TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

TIMSS Advanced 2008

Curriculum Questionnaire

Advanced Mathematics

International Association for the Evaluation
of Educational Achievement

TIMSS Advanced 2008

General Directions

The TIMSS Advanced 2008 Curriculum Questionnaire for Advanced Mathematics is designed to collect information about the organization, content, and implementation of the intended advanced mathematics curriculum in each country. The questionnaire should be completed by the National Research Coordinator, drawing on the expertise of curriculum specialists and educators.

Your responses are very important for us in interpreting the student achievement and background information collected in other parts of the study. Thank you very much for the time and effort you have put into responding to this questionnaire.

Contact Information

Country: _____

Name of Person Completing This Questionnaire: _____

Position: _____

Address: _____

_____

Email: _____

Phone: _____

Fax: _____

Advanced Mathematics Curriculum and Instruction

1. a) In what year was the current curriculum implemented? (i.e., the curriculum that covers the advanced mathematics track or course being assessed in TIMSS Advanced)

Comments:

b) Is that curriculum currently being revised?

*Check **one** circle only.*

Yes--- ○

No--- ○

If Yes…
Please explain:

If No…
Comments:

2. a) Are there any prerequisite courses for students taking the advanced mathematics track or course being assessed in TIMSS Advanced?

*Check **one** circle only.*

Yes--- ○

No--- ○

If Yes…
Please explain:

b) Regardless of whether or not the students currently are enrolled in the advanced mathematics track or course being assessed in TIMSS Advanced, what percentage of students fulfilled the prerequisites?

_____ %

c) Is taking the advanced mathematics track or course being assessed in TIMSS Advanced a prerequisite for further study (e.g., in university or higher education fields)?

If Yes…
Please explain:

3. a) Does the national curriculum contain statements/policies about the use of calculators by students in the advanced mathematics track or course being assessed in TIMSS Advanced?

*Check **one** circle only.*

Yes--- ○

No--- ○

If Yes…
What are the statements/policies?

If No…
Comments:

b) *If Yes…*
Does the policy address requirements for the types of calculators that may be used?

*Check **one** circle only.*

Yes--- ○

No--- ○

If Yes…
Describe the types of calculators (e.g., graphing, symbolic):

If No…
Comments:

c) Are students permitted to use calculators in national examinations?

*Check **one** circle only.*

Yes--- ○
No--- ○

If Yes…
Describe the policy and the types of calculator(s) allowed (e.g., graphing, symbolic):

d) Who pays for the calculators?

4. Does the national curriculum contain statements/policies about the use of computers by students in the advanced mathematics track or course being assessed in TIMSS Advanced?

*Check **one** circle only.*

Yes--- ○

No--- ○

If Yes…
What are the statements/policies?

If No…
Comments:

5. According to the curriculum, should the students in the advanced mathematics track or course being assessed in TIMSS Advanced have been taught each of the following topics by the end of the year (in the current course or before)?

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

*Check **one** circle for each line.*

	Yes	**No**
A. Algebra		
a) Operations with complex numbers----------	○	○
b) The *n*th term of numeric and algebraic series and the sums to *n* terms or infinity of series----	○	○
c) Problems involving permutations and combinations----------	○	○
d) Probability----------	○	○
e) Linear, simultaneous, and quadratic equations and inequalities----------	○	○
f) Logarithmic and exponential equations---------	○	○
g) Surd (radical) equations----------	○	○
h) Equivalent representations of functions as ordered pairs, tables, graphs, formulas, or words----------	○	○
i) Values of functions, including rational functions for given values and ranges of the variables----------	○	○
j) Function of a function----------	○	○
B. Calculus		
a) Limits of functions including rational functions ----------	○	○
b) Conditions for continuity and differentiability of functions----------	○	○
c) Differentiation of functions (including polynomial, exponential, logarithmic, trigonometric, rational and radical functions); differentiation of products and quotients--------	○	○
d) Differentiation of composite and parametric functions----------	○	○
e) Using derivatives to solve problems (e.g., in kinematics, optimization, and rates of change)----------	○	○

	Yes	No
f) Using first derivatives to determine gradient and turning points----------		
g) Using second derivatives to determine maxima, minima, and points of inflection of functions----------		
h) Integrating functions (including polynomial, exponential, trigonometric, and rational functions)----------		
i) Evaluating definite integrals----------		
C. Geometry		
a) Properties of geometric figures; proving geometric propositions in two dimensions------		
b) Proving geometric proposition in three dimensions----------		
c) Gradients, *y*-axis intercepts, and points of intersection of straight lines in the Cartesian plane----------		
d) Equations and properties of circles in the Cartesian plane;		
e) Tangents and normals to given points on a circle----------		
f) Trigonometric properties of triangles (sine, cosine, and tangent)----------		
g) Solving equations involving trigonometric functions----------		
h) Properties of vectors and their sums and differences----------		

Comments:

6. In what form is the advanced mathematics curriculum made available?

*Check **one** circle for each line.*

	Yes	No
a) Official publication containing the curriculum----------	○	○
b) Ministry notes and directives----------	○	○
c) Mandated or recommended textbooks----------	○	○
d) Instructional or pedagogical guide----------	○	○
e) Specifically developed or recommended instructional activities----	○	○
f) Prescribed syllabus for public examination----------	○	○
g) Other----------	○	○

Please specify:

_____

Comments:

7. a) Are textbooks that are used in the advanced mathematics track or course being assessed in TIMSS Advanced certified by an education authority?

*Check **one** circle only.*

Yes--- ○

No--- ○

Comments:

b) Who pays for the textbooks?

Please describe:

8. a) Does your country have a nationally mandated number of school days per year for the students in the advanced mathematics track or course being assessed in TIMSS Advanced?

*Check **one** circle only.*

Yes--- ○

No--- ○

Please describe:

b) What is the total amount of class time in advanced mathematics prescribed by the curriculum for the students in the advanced mathematics track?

_____ hours per year (1 hour = 60 minutes)

Comments:

9. Is there an official policy on encouraging students to choose advanced mathematics courses?

*Check **one** circle only.*

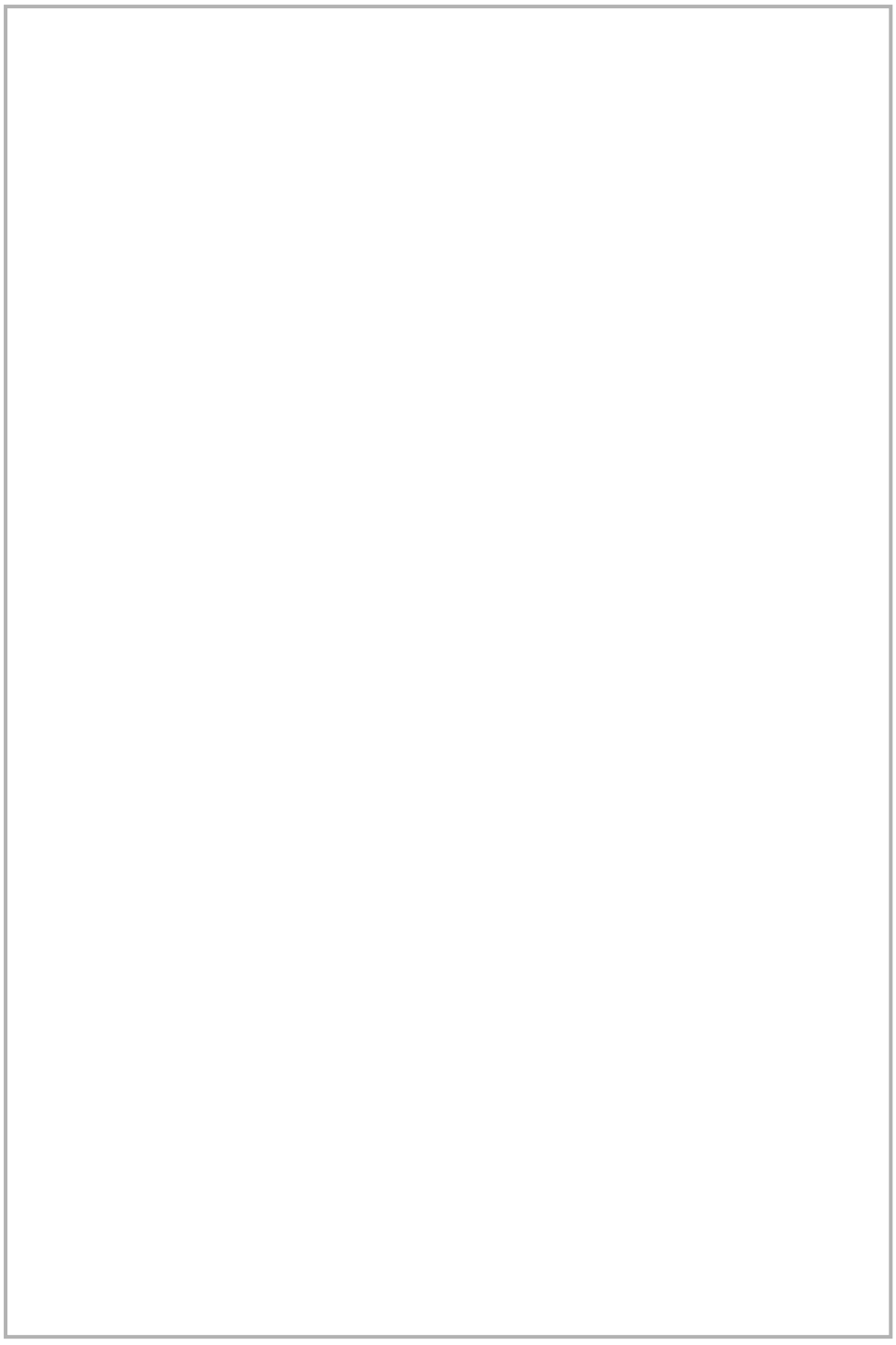
Yes--- ○

No--- ○

If Yes…
Please explain:

10. Describe the national requirements for being a teacher of the advanced mathematics track or course being assessed in TIMSS Advanced.

Comments:



11. If changes were made to the advanced mathematics curriculum, how would a teacher be informed about them?

*Check **one** circle for each line.*

	Yes	No
a) Special conferences/seminars on curriculum----------	○	○
b) Ministry (department of education, government, board of education) website----------	○	○
c) Printed copies of curriculum distributed to schools----------	○	○
d) Teachers receive own printed copy----------	○	○
e) Professional development/in-service education----------	○	○
f) Ministry notes----------	○	○
g) Professional association newsletter----------	○	○
h) Education journals----------	○	○
i) Other educational authorities----------	○	○
j) Other----------	○	○

Please specify:

_____

Comments:

12. How is the advanced mathematics curriculum implementation evaluated?

*Check **one** circle for each line.*

	Yes	No
a) Visits by inspectors----------	○	○
b) Research programs----------	○	○
c) School self-evaluation----------	○	○
d) National examinations----------	○	○
e) TIMSS Advanced----------	○	○
f) Other----------	○	○

Please specify:

_____

Comments:

13. 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 a university, and/or exiting or graduating from upper secondary school?

*Check **one** circle only.*

Yes--- ○

No--- ○

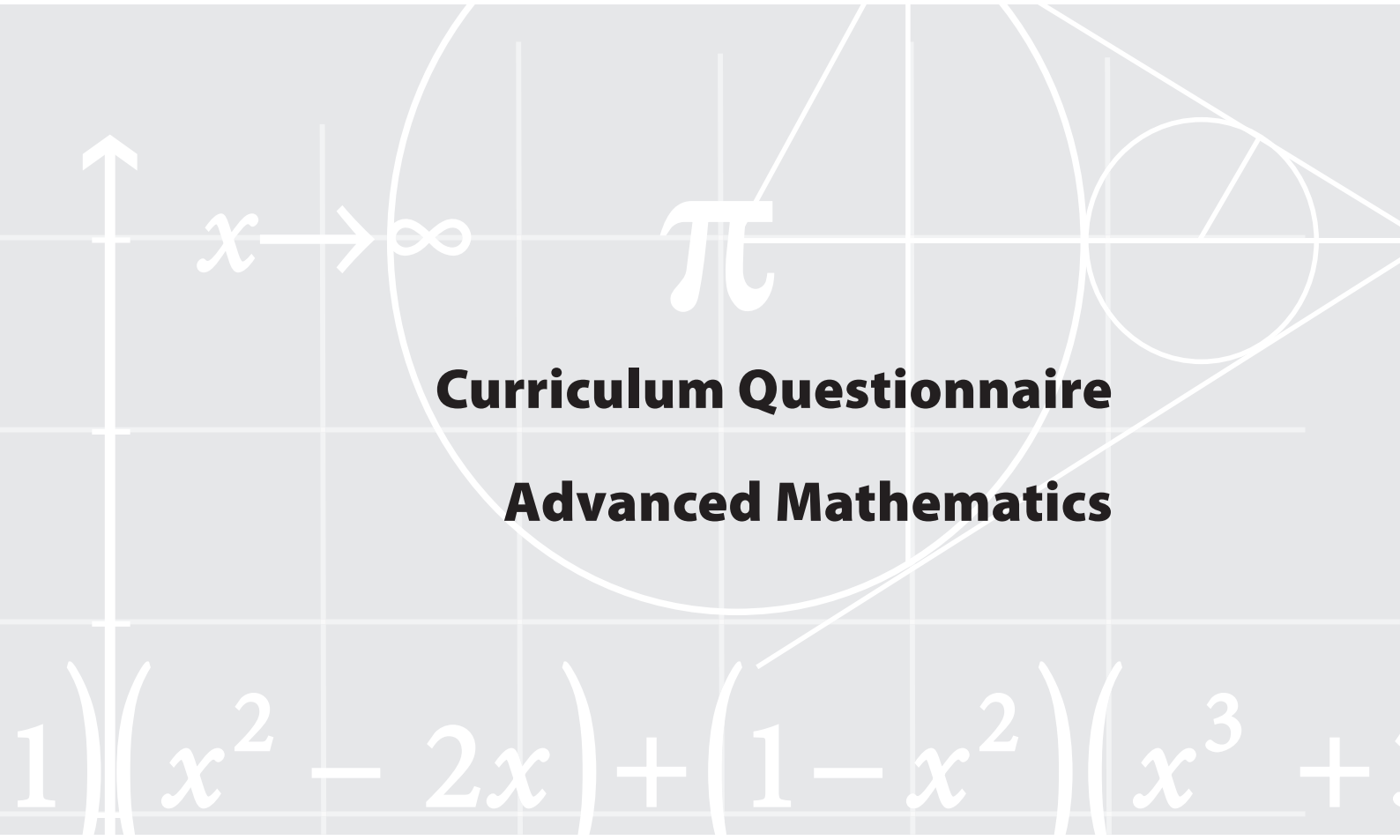
If Yes…
Please describe the authority which administers examinations in mathematics, and list the grades at which they are given:

If No…
Comments:

Thank You

for completing this questionnaire

TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College



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