TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

TIMSS 2023

28 Years of Trends

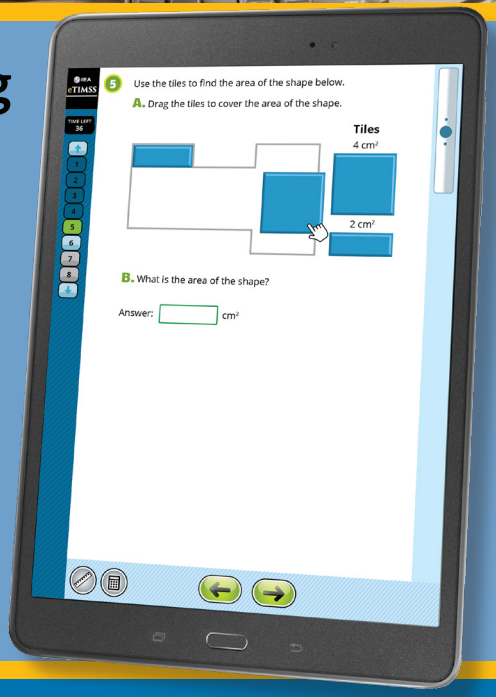
Key Features of TIMSS 2023

- *Innovative item types that engage students*
- *Problem Solving and Inquiry tasks (PSIs) integrated into the assessment design*
- *Group adaptive assessment to ensure alignment with student populations*
- *Enhanced international reporting that includes reporting of process data*
- *Policy-relevant information on contexts for learning mathematics and science*
- *Multiple modes of delivery, including online, and efficient operations*

TIMSS 2023–Engaging students with interactive tasks

A digital TIMSS reflects the growing use of digital devices in school and everyday life and leverages technology to assess a new generation of students.

TIMSS 2023 completes TIMSS' transition to eAssessment, which began with TIMSS 2019.



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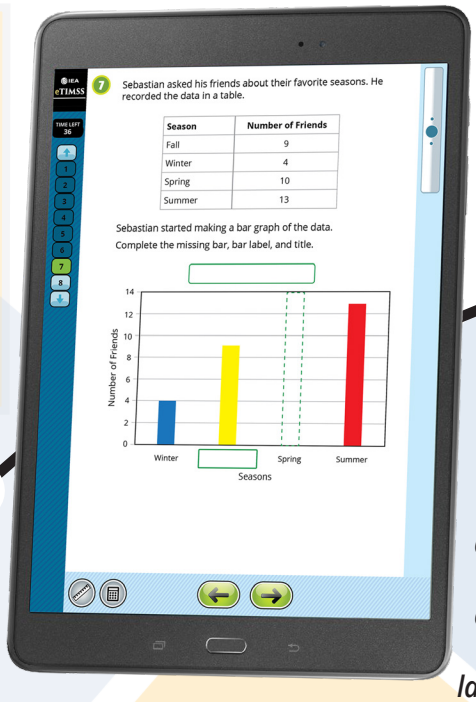
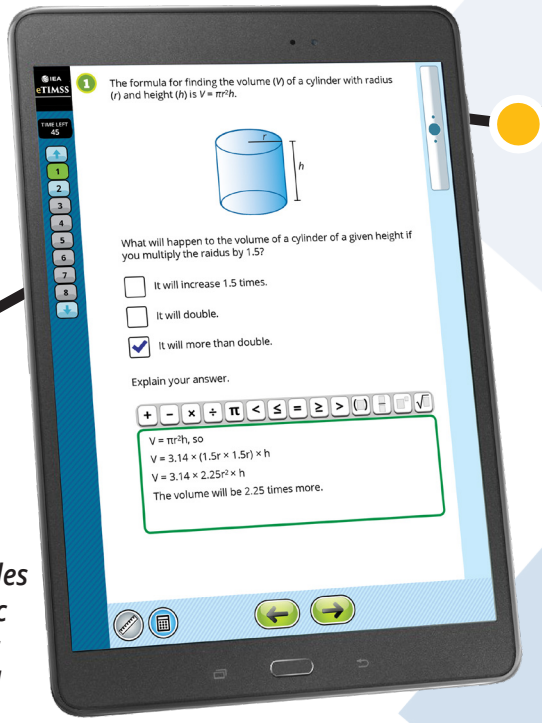
Innovative Item Types

TIMSS 2023 will include a wide variety of interactive item types and features that capitalize on the digital environment and engage students. For example, students will create a range of data displays, move and rotate objects on the screen to solve problems, and show their work with typed text, equations, and free-hand drawings. In addition to colorful graphics, item stimuli can include videos or animations to show science investigations or phenomena.



Students represent data in a bar graph by completing a missing bar, labeling a bar, and adding a title.



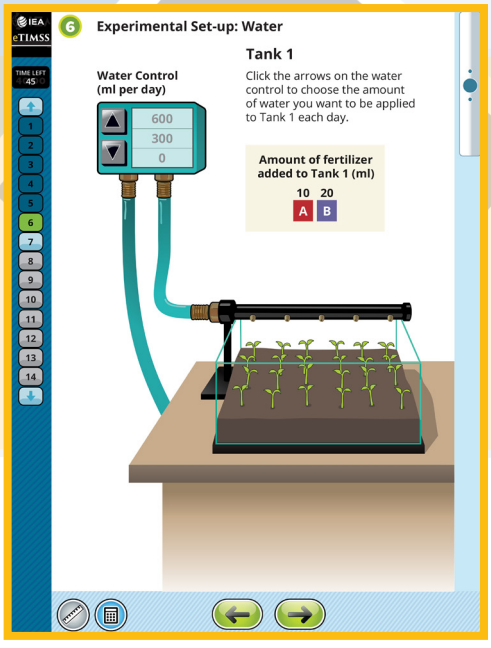
Students evaluate the relationship among variables in an algebraic expression set in context and explain their reasoning with text and a user-friendly symbol palette.

Process Data

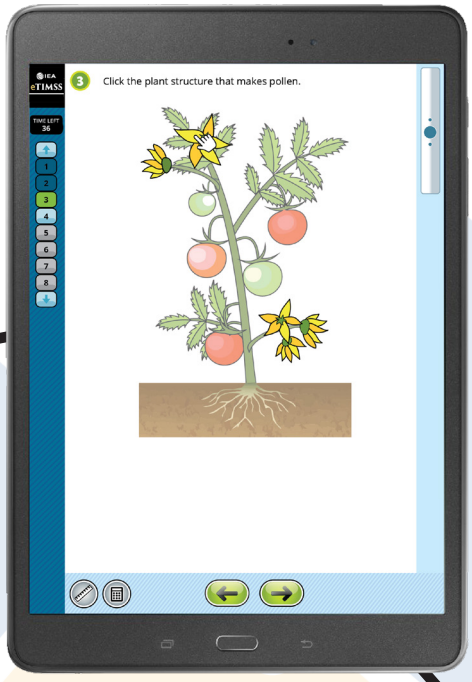
Process data captured during the assessment will enable TIMSS to better understand student approaches to mathematics problem solving and scientific inquiry, test-taking strategies, and engagement. This information will be included in the TIMSS 2023 international reporting to enhance understanding of students' mathematics and science achievement.

Problem Solving and Inquiry Tasks (PSIs)

PSIs simulate real-world and laboratory situations and call on students to integrate and apply process skills and content knowledge to solve mathematics problems and conduct scientific experiments and investigations. New PSIs will be developed for TIMSS 2023 and will be integrated into the TIMSS 2023 assessment design.

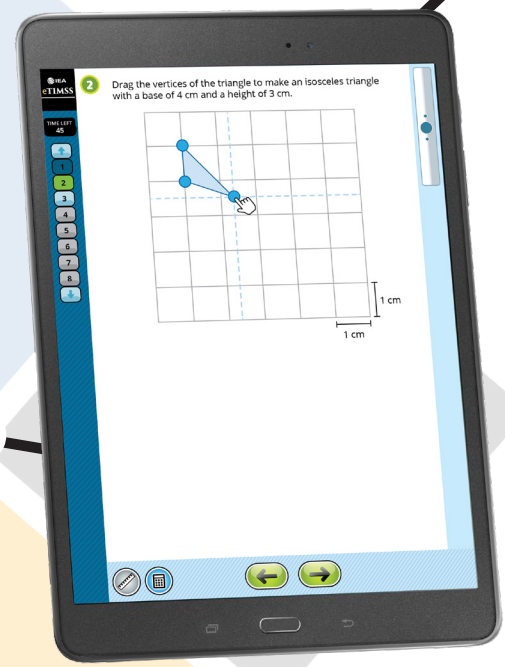


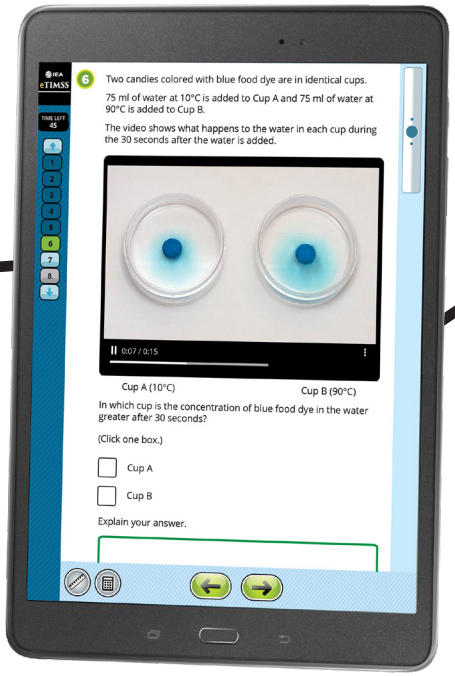
Students design and carry out a virtual experiment to study plant growth and development in this example problem solving and inquiry task.



Students click part of an image to demonstrate knowledge of the functions of plant structures in this example enhanced multiple-choice item.

Students create a geometric shape to given specifications by dragging the vertices of the shape on a grid.





The embedded video in this example chemistry item allows students to watch the diffusion of colored dye in hot and cold water.

Group Adaptive Assessment

TIMSS 2023 will better align the assessment with student populations using an innovative group adaptive design. All countries will administer the same TIMSS items. Two sets of digital assessment booklets—a more difficult set with difficult and medium items and a less difficult set with medium and easy items—will be administered in all countries but at different rates depending on the country's overall achievement. This will provide a better match between the difficulty of the assessment and student achievement and, in turn, provide better measurement at all achievement levels.

Contexts for Learning Mathematics and Science

TIMSS 2023 will continue to collect crucial policy-relevant information by having students and their parents, teachers, and principals complete questionnaires about students' experiences in learning mathematics and science at school and at home.

The TIMSS 2023 Encyclopedia, authored by participating countries, will provide comprehensive information about each country, including structural aspects of education systems, curricular content and instruction, and recent or planned reforms.

This rich array of contextual data can be examined in relation to achievement to reveal inequities in students' environments and experiences. Countries can view policy-relevant variables including educational system structure, curricula, instructional practices, and student attitudes toward learning.

28 Years of Trends–in Mathematics and Science

Since 1995, IEA's TIMSS has enabled countries worldwide to make evidence-based decisions to improve education in mathematics and science. TIMSS is conducted every four years at the fourth and eighth grades, and TIMSS 2023 will mark 28 years of trend data, the longest of any international educational assessment.

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Flexible, Efficient Operations

TIMSS 2023 offers maximum flexibility to countries. The assessment can be delivered to students online or locally using USB sticks or a local server. Countries can use school equipment or bring equipment into schools. The digital environment also provides increased operational efficiency by streamlining translation and verification activities, improving data collection, automating scoring, and reducing printing and shipping costs associated with paper-based delivery.

Participation

Entities such as regions (e.g., states or provinces) or additional grades (e.g., third or fifth grade) may participate in the same ways as countries by enrolling as a benchmarking system.

TIMSS 2023 is a digital assessment. Countries unable to transition to digital assessment will be offered a paper-based option comprising trend items only.

For country enrollment, contact:
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Andrea Netten – a.netten@iea.nl

TIMSS 2023 Schedule Highlights

February 2021—***First National Research Coordinators Meeting***

March-April 2022—***Field Test***

2023—***Data Collection***

December 2024—***Results Released***

IEA

TIMSS is a project of IEA. With offices in Amsterdam and Hamburg, IEA pioneered international comparative studies. It has been conducting international assessments of educational achievement since 1959.

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TIMSS is directed by the TIMSS & PIRLS International Study Center at Boston College. TIMSS and PIRLS, which assesses reading, comprise IEA's core cycle of studies. Together, these assessments provide participating countries with regular information about achievement in three fundamental subjects—mathematics, science, and reading.