European Commission

Teaching basic skills: Mathematics

Mathematics – The capacity to reason mathematically and to formulate, use and interpret mathematics to solve problems in real-world situations, and make well-founded judgements and decisions based on data.

Mathematical skills underpin logical thinking, financial literacy and informed decision-making in a technology-driven world. They foster problem-solving, critical thinking and prudent risk-taking, and boost career prospects. Low numerical proficiency limits engagement in science, technology, engineering and mathematics (STEM) subjects, while digital tools strengthen the link between mathematical and digital literacy in modern education. Adults with higher numeracy skills are more likely to be employed, earn a higher wage and report better health and life satisfaction than those with lower numeracy skills.

In the EU:

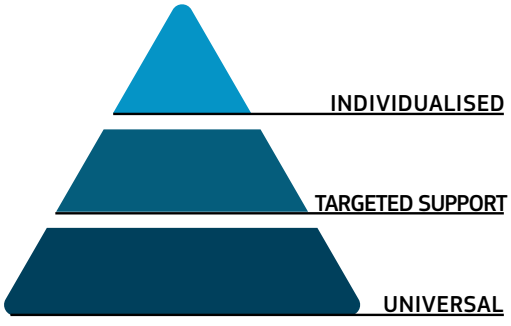
approximately **1 in 3** 15-year-olds struggles to understand and apply mathematics in real-life situations and learning environments

underachievement in mathematics among disadvantaged learners is **48%**

compared to Canada, Japan, the United Kingdom and the US, **the EU has the second lowest performance rate in mathematics**

The different levels of support in the whole school approach can be used for enhanced mathematical skills acquisition:

- universal approach: all learners are supported to understand and apply mathematical concepts
- targeted support: in small groups or at individual level, for learners at risk and/or with specific learning needs



Building a strong numeracy foundation for all

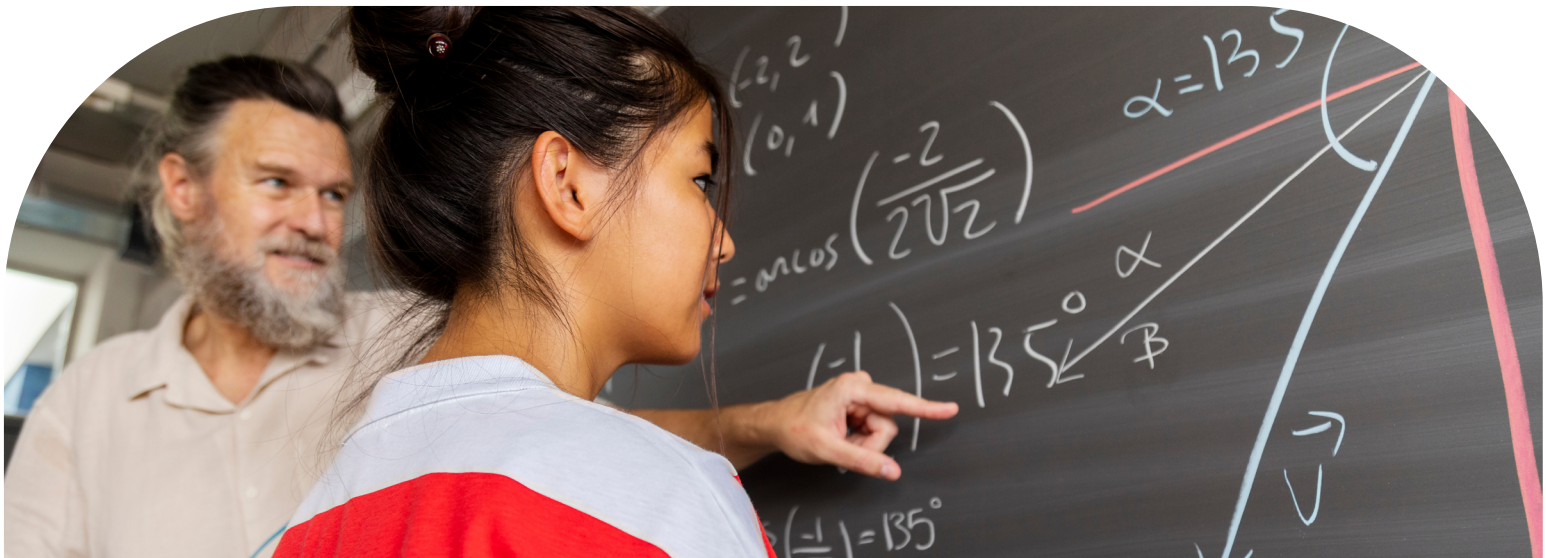
Basic numeracy supports financial literacy, data interpretation and informed decision-making, while also preparing learners for modern workplace demands in fields such as technology, engineering and finance. Numeracy is a cross-curricular priority, linked to everyday contexts and workforce readiness. Universal provision needs to address common barriers such as lack of motivation, gender stereotypes and maths anxiety by making learning engaging, relevant and inclusive. This includes:

- **teaching with real-world applications,** i.e. teaching mathematics in a way that is relevant and relatable so that learners can apply what they learn to real-life situations, rather than simply to pass a test
- **integration with other subjects** to break down subject silos so mathematics supports and is supported by other subjects, giving learners a versatile and more practical understanding of numeracy
- **use of digital tools** to tackle disengagement and offer interactive ways to learn mathematics, like storytelling, visual representations and education games
- **regular practice** through homework, quizzes and in-class activities to reinforce skills and build confidence

Explore further

Math4Sustainability interdisciplinary project: The project connects mathematical concepts with real-world environmental issues through interactive exhibits, pop-up living labs and practical guides. Learners explore ecological challenges, apply quantitative reasoning and engage stakeholders.

MATHGAN: The project developed effective ways to teach mathematics through technology, games, art and nature. It provides guidelines, 60 classroom activities for different age groups and educational games.



Tailoring to the needs of mathematics learners

Some learners benefit from personalised approaches to overcome specific skill gaps or learning barriers. This involves:

- **diagnostic assessment,** which informs differentiated instruction, targeted practice and scaffolded problem-solving
- **adaptive learning platforms** that adjust difficulty in real time, while peer mentoring and small-group workshops build confidence in challenging areas such as algebraic reasoning, fractions or interpreting statistical data
- **inclusive pedagogies and positive reinforcement** to foster emotional resilience and counter maths anxiety
- **gender equity** to actively encourage girls and other underrepresented groups to pursue mathematics through role models, mentorship and inclusive classroom practices

Explore further

Maths recovery clubs: Weekly after-school sessions for learners at risk of low achievement, combining targeted skill-building with practical activities like cooking, building or coding to demonstrate the relevance of numeracy.

Inclusive teaching materials: By designing an inclusive curriculum, teachers can counteract gender biases in STEM resources and encourage all pupils to realise their potential.

Intensive interventions for persistent numeracy challenges

A small proportion of learners require sustained, specialised support to overcome significant difficulties in mathematics. This involves:

- **one-to-one tutoring**, where a single learner works directly with a teacher, tutor or trained peer in a focused learning session that is fitted to the learner's individual needs
- **structured programmes for low achievers**, i.e. a recovery path for learners who need a well-structured, intensive boost to meet learning standards
- **multi-sensory approaches** designed for learners with special educational needs, engaging more than one sense at the same time to help them understand and remember concepts more effectively
- **technology leveraged for accessibility** using speech-to-text tools, interactive manipulatives or gamified drill-and-practice activities tailored to a learner's pace
- **cross-sector collaboration** between teachers, learning support specialists, parents and community organisations, i.e. different people and groups involved in a pupil's learning work together to meet that learner's specific needs

Explore further

Maths mentorship circles: Older pupils mentor younger peers on real-world mathematical tasks, such as designing a room layout or planning a trip, combining skills practice with social connection and role modelling – see the Erasmus+ project VisitMath.

Explore the European School Education Platform to see how mathematics and numeracy, integrated into education at every level, can help people navigate everyday life and work.

Via eTwinning – the community for schools in Europe – teachers can join featured groups to exchange with peers:

- Mathematics, science and other STEM topics
- Basic skills in action: Numeracy

More learning resources online

- Mathologer – accessible explanations of complex (and beautiful) mathematics concepts (in English)
- Vidukids – using video making to teach mathematics in kindergarten (in English, German, Italian, Norwegian, Portuguese, Swedish)
- Mathigon – free games, lesson plans, activities and resources (in English)
- MathCityMap – teachers create maths trails, where pupils use GPS coordinates to find and solve maths problems in their surroundings (in 13 languages)
- Micmaths – engaging videos of surprising mathematical ideas, famous mathematicians and real-life applications (in French)

Bibliography

Action Plan on Basic Skills, European Commission, 2025

STEM Education Strategic Plan, European Commission, 2025

Survey of Adult Skills, OECD, 2024

Council Recommendation on Pathways to School Success, 2022

Council Recommendation on establishing a European Child Guarantee, 2021

Key Competences for Lifelong Learning, 2018

Publications Office of the European Union

PRINT ISBN 978-92-9488-998-0 doi: 10.2797/8052756 EC-01-25-101-EN-C
PDF ISBN 978-92-9488-997-3 doi: 10.2797/0444132 EC-01-25-101-EN-N