Exhibit M9.6: Number of TIMSS Advanced Advanced Mathematics Topics in the Intended Curriculum

Reported by National Research Coordinators

Country	All Advanced Mathematics (19 topics)	Algebra (8 topics)	Calculus (7 topics)	Geometry (4 topics)
France	18	8	6	4
Italy	19	8	7	4
Lebanon	19	8	7	4
Norway	18	7	7	4
Portugal	18	8	6	4
Russian Federation	16	8	4	4
Russian Federation 6hr+	19	8	7	4
Slovenia	19	8	7	4
Sweden	17	8	5	4
United States	19	8	7	4

The Russian Federation 6hr+ results are for a subset of the Russian Federation students. This subset of students are in an Intensive stream that have at least 6 hours of mathematics lessons per week.

In the United States, the number of TIMSS Advanced mathematics topics covered varies by state and course type. The data shown in this table reflect the maximum number of topics that may be covered in each content domain.

TIMSS Advanced 2015 Advanced Mathematics Topics

A. Algebra

1) Operations with exponential, logarithmic, polynomial, rational, and radical expressions
2) Operations with complex numbers
3) Evaluating algebraic expressions
4) The nth term of arithmetic and geometric sequences and the sums of finite and infinite series
5) Linear, simultaneous, and quadratic equations and inequalities; radical expressions, logarithmic, and exponential equations
6) Slopes, y-axis intercepts, and points of intersection of straight lines
7) Equivalent representations of functions, including composite functions, as ordered pairs, tables, graphs, formulas, or words
8) Properties of functions including domain and range

B. Calculus

1) Limits of functions
2) Conditions for continuity and differentiability of functions
3) Differentiation of functions; differentiation of products, quotients, and composite functions
4) Using derivatives to solve problems
5) Using first and second derivatives to determine slope and local extrema of functions
6) Using derivatives to determine points of inflection of functions
7) Integrating functions; evaluating definite integrals, including calculation of areas

C. Geometry

1) Properties of geometric figures in two and three dimensions
2) Properties of vectors and their sums and differences
3) Trigonometric properties of triangles (sine, cosine, and tangent)
4) Trigonometric functions and their graphs

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