. The pupils shall early gain a strong concept of numbers and develop a variety of numeracy strategies. Algebra refers to exploring structures, patterns and relationships, and is an important prerequisite for enabling the pupils to generalise and model in mathematics. Functions provide the pupils with an important tool for studying and modelling change and development. Geometry is important for enabling the pupils to develop good spatial understanding. Knowledge of statistics and probability gives the pupils a good foundation for making choices in their own lives, in society and in working life. The fields of knowledge form the basis the pupils need in order to develop their mathematical understanding by exploring relationships within and between the mathematical fields of knowledge.

Resources



For the subject:

Hva er nytt i matematikk?

Aktuelle nettsteder – matematikk

For all subjects:

Hva er kjerneelementer?

Hvordan ta i bruk læreplanene?

Sosial læring gjennom arbeid med fag



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