

IEA Trends in International Mathematics and Science Study

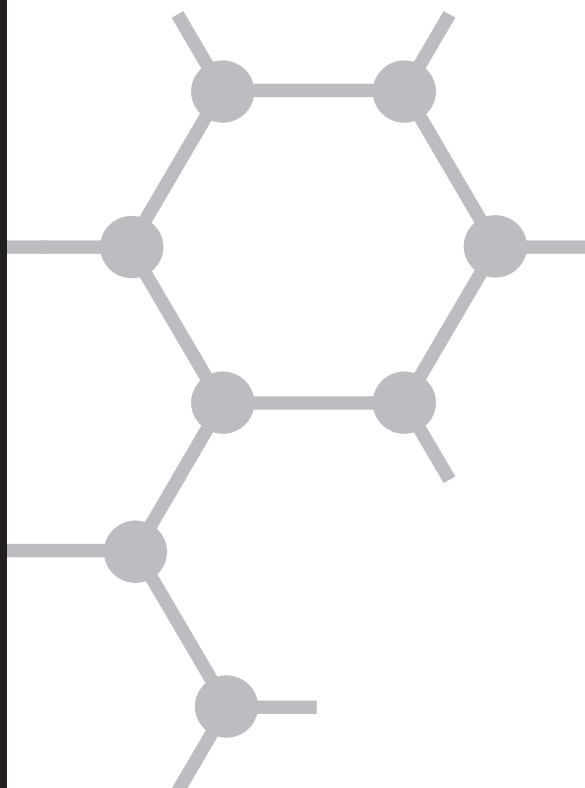
TIMSS

2003

Main Survey

**Curriculum
Questionnaire**

Mathematics
<Grade 8>



General Directions

This questionnaire is addressed to National Research Coordinators, who are asked to supply information about their nation's intended curriculum in mathematics. This will help provide background information for interpretation of the school and achievement data collected in other parts of the TIMSS 2003 study. Your responses are very important in helping to provide a better understanding of the study results.

We ask that you or your nominee complete this questionnaire, working with others as necessary (e.g., curriculum supervisors of mathematics representative of those at the <grade 8> level in your country). It is important that you answer each question carefully and provide additional information where requested so that as accurate a picture as possible of your country's curriculum is presented in the final reports.

●Your cooperation in completing this questionnaire is greatly appreciated●

Contact Information

Country: _____

Name of Individual
Completing Report: _____

Position of Individual
Completing Report: _____

Address: _____

Email: _____

Phone: _____

Fax: _____

Others (and positions) involved in providing information in completing questionnaire:

National Curriculum

IMPORTANT: Throughout this questionnaire, the term “national curriculum” is intended to include any centrally-supported curriculum. The curriculum need not be mandated but it should be strongly recommended or at least widely used.

This curriculum may not necessarily be articulated in a formal document, or different aspects of the curriculum may appear in different documents.

1

A. Does your country have a national curriculum that includes mathematics at <grade 8>?

Yes No

Fill in **one** circle only -----○---

Note: If No, please complete the remainder of the questionnaire based on your best informed judgment of the intended mathematics curriculum for the majority of <grade 8> students in your country. If it is impossible to answer a particular question, just make a note and move to the next question.

B. If there is not a national curriculum, what is the highest level of decision-making authority that provides a curriculum for <grade 8> mathematics?

C. In what year was the current intended mathematics curriculum for <grade 8> introduced?

D. Is the intended mathematics curriculum that includes <grade 8> currently being revised?

Yes No


Fill in **one** circle only -----○---

2

A. Across grades K-12, does an education authority in your country (e.g., National Ministry of Education) administer examinations in mathematics that have consequences for individual students, such as determining grade promotion, entry to a higher school system, entry to university, and/or exiting or graduating from high school?

Yes No

Fill in **one** circle only -----○---

If **No**, please go to question **3** 

B. If YES, please describe the authority which administers examinations in mathematics, and list the grades at which they are given.

3

Are any of the following methods used to help implement the national mathematics curriculum at <grade 8>?

*Fill in **one** circle for each row*

- | | | No |
|-------------------------------------------------------------------------|---|-----|
| Yes | | |
| a) Mandated or recommended textbook(s) ----- | ○ | --- |
| b) Instructional or pedagogical guide ----- | ○ | --- |
| c) Ministry notes and directives ----- | ○ | --- |
| d) Curriculum evaluation during or after implementation ----- | ○ | --- |
| e) Specifically developed or recommended instructional activities ----- | ○ | --- |
| f) National assessments based on student samples ----- | ○ | --- |
| g) A system of school inspection or audit ----- | ○ | --- |
| h) Other ----- | ○ | --- |
| (Please specify: _____) | | |

Comments: _____

4

Does the national curriculum specify the amount of instructional time that should be devoted to mathematics?

*Fill in **one** circle for each row*

- | | | No |
|-------------------------------------------------------------------------------------------------------------|---|-----|
| Yes | | |
| a) at <grade 4> ----- | ○ | --- |
| If Yes , what percentage of total instructional time is supposed to be devoted to mathematics? ----- | | |
| b) at <grade 6> ----- | ○ | --- |
| If Yes , what percentage of total instructional time is supposed to be devoted to mathematics? ----- | | |
| c) at <grade 8> ----- | ○ | --- |
| If Yes , what percentage of total instructional time is supposed to be devoted to mathematics? ----- | | |

Pedagogical Approach

5

Which best describes how the national mathematics curriculum at <grade 8> addresses the issue of students with different levels of ability?

*Fill in **one** circle only*

The same curriculum is prescribed for all students -----○

The same curriculum is prescribed for students of different ability levels, but at different levels of difficulty -----○

Different curricula are prescribed for students of different ability levels -----○

Comments: _____

6

How much emphasis does the national mathematics curriculum at <grade 8> place on the following?

*Fill in **one** circle for each row*

	A lot			
	Some			
Very little				
None				

- a) Mastering basic skills ----- ○ ---○ ---○ ---○
- b) Understanding mathematical concepts and principles ----- ○ ---○ ---○ ---○
- c) Applying mathematics in real-life contexts ----- ○ ---○ ---○ ---○
- d) Communicating mathematically ----- ○ ---○ ---○ ---○
- e) Reasoning mathematically -- ○ ---○ ---○ ---○
- f) Incorporating the experiences of different ethnic/cultural groups ----- ○ ---○ ---○ ---○
- g) Integrating mathematics with other subjects ----- ○ ---○ ---○ ---○
- h) Deriving formal proofs ----- ○ ---○ ---○ ---○

Comments: _____


Calculators and Computers

7

A. Does the national curriculum contain statements/policies about the use of calculators in <grade 8> mathematics?

Yes No

Fill in **one** circle only -----○-----○

If **No**, please go to question **8** 


B. If YES, what are the statements/policies?

8

A. Does the national curriculum contain statements/policies about the use of computers in <grade 8> mathematics?

Yes No

Fill in **one** circle only -----○-----○

If **No**, please go to question **9** 

B. If YES, what are the statements/policies?

Teacher Education and Certification

9

A. Do <grade 8> mathematics teachers receive specific preparation in how to teach the intended mathematics curriculum at <grade 8>?

Fill in **one** circle for each row

No
|
Yes

- a) As part of pre-service education -----○ ---○
- b) As part of in-service education -----○ ---○

B. If you answered YES to either (a) or (b), describe the nature of the preparation.

10

Which are the current requirements for being a mathematics teacher at <grade 8>?

Fill in **one** circle for each row

No
|
Yes

- a) Pre-practicum and supervised practicum in the field -----○ ---○
- b) Passing an examination -----○ ---○
- c) <ISCED 5A, first degree> -----○ ---○
- d) Completion of a probationary teaching period -----○ ---○

If **Yes**, how long is this period? _____

- e) Completion of a mentoring or induction program -----○ ---○
- f) Other -----○ ---○
(Please specify: _____)

11

A. Is there a process to license or certify <grade 8> mathematics teachers?

No
|
Yes

Fill in **one** circle only -----○ ---○

If **No**, please go to question **12**

B. If YES, who certifies/licenses <grade 8> mathematics teachers?

Fill in **one** circle for each row

No
|
Yes

- a) Minister/Ministry of Education -----○ ---○
- b) National/state licensing board -----○ ---○
- c) Universities/colleges -----○ ---○
- d) Teacher organization/union -----○ ---○
- e) Other -----○ ---○

(Please specify: _____)

Comments: _____

Grade 8 Mathematics Topics

12

According to the national mathematics curriculum, what proportion of <grade 8> students should have been taught each of the following topics or skills by the end of <grade 8>?

Across grades K-12, at what grade(s) are the topics primarily intended to be taught?

Be sure to include curriculum expectations for all grades up to and including <grade 8>. If there are not any specifications to this detail, please indicate national expectations to the best of your ability.

If part of a topic does not apply (e.g., factorization in topic (a) below), please cross out that part and answer for the major part of the topic.

	Proportion of <grade 8> students expected to be taught topic			Grade(s) topic is expected to be taught K-12
	Not included in the curriculum through <grade 8> Only the more able students (top track) All or almost all students			
A. Number				
a) Whole numbers including place value, factorization, and the four operations	--- ○ ---○ ---○			_____
b) Computations, estimations, or approximations involving whole numbers	----- ○ ---○ ---○			_____
c) Common fractions including equivalent fractions, and ordering of fractions	----- ○ ---○ ---○			_____
d) Decimal fractions including place value, ordering, rounding, and converting to common fractions (and vice versa)	----- ○ ---○ ---○			_____
e) Representing decimals and fractions using words, numbers, or models (including number lines)	----- ○ ---○ ---○			_____
f) Computations with fractions	----- ○ ---○ ---○			_____
g) Computations with decimals	----- ○ ---○ ---○			_____
h) Integers including words, numbers, or models (including number lines), ordering integers, addition, subtraction, multiplication, and division with integers	----- ○ ---○ ---○			_____
i) Ratios (equivalence, division of a quantity by a given ratio)	----- ○ ---○ ---○			_____
j) Conversion of percents to fractions or decimals, and vice versa	----- ○ ---○ ---○			_____
B. Algebra				
a) Numeric, algebraic, and geometric patterns or sequences (extension, missing terms, generalization of patterns)	----- ○ ---○ ---○			_____
b) Sums, products, and powers of expressions containing variables	----- ○ ---○ ---○			_____
c) Simple linear equations and inequalities, and simultaneous (two variables) equations	----- ○ ---○ ---○			_____
d) Equivalent representations of functions as ordered pairs, tables, graphs, words, or equations	----- ○ ---○ ---○			_____
e) Proportional, linear, and nonlinear relationships (travel graphs and simple piecewise functions included)	----- ○ ---○ ---○			_____
f) Attributes of a graph such as intercepts on axes, and intervals where the function increases, decreases, or is constant	----- ○ ---○ ---○			_____

	Proportion of <grade 8> students expected to be taught topic			Grade(s) topic is expected to be taught K-12
	Not included in the curriculum through <grade 8>	Only the more able students (top track)	All or almost all students	
<i>Fill in one circle for each row</i>				
C. Measurement				
a) Standard units for measures of length, area, volume, perimeter, circumference, time, speed, density, angle, mass/weight -----	○	○	○	_____
b) Relationships among units for conversions within systems of units, and for rates -----	○	○	○	_____
c) Use standard tools to measure length, weight, time, speed, angle, and temperature -----	○	○	○	_____
d) Estimations of length, circumference, area, volume, weight, time, angle, and speed in problem situations (e.g., circumference of a wheel, speed of a runner) -----	○	○	○	_____
e) Computations with measurements in problem situations (e.g., add measures, find average speed on a trip, find population density) ----	○	○	○	_____
f) Measurement formulas for perimeter of a rectangle, circumference of a circle, areas of plane figures (including circles), surface area and volume of rectangular solids, and rates -----	○	○	○	_____
g) Measures of irregular or compound areas (e.g., by using grids or dissecting and rearranging pieces)-----	○	○	○	_____
h) Precision of measurements (e.g., upper and lower bounds of a length reported as 8 centimeters to the nearest centimeter) -----	○	○	○	_____



12 continued

According to the national mathematics curriculum, what proportion of <grade 8> students should have been taught each of the following topics or skills by the end of <grade 8>?

Across grades K-12, at what grade(s) are the topics primarily intended to be taught?

Be sure to include curriculum expectations for all grades up to and including <grade 8>. If there are not any specifications to this detail, please indicate national expectations to the best of your ability.

If part of a topic does not apply, please cross out that part and answer for the major part of the topic.

	Proportion of <grade 8> students expected to be taught topic			Grade(s) topic is expected to be taught K-12
	Not included in the curriculum through <grade 8> Only the more able students (top track) All or almost all students			
D. Geometry				
a) Angles - acute, right, straight, obtuse, reflex, complementary, and supplementary -----	○ --- ○ --- ○			_____
b) Relationships for angles at a point, angles on a line, vertically opposite angles, angles associated with a transversal cutting parallel lines, and perpendicularity	○ --- ○ --- ○			_____
c) Properties of angle bisectors and perpendicular bisectors of lines-----	○ --- ○ --- ○			_____
d) Properties of geometric shapes: triangles and quadrilaterals-----	○ --- ○ --- ○			_____
e) Properties of other polygons (regular pentagon, hexagon, octagon, decagon) -----	○ --- ○ --- ○			_____
f) Construct or draw triangles and rectangles of given dimensions -----	○ --- ○ --- ○			_____
g) Pythagorean theorem (not proof) to find length of a side -----	○ --- ○ --- ○			_____
h) Congruent figures (triangles, quadrilaterals) and their corresponding measures	○ --- ○ --- ○			_____
i) Similar triangles and recall their properties -----	○ --- ○ --- ○			_____
j) Cartesian plane - ordered pairs, equations, intercepts, intersections, and gradient-----	○ --- ○ --- ○			_____
k) Relationships between two-dimensional and three-dimensional shapes -----	○ --- ○ --- ○			_____
l) Line and rotational symmetry for two-dimensional shapes -----	○ --- ○ --- ○			_____
m) Translation, reflection, rotation, and enlargement -----	○ --- ○ --- ○			_____

Fill in **one** circle for each row

Not included in the curriculum through <grade 8>

Only the more able students (top track)

All or almost all students

D. Geometry

- a) Angles - acute, right, straight, obtuse, reflex, complementary, and supplementary ----- ○ --- ○ --- ○ _____
- b) Relationships for angles at a point, angles on a line, vertically opposite angles, angles associated with a transversal cutting parallel lines, and perpendicularity ○ --- ○ --- ○ _____
- c) Properties of angle bisectors and perpendicular bisectors of lines----- ○ --- ○ --- ○ _____
- d) Properties of geometric shapes: triangles and quadrilaterals----- ○ --- ○ --- ○ _____
- e) Properties of other polygons (regular pentagon, hexagon, octagon, decagon) ----- ○ --- ○ --- ○ _____
- f) Construct or draw triangles and rectangles of given dimensions ----- ○ --- ○ --- ○ _____
- g) Pythagorean theorem (not proof) to find length of a side ----- ○ --- ○ --- ○ _____
- h) Congruent figures (triangles, quadrilaterals) and their corresponding measures ○ --- ○ --- ○ _____
- i) Similar triangles and recall their properties ----- ○ --- ○ --- ○ _____
- j) Cartesian plane - ordered pairs, equations, intercepts, intersections, and gradient----- ○ --- ○ --- ○ _____
- k) Relationships between two-dimensional and three-dimensional shapes ----- ○ --- ○ --- ○ _____
- l) Line and rotational symmetry for two-dimensional shapes ----- ○ --- ○ --- ○ _____
- m) Translation, reflection, rotation, and enlargement ----- ○ --- ○ --- ○ _____

	Proportion of <grade 8> students expected to be taught topic			Grade(s) topic is expected to be taught K-12
	Not included in the curriculum through <grade 8> Only the more able students (top track) All or almost all students			
E. Data				
a) Organizing a set of data by one or more characteristics using a tally chart, table, or graph -----	○ ---○ ---○			_____
b) Sources of error in collecting and organizing data (e.g., bias, inappropriate grouping) -----	○ ---○ ---○			_____
c) Data collection methods (e.g., survey, experiment, questionnaire) -----	○ ---○ ---○			_____
d) Drawing and interpreting graphs, tables, pictographs, bar graphs, pie charts, and line graphs -----	○ ---○ ---○			_____
e) Characteristics of data sets including mean, median, range, and shape of distribution (in general terms) -----	○ ---○ ---○			_____
f) Interpreting data sets (e.g., draw conclusions, make predictions, and estimate values between and beyond given data points) -----	○ ---○ ---○			_____
g) Evaluating interpretations of data with respect to correctness and completeness of interpretation -----	○ ---○ ---○			_____
h) Simple probability including using data from experiments to estimate probabilities for favorable outcomes -----	○ ---○ ---○			_____

Fill in **one** circle for each row

Thank You for completing this questionnaire



TIMSS International Study Center

Boston College
Chestnut Hill, MA 02467

©IEA, Amsterdam (2002)

