TIMSS 2023 Longitudinal Curriculum Questionnaire—Ninth Grade

The TIMSS 2023 Longitudinal Curriculum Questionnaire is designed to collect information about the transition of students between grades as well as the mathematics and science curricula in each country.

The questionnaire should be completed by National Research Coordinators, drawing on the expertise of curriculum specialists and educators. Please submit this questionnaire by **January 31, 2025.**

Please note that the General Module is the same for the fifth and ninth grades. National Research Coordinators of countries participating in TIMSS 2023 Longitudinal at both the fifth and ninth grade should complete the General Module at only one of the grade levels. The Mathematics and Science Modules should be completed for both grades.

If you have any questions about the content of this questionnaire, please contact the TIMSS & PIRLS International Study Center at Boston College: timss-l_2023@bc.edu

If you have any technical questions about how to complete this questionnaire, please contact IEA Hamburg: timss@iea-hamburg.de

GENERAL MODULE

To be completed by all countries participating in TIMSS Longitudinal

G1. Please describe how students in your country are organized as they transition between the fourth and fifth grades.

Example: Students remain in the same classes/groups when they move to fifth grade but have a different teacher.

G2. Please describe how students in your country are organized as they transition between the eighth and ninth grades.

Example: Students have all subjects with the same classmates and a single teacher in eighth grade, but have different subjects with different classmates and teachers in ninth grade.

MATHEMATICS MODULE GRADE 9

To be completed by all countries participating in TIMSS Longitudinal at the ninth grade

This mathematics module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers mathematics instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

Curriculum Specifications

This mathematics module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers mathematics instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

M1. Does the curriculum or any other official document prescribe the percentage of <u>total</u> instructional time to be devoted to <u>mathematics</u> instruction at the ninth grade of formal schooling?

*Click **one** circle only.*

- ◯ Yes
- ◯ No

If Yes… Please specify the percentage:

Comments:

M2. Does the ninth grade mathematics curriculum include any of the following?

*Click **one** circle for each line.*

	Yes	*No*
a) Recommendations for the amount of time to be spent on particular areas or topics	◯	◯
b) Recommendations for assessment methods	◯	◯
c) Recommendations for instructional activities	◯	◯
d) Recommendations for connecting mathematics to other subjects	◯	◯
e) Other, please specify:	◯	◯

Use of Digital Devices

This mathematics module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers mathematics instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

M3. Does the national curriculum contain statements/policies about the use of digital devices (e.g., computers, tablets, calculators) in Grade 9 mathematics instruction?

*Click **one** circle only.*

- ◯ Yes
- ◯ No

If Yes… What are the statements/policies?

Ninth Grade Mathematics Topics Covered

This mathematics module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers mathematics instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

M4. According to the national mathematics curriculum, what proportion of Grade 9 students should have been taught each of the following topics or skills by the end of Grade 9?

A. Number

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Multiples, factors, and prime numbers	◯	◯	◯
b) Add and subtract with negative numbers	◯	◯	◯
c) Compare and order fractions and decimals	◯	◯	◯
d) Add, subtract, multiply, and divide with fractions and decimals	◯	◯	◯
e) Combine two or more properties of numbers or operations to solve a problem	◯	◯	◯
f) Ratios and proportions	◯	◯	◯
g) Find percentages; convert between percentages and fractions or decimals	◯	◯	◯

Comments:

B. Algebra

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Find the value of an expression or formula given values of variables	○	○	○
b) Simplify and compare algebraic expressions	○	○	○
c) Write expressions to represent problems	○	○	○
d) Solve linear equations and inequalities	○	○	○
e) Interpret and generate representations of linear functions in tables, graphs, or words	○	○	○
f) Interpret and generate representations of simple non-linear functions in tables, graphs, or words	○	○	○

Comments:

C. Geometry and Measurement

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Recognize and draw different types of angles and lines	○	○	○
b) Recognize two-dimensional shapes and use their properties (e.g., circles, triangles)	○	○	○
c) The Pythagorean Theorem	○	○	○
d) Geometric translations, reflections, and rotations	○	○	○
e) Recognize three-dimensional shapes and use their geometric properties	○	○	○

Comments:

D. Data and Probability

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Interpret data from one or more sources (e.g., make comparisons, draw conclusions)	○	○	○
b) Organize and represent data in appropriate figures or tables to help answer questions	○	○	○
c) Summarize data using the mean and median, and recognize the effect of spread	○	○	○
d) Determine theoretical and empirical probability for simple events	○	○	○
e) Determine theoretical and empirical probability for compound events	○	○	○

Comments:

SCIENCE MODULE GRADE 9

To be completed by all countries participating in TIMSS Longitudinal at the ninth grade

This science module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers science instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

Curriculum Specifications

This science module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers science instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

S1. Does the curriculum or any other official document prescribe the percentage of <u>total</u> instructional time to be devoted to <u>science</u> instruction at the ninth grade of formal schooling?

*Click **one** circle only.*

- ◯ Yes
- ◯ No

If Yes… Please specify the percentage:

Comments:

S2. Does the ninth grade science curriculum include any of the following?

*Click **one** circle for each line.*

	Yes	*No*
a) Recommendations for the amount of time to be spent on particular areas or topics	◯	◯
b) Recommendations for assessment methods	◯	◯
c) Recommendations for instructional activities	◯	◯
d) Recommendations for connecting science to other subjects	◯	◯
e) Other, please specify:	◯	◯

Use of Digital Devices

This science module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers science instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

S3. Does the national curriculum contain statements/policies about the use of digital devices (e.g., computers, tablets, calculators) in Grade 9 science instruction?

*Click **one** circle only.*

- ○ Yes
- ○ No

If Yes… What are the statements/policies?

Ninth Grade Science Topics Covered

This science module refers to the national curriculum that was in effect for the ninth grade students assessed in TIMSS 2023 Longitudinal—the curriculum that covers science instruction at the ninth grade of formal schooling for the majority of students. If you do not have a national curriculum, please summarize for your state or provincial curricula.

S4. According to the national science curriculum, what proportion of Grade 9 students should have been taught each of the following topics or skills by the end of Grade 9?

A. Biology

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Differences among major taxonomic groups of organisms (e.g., plants, fungi, reptiles, insects)	○	○	○
b) Structures and functions of major organ systems in humans; how these compare to other organisms	○	○	○
c) How animals respond to internal and external changes to maintain stable body conditions (e.g., increased heart rate during exercise, sweating in heat)	○	○	○
d) Structures in plants and animal cells and their functions	○	○	○
e) Photosynthesis and cellular respiration	○	○	○
f) Life cycles and patterns of development in different types of organisms (e.g., mammals, birds)	○	○	○
g) DNA and inheritance in plants and animals	○	○	○
h) Variation and natural selection	○	○	○
i) Fossils as evidence for changes in life on Earth over time	○	○	○
j) Flow of energy through ecosystems (e.g., producers, consumers, decomposers)	○	○	○
k) Cycling of water, oxygen, and carbon in ecosystems	○	○	○
l) Relationships among populations of organisms in an ecosystem (e.g., competition, predation, symbiosis)	○	○	○
m) Positive and negative impacts of human behavior on the environment	○	○	○
n) Causes, transmission, prevention of, and resistance to diseases	○	○	○
o) Diet, exercise, and other lifestyle choices for promoting human health	○	○	○

Comments:

B. Chemistry

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Structure of atoms and molecules (e.g., electrons, protons, neutrons)	○	○	○
b) Elements, compounds, and mixtures	○	○	○
c) The periodic table of elements as a way of organizing the elements	○	○	○
d) Physical and chemical properties of matter (e.g., boiling point, flammability)	○	○	○
e) Use of physical and chemical properties to classify matter (e.g., metals, nonmetals)	○	○	○
f) Separating mixtures	○	○	○
g) Concepts related to solutions (e.g., solvent, solute, concentration)	○	○	○
h) Properties of acids and bases	○	○	○
i) Characteristics of chemical changes (e.g., production of a new substance, color change)	○	○	○
j) Conservation of matter and release/absorption of energy in chemical reactions	○	○	○
k) Chemical bonds between atoms	○	○	○

Comments:

C. Physics

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Motion of particles in solids, liquids, and gases	○	○	○
b) Changes in states of matter (e.g., melting, condensation)	○	○	○
c) Forms of energy and energy transformation (e.g., kinetic, potential, thermal)	○	○	○
d) Thermal energy transfer and thermal conductivity of metals	○	○	○
e) Properties of light (e.g., speed, transmission through media)	○	○	○
f) Properties of sound (e.g., amplitude, frequency)	○	○	○
g) Conductors and movement of electricity through circuits	○	○	○
h) Properties of permanent magnets and electromagnets	○	○	○
i) Concepts related to motion (e.g., speed, acceleration)	○	○	○
j) Common forces and their characteristics (e.g., strength, direction)	○	○	○
k) Effects of forces (e.g., floating, sinking, water pressure)	○	○	○
l) Functioning of simple machines (e.g., levers, inclined planes)	○	○	○

Comments:

D. Earth Science

*Click **one** circle for each line.*

	Proportion of Grade 9 Students Expected to be Taught Topic or Skill		
	All or almost all students	*Only the more advanced students*	*Not included in the curriculum through Grade 9*
a) Earth's structure and physical characteristics (e.g., crust, mantle, distribution of water)	○	○	○
b) Makeup of Earth's atmosphere (i.e., nitrogen, oxygen, water vapor, carbon dioxide)	○	○	○
c) Geological processes that have shaped Earth's surface (the rock cycle, formation of fossil fuels)	○	○	○
d) Earth's water cycle	○	○	○
e) Differences between weather and climate and evidence for climate change	○	○	○
f) Management of Earth's resources (e.g., advantages and disadvantages of different energy sources, methods of waste management)	○	○	○
g) Land and water use (e.g., importance of conservation)	○	○	○
h) Observable phenomena on Earth resulting from the movements of Earth and the Moon (e.g., seasons, tides, eclipses)	○	○	○
i) The role of the Sun in the Solar System (i.e., provides light/heat to planets and their moons)	○	○	○
j) Compare characteristics of Earth to other bodies in the Solar System (e.g., presence of water, distance from Sun)	○	○	○

Comments:

Print Option

This summary shows all questionnaire items and your responses. Click the "Save responses as PDF" button to save a copy of your answers. Please submit your responses by clicking the "Submit Data" button at the bottom of this page.

Save responses as PDF

This completes the *Grade 9 TIMSS 2023 Longitudinal Curriculum Questionnaire*. Please click "Submit Data" to complete data entry and submit your responses to IEA.

Thank you for completing the TIMSS 2023 Longitudinal Curriculum Questionnaire.