

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

TIMSS

63 (1.7) ▲

62 (1.4) ▲

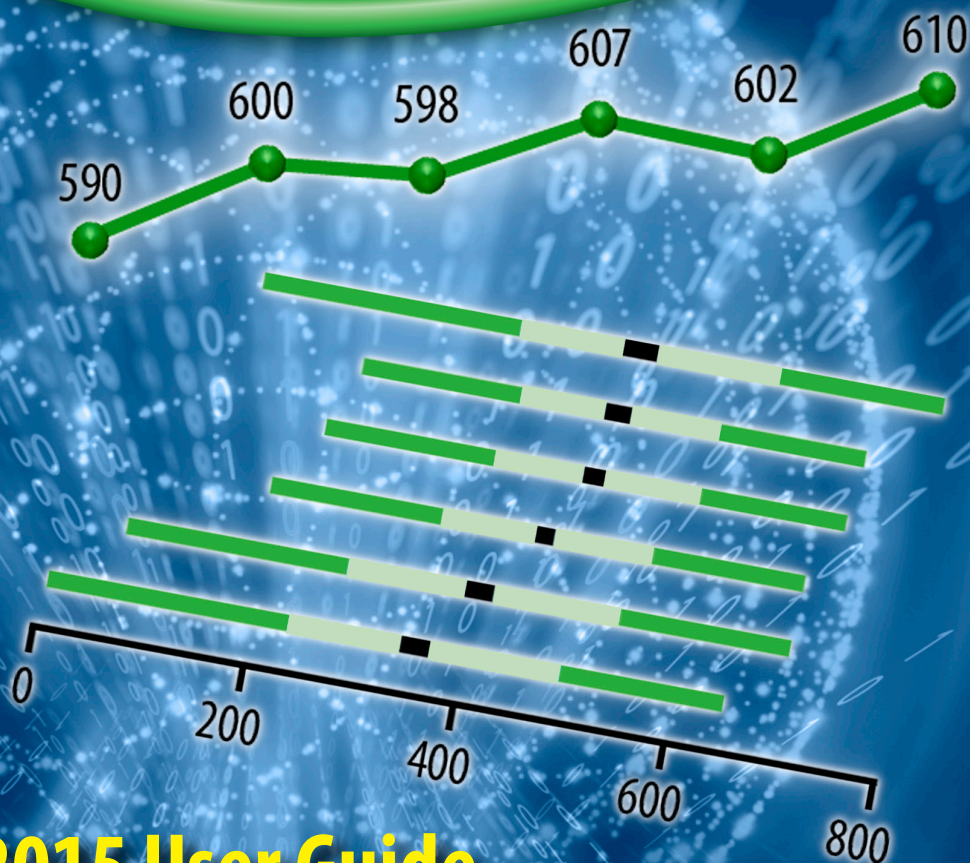
57 (2.0) ▲

53 (0.7) ▼

50 (1.3) ▼

41 (1.3) ▼

38 (1.9) ▼



TIMSS Advanced 2015 User Guide for the International Database

ITEM PERCENT CORRECT STATISTICS

Advanced Mathematics



IEA

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

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_01 (MA13011): Find an equivalent fraction Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	79 (2.7)	▲
Russian Federation 6hr+	77 (3.1)	▲
Portugal	60 (1.5)	▲
Italy	58 (1.6)	▲
Russian Federation	58 (2.4)	▲
Slovenia	55 (1.6)	▲
International Avg.	49 (0.6)	
France	44 (1.4)	▼
United States	42 (1.8)	▼
Norway	23 (1.5)	▼
Sweden	20 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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.

- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_02 (MA13012): Cubing a trigonometric function Multiple Choice (Key is C)

Country	Percent Correct	
Lebanon	77 (2.5)	▲
Russian Federation 6hr+	48 (2.8)	▲
France	37 (1.7)	
Portugal	35 (1.9)	
Russian Federation	35 (2.2)	
International Avg.	34 (0.6)	
Sweden	31 (1.6)	▼
United States	25 (1.6)	▼
Italy	24 (1.7)	▼
Slovenia	22 (1.6)	▼
Norway	22 (1.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_03 (MA13013): Value of x to make function negative Multiple Choice (Key is E)

Country	Percent Correct	
Russian Federation 6hr+	82 (2.3)	▲
Russian Federation	68 (2.0)	▲
Lebanon	65 (2.8)	▲
Portugal	59 (1.8)	▲
Italy	56 (1.9)	
France	56 (1.5)	
International Avg.	54 (0.7)	
United States	52 (2.2)	
Slovenia	49 (1.8)	▼
Norway	45 (1.9)	▼
Sweden	34 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_05 (MA13015): Derivative of exponential function Multiple Choice (Key is C)

Country	Percent Correct	
Lebanon	87 (1.8)	▲
France	80 (1.2)	▲
Norway	73 (1.5)	▲
United States	71 (2.2)	▲
Russian Federation 6hr+	69 (2.2)	
International Avg.	66 (0.6)	
Portugal	65 (1.6)	
Russian Federation	62 (2.2)	
Italy	62 (2.3)	
Sweden	48 (1.7)	▼
Slovenia	44 (2.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_06 (MA13016): Cylinder radius with maximum volume
Multiple Choice (Key is D)

Country	Percent Correct	
Russian Federation 6hr+	52 (2.4)	▲
Russian Federation	45 (1.7)	▲
Slovenia	35 (1.8)	▲
United States	31 (1.9)	
Sweden	31 (1.2)	
International Avg.	30 (0.6)	
Italy	29 (1.8)	
Portugal	28 (1.6)	
Norway	28 (1.6)	
France	25 (1.3)	▼
Lebanon	19 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_07 (MA13017): Equation of perpendicular line Multiple Choice (Key is E)

Country	Percent Correct	
Lebanon	53 (3.8)	▲
United States	50 (2.6)	▲
Slovenia	47 (1.8)	▲
Russian Federation 6hr+	45 (2.8)	▲
Italy	40 (1.8)	▲
International Avg.	36 (0.7)	
Russian Federation	36 (2.5)	
Portugal	36 (1.7)	
France	26 (1.2)	▼
Norway	23 (2.0)	▼
Sweden	19 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_08 (MA13018): Difference of two vectors
Multiple Choice (Key is B)

Country	Percent Correct	
France	80 (1.1)	▲
Norway	79 (1.7)	▲
Russian Federation 6hr+	77 (1.9)	▲
Russian Federation	74 (1.7)	▲
Lebanon	72 (2.6)	▲
Portugal	71 (1.5)	▲
International Avg.	62 (0.6)	
United States	59 (2.6)	
Slovenia	47 (1.7)	▼
Sweden	37 (1.4)	▼
Italy	37 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_09 (MA13019): Equation representing set of points Multiple Choice (Key is B)

Country	Percent Correct	
Russian Federation 6hr+	35 (3.1)	▲
Lebanon	35 (2.8)	▲
Russian Federation	29 (1.6)	▲
Norway	27 (1.4)	▲
International Avg.	23 (0.6)	
Sweden	23 (1.2)	
United States	22 (2.1)	
Italy	20 (1.5)	▼
Slovenia	19 (1.1)	▼
Portugal	17 (1.4)	▼
France	17 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M1_10 (MA13020): Value of vector in triangle
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	56 (3.5)	▲
Norway	49 (1.8)	▲
France	48 (1.7)	▲
Russian Federation	45 (1.7)	▲
Lebanon	44 (3.3)	▲
Slovenia	42 (2.0)	▲
International Avg.	36 (0.6)	
United States	30 (1.9)	▼
Portugal	30 (1.7)	▼
Sweden	18 (1.2)	▼
Italy	18 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_01 (MA33086): Absolute value of parabola partly below x-axis
Multiple Choice (Key is A)

Country	Percent Correct	
Slovenia	88 (1.6)	▲
Portugal	86 (1.4)	▲
Russian Federation 6hr+	84 (2.2)	▲
Russian Federation	71 (2.2)	▲
Lebanon	70 (2.9)	
International Avg.	65 (0.7)	
France	62 (1.5)	▼
Italy	60 (2.5)	▼
Norway	54 (2.1)	▼
United States	54 (2.5)	▼
Sweden	43 (2.8)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_02 (MA33225): Polynomials satisfying conditions (DERIVED) Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Slovenia	67 (1.8) ▲	79 (1.7) ▲
Lebanon	67 (2.8) ▲	79 (2.1) ▲
Russian Federation 6hr+	63 (3.2) ▲	69 (3.0) ▲
United States	53 (2.1) ▲	67 (1.9) ▲
Russian Federation	46 (2.4)	55 (1.9) ▼
International Avg.	45 (0.7)	61 (0.6)
France	44 (1.5)	59 (1.5)
Portugal	43 (1.8)	63 (1.6)
Sweden	32 (1.6) ▼	50 (1.6) ▼
Italy	31 (2.1) ▼	50 (2.2) ▼
Norway	18 (2.0) ▼	50 (1.7) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_02A (MA33225A): $(x-3)^2(x-5)$
Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	83 (2.0)	▲
Slovenia	81 (1.6)	▲
Russian Federation 6hr+	73 (3.1)	
United States	71 (1.8)	▲
Portugal	68 (1.6)	
International Avg.	67 (0.6)	
France	64 (1.4)	▼
Norway	62 (1.6)	▼
Russian Federation	61 (1.9)	▼
Sweden	60 (1.8)	▼
Italy	57 (1.8)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_02B (MA33225B): $(x-3)3(x-5)3$
Multiple Choice (Key is B)

Country	Percent Correct	
Slovenia	85 (1.6)	▲
Lebanon	81 (2.3)	▲
Portugal	76 (1.5)	▲
International Avg.	72 (0.6)	
France	72 (1.4)	
Russian Federation 6hr+	72 (3.3)	
United States	71 (1.9)	
Italy	68 (1.8)	▼
Norway	67 (2.1)	▼
Sweden	63 (1.6)	▼
Russian Federation	61 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_02C (MA33225C): $(x+3)2(x+5)$
Multiple Choice (Key is B)

Country	Percent Correct	
Slovenia	88 (1.3)	▲
Russian Federation 6hr+	88 (1.4)	▲
Lebanon	87 (1.9)	▲
United States	81 (1.3)	▲
Russian Federation	81 (1.4)	▲
France	77 (1.5)	▲
Portugal	74 (1.7)	
International Avg.	74 (0.6)	
Sweden	70 (1.4)	▼
Italy	61 (2.4)	▼
Norway	46 (2.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_02D (MA33225D): $(x-3)(x-5)^2$
Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	82 (1.9)	▲
Slovenia	82 (1.6)	▲
Russian Federation 6hr+	73 (3.2)	
United States	71 (2.1)	
International Avg.	67 (0.6)	
Portugal	67 (1.6)	
France	64 (1.3)	▼
Norway	60 (1.7)	▼
Italy	60 (1.9)	▼
Russian Federation	60 (2.0)	▼
Sweden	60 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_02E (MA33225E): $(x-5)^3$
Multiple Choice (Key is B)

Country	Percent Correct	
Slovenia	92 (0.9)	▲
United States	88 (1.3)	▲
Russian Federation 6hr+	86 (1.8)	▲
Lebanon	85 (1.8)	▲
Portugal	84 (1.2)	▲
France	82 (1.4)	
International Avg.	80 (0.5)	
Russian Federation	78 (1.5)	
Norway	72 (1.5)	▼
Sweden	70 (1.9)	▼
Italy	68 (1.9)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_03 (MA33142): Evaluate alternating expression when $x=3$ Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	60 (2.9)	▲
Russian Federation	50 (2.1)	▲
Lebanon	31 (2.6)	
France	31 (1.4)	
International Avg.	30 (0.7)	
United States	30 (1.6)	
Portugal	29 (1.5)	
Italy	29 (2.3)	
Sweden	28 (1.6)	
Norway	23 (1.9)	▼
Slovenia	20 (2.3)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_04 (MA33044): Sum of geometric series alternating signs
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	63 (2.6)	▲
Russian Federation	53 (1.9)	▲
Norway	50 (2.2)	▲
United States	48 (2.4)	▲
Sweden	45 (1.7)	
Slovenia	44 (1.9)	
International Avg.	42 (0.7)	
France	40 (1.5)	
Portugal	38 (1.9)	▼
Lebanon	33 (2.9)	▼
Italy	26 (1.4)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_05 (MA33179): Solve for 2 rational coefficients given 2 points Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	65 (3.3)	▲
Russian Federation 6hr+	58 (3.1)	▲
Russian Federation	41 (2.1)	▲
Italy	36 (2.0)	
Slovenia	34 (2.0)	
International Avg.	33 (0.7)	
Portugal	31 (1.6)	
United States	26 (2.3)	▼
France	26 (1.4)	▼
Norway	22 (1.7)	▼
Sweden	18 (1.1)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_06 (MA33076): Use shaded graph regions to determine integral
Multiple Choice (Key is B)

Country	Percent Correct	
United States	65 (2.6)	▲
Sweden	63 (1.7)	▲
Norway	58 (2.1)	▲
France	52 (1.4)	▲
Russian Federation 6hr+	48 (3.9)	
International Avg.	48 (0.7)	
Lebanon	47 (3.5)	
Italy	45 (1.9)	
Slovenia	41 (2.3)	▼
Russian Federation	37 (2.3)	▼
Portugal	22 (1.4)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_07 (MA33140): Find graph with first second derivative properties Multiple Choice (Key is D)

Country	Percent Correct	
Portugal	63 (2.0)	▲
Russian Federation 6hr+	58 (3.4)	▲
Lebanon	56 (3.1)	▲
United States	54 (2.6)	▲
International Avg.	48 (0.8)	
Norway	44 (1.9)	▼
Russian Federation	44 (2.3)	▼
Italy	42 (2.2)	▼
Sweden	42 (1.5)	▼
France	41 (1.7)	▼
Slovenia	- -	

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A dash (-) indicates comparable data not available

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_08 (MA33007): Rational function limit of leading coefficients Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	90 (1.8)	▲
Italy	70 (2.2)	▲
Portugal	62 (1.6)	▲
Russian Federation 6hr+	57 (3.4)	
United States	56 (2.5)	
International Avg.	54 (0.7)	
Slovenia	50 (2.0)	▼
Russian Federation	48 (2.5)	▼
France	46 (1.6)	▼
Norway	37 (2.3)	▼
Sweden	27 (1.6)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_09 (MA33214): Explain continuity at point of piecewise function Constructed Response (1 Point)

Country	Percent Correct	
Portugal	46 (2.0)	▲
Lebanon	46 (3.3)	▲
Russian Federation 6hr+	27 (2.8)	
International Avg.	22 (0.6)	
Slovenia	21 (1.6)	
France	21 (1.3)	
United States	21 (1.6)	
Russian Federation	13 (1.2)	▼
Italy	13 (1.2)	▼
Sweden	9 (0.9)	▼
Norway	8 (1.2)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_10 (MA33171): Use trig identity to solve function translation
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	77 (2.6)	▲
Russian Federation	65 (1.8)	▲
Lebanon	63 (2.5)	▲
Portugal	62 (1.7)	▲
International Avg.	45 (0.6)	
France	42 (1.5)	▼
Italy	41 (1.6)	▼
Slovenia	37 (2.0)	▼
United States	33 (2.2)	▼
Norway	32 (1.9)	▼
Sweden	31 (1.6)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_11 (MA33039): Solve for hexagon diagonal given side Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	78 (2.4)	▲
Russian Federation	60 (1.8)	▲
Lebanon	58 (2.9)	▲
Slovenia	54 (2.1)	▲
Portugal	50 (2.0)	
Sweden	49 (1.9)	
International Avg.	47 (0.7)	
Norway	46 (2.1)	
Italy	42 (2.4)	▼
United States	36 (2.3)	▼
France	29 (1.5)	▼

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M2_12 (MA33180): Find side given overlapping triangle side ratios Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	69 (3.0)	▲
Russian Federation	55 (2.3)	▲
Norway	37 (1.9)	▲
Lebanon	35 (2.7)	
Sweden	34 (1.4)	
United States	31 (2.3)	
International Avg.	31 (0.6)	
Slovenia	25 (1.6)	▼
Portugal	24 (1.6)	▼
Italy	22 (1.5)	▼
France	16 (1.2)	▼

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_01 (MA23005): Which term has a value of 243
Multiple Choice (Key is B)

Country	Percent Correct	
Russian Federation 6hr+	79 (1.9)	▲
Russian Federation	71 (1.8)	▲
United States	61 (2.0)	▲
Norway	59 (2.2)	▲
Slovenia	57 (2.4)	▲
International Avg.	50 (0.7)	
Lebanon	47 (3.7)	
Portugal	45 (1.7)	▼
Sweden	45 (1.3)	▼
Italy	36 (1.8)	▼
France	34 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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.

- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_02 (MA23145): How many 3 digit numbers formed Constructed Response (1 Point)

Country	Percent Correct	
Portugal	67 (1.7)	▲
Slovenia	54 (2.9)	▲
Russian Federation 6hr+	48 (3.0)	▲
Lebanon	44 (2.8)	▲
Norway	42 (2.0)	▲
International Avg.	38 (0.7)	
Russian Federation	36 (2.3)	
United States	33 (2.4)	▼
Sweden	32 (1.6)	▼
Italy	17 (1.8)	▼
France	15 (1.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_03 (MA23187): New diameter of soup can Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Sweden	57 (1.4) ▲	67 (1.3) ▲
Russian Federation 6hr+	55 (3.0) ▲	68 (2.9) ▲
Norway	51 (2.0) ▲	75 (2.1) ▲
Portugal	43 (1.7)	57 (1.6)
United States	41 (2.4)	60 (3.4)
International Avg.	41 (0.7)	57 (0.7)
Russian Federation	39 (1.9)	52 (1.9) ▼
Lebanon	36 (2.7)	49 (2.7) ▼
France	32 (1.6) ▼	44 (1.8) ▼
Slovenia	32 (1.8) ▼	66 (2.5) ▲
Italy	32 (1.9) ▼	41 (2.0) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_04 (MA23201): What is the error Carl made Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	69 (2.8)	▲
France	62 (1.7)	▲
Russian Federation 6hr+	62 (2.6)	▲
Portugal	55 (1.7)	▲
Russian Federation	49 (2.0)	
International Avg.	48 (0.7)	
Slovenia	45 (2.1)	
Norway	43 (1.9)	▼
United States	38 (2.4)	▼
Sweden	38 (1.4)	▼
Italy	31 (2.0)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_05 (MA23154): Second derivative of function given Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Lebanon	69 (3.0) ▲	91 (1.7) ▲
Russian Federation 6hr+	59 (2.3) ▲	63 (2.3) ▲
United States	52 (2.5) ▲	63 (3.1) ▲
Russian Federation	43 (2.2)	48 (2.2) ▼
International Avg.	43 (0.8)	56 (0.8)
Sweden	43 (2.2)	55 (2.4)
Norway	42 (2.7)	54 (2.5)
Portugal	39 (2.1) ▼	59 (2.1)
Slovenia	34 (1.8) ▼	47 (2.1) ▼
Italy	33 (2.1) ▼	45 (2.2) ▼
France	33 (1.6) ▼	44 (1.6) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_06 (MA23206): Sign of derivative function Multiple Choice (Key is D)

Country	Percent Correct	
Lebanon	80 (2.3)	▲
Russian Federation 6hr+	79 (2.0)	▲
Norway	73 (2.1)	▲
Sweden	71 (1.4)	▲
Portugal	70 (1.5)	▲
Russian Federation	69 (2.0)	▲
France	67 (1.7)	
United States	65 (2.7)	
International Avg.	64 (0.7)	
Slovenia	43 (2.1)	▼
Italy	37 (2.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_07 (MA23166): Units of commodity to max profit Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	18 (1.8)	▲
United States	16 (2.1)	▲
Russian Federation	12 (1.3)	▲
Sweden	12 (1.2)	▲
Norway	12 (1.6)	
France	10 (1.1)	
International Avg.	9 (0.4)	
Lebanon	9 (1.7)	
Portugal	6 (1.0)	▼
Slovenia	5 (0.9)	▼
Italy	3 (0.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_08 (MA23043): Area enclosed by graphs of functions Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
United States	37 (2.8) ▲	53 (2.8) ▲
Sweden	23 (1.3) ▲	30 (1.5) ▲
Russian Federation 6hr+	22 (2.2) ▲	30 (2.8)
Lebanon	20 (2.8)	37 (3.0) ▲
Norway	20 (2.3)	31 (2.5) ▲
International Avg.	16 (0.6)	25 (0.7)
Russian Federation	16 (1.5)	21 (1.8) ▼
Slovenia	15 (1.2)	32 (2.4) ▲
France	7 (0.8) ▼	11 (1.1) ▼
Italy	6 (1.0) ▼	14 (1.5) ▼
Portugal	1 (0.3) ▼	1 (0.3) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_09 (MA23076): How long is distance between B and Q
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	69 (2.8)	▲
Portugal	69 (1.4)	▲
Russian Federation	59 (2.4)	▲
Slovenia	58 (1.9)	▲
Norway	54 (2.3)	
Lebanon	54 (2.7)	
International Avg.	54 (0.7)	
Sweden	49 (1.4)	▼
France	49 (1.6)	▼
Italy	46 (2.1)	▼
United States	45 (2.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_10 (MA23176): What is the height of the lighthouse
Multiple Choice (Key is B)

Country	Percent Correct	
Sweden	65 (1.3)	▲
Portugal	65 (1.7)	▲
Norway	63 (1.7)	▲
Russian Federation 6hr+	62 (2.9)	
Lebanon	61 (2.3)	
Slovenia	59 (2.0)	
International Avg.	58 (0.6)	
United States	58 (2.5)	
Russian Federation	53 (2.1)	▼
France	52 (1.5)	▼
Italy	50 (1.8)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M3_11 (MA23098): Which is equivalent to equation
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	56 (2.7)	▲
Russian Federation	45 (1.9)	▲
Slovenia	43 (2.2)	▲
Sweden	41 (1.6)	
Norway	40 (2.2)	
Portugal	39 (2.0)	
United States	39 (2.1)	
International Avg.	39 (0.7)	
France	34 (1.6)	▼
Italy	34 (2.0)	▼
Lebanon	32 (2.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_01 (MA33008): Simplify log exponent using inverses Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	84 (2.8)	▲
France	78 (1.5)	▲
Russian Federation	76 (2.3)	▲
Portugal	57 (1.7)	▲
International Avg.	39 (0.7)	
United States	34 (2.4)	
Italy	26 (2.0)	▼
Slovenia	26 (1.8)	▼
Lebanon	20 (2.7)	▼
Sweden	18 (1.3)	▼
Norway	11 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_02 (MA33121): Find x values of two functions' intersections Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	50 (2.8) ▲	64 (3.1) ▲
Lebanon	39 (2.6) ▲	70 (3.6) ▲
Russian Federation	35 (1.9) ▲	52 (1.9) ▲
Italy	29 (1.6) ▲	42 (2.0)
Slovenia	26 (1.7) ▲	52 (2.0) ▲
International Avg.	20 (0.5)	44 (0.7)
Portugal	13 (1.1) ▼	40 (1.4) ▼
Norway	11 (1.2) ▼	36 (2.0) ▼
Sweden	9 (1.1) ▼	29 (1.6) ▼
France	8 (1.0) ▼	30 (1.4) ▼
United States	7 (1.0) ▼	45 (2.3)

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_03 (MA33240): Compare car rental plans X and Y Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
France	52 (1.8) ▲	67 (1.6) ▲
Russian Federation 6hr+	43 (2.1) ▲	57 (2.3) ▲
Norway	39 (1.7) ▲	64 (2.3) ▲
United States	35 (3.0) ▲	62 (2.9) ▲
International Avg.	30 (0.7)	50 (0.7)
Russian Federation	30 (1.8)	45 (2.2) ▼
Portugal	29 (1.5)	45 (1.4) ▼
Slovenia	28 (1.6)	47 (2.5)
Lebanon	21 (2.8) ▼	36 (2.8) ▼
Italy	18 (1.2) ▼	29 (1.3) ▼
Sweden	16 (1.3) ▼	55 (1.8) ▲

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_04 (MA33050): Find a and b for equation given asymptotes
Multiple Choice (Key is D)

Country	Percent Correct	
Lebanon	56 (3.0)	▲
Portugal	53 (1.9)	▲
United States	45 (2.9)	▲
Russian Federation 6hr+	39 (3.0)	
International Avg.	38 (0.7)	
Slovenia	37 (2.2)	
France	34 (1.6)	▼
Norway	31 (2.2)	▼
Russian Federation	29 (1.8)	▼
Sweden	29 (1.6)	▼
Italy	27 (1.9)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_05 (MA33046): Find exponential function limit Multiple Choice (Key is C)

Country	Percent Correct	
Lebanon	92 (1.8)	▲
Portugal	79 (1.6)	▲
Italy	72 (2.0)	
Russian Federation 6hr+	70 (3.0)	
France	70 (1.5)	
International Avg.	69 (0.6)	
Russian Federation	66 (1.6)	
Norway	66 (1.9)	
United States	59 (2.8)	▼
Sweden	58 (1.5)	▼
Slovenia	57 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_06 (MA33162): Derivative of \sin^2 where argument is function
Multiple Choice (Key is B)

Country	Percent Correct	
Russian Federation 6hr+	66 (3.0)	▲
United States	58 (2.3)	▲
Russian Federation	58 (2.4)	▲
Lebanon	56 (2.5)	▲
Italy	50 (1.9)	▲
Slovenia	47 (1.7)	
International Avg.	45 (0.7)	
Sweden	40 (1.7)	▼
Norway	39 (1.8)	▼
Portugal	36 (1.5)	▼
France	26 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_07 (MA33163): Discern function graph from derivative graph Multiple Choice (Key is D)

Country	Percent Correct	
Russian Federation 6hr+	69 (2.8)	▲
Lebanon	60 (2.8)	▲
United States	58 (2.8)	▲
Russian Federation	58 (2.4)	▲
Portugal	54 (1.7)	▲
Norway	53 (2.3)	
France	50 (1.6)	
International Avg.	50 (0.7)	
Sweden	49 (1.5)	
Slovenia	34 (2.1)	▼
Italy	32 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_08 (MA33066): Find range of integral with variable upper bound Multiple Choice (Key is D)

Country	Percent Correct	
Lebanon	65 (2.7)	▲
United States	51 (2.6)	▲
Russian Federation 6hr+	51 (3.4)	▲
Norway	47 (2.2)	▲
Russian Federation	41 (1.6)	
International Avg.	40 (0.7)	
Slovenia	39 (1.9)	
Sweden	38 (1.5)	
France	38 (1.6)	
Italy	30 (1.9)	▼
Portugal	11 (1.0)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_09 (MA33182): Value of compound special triangles ratio
Multiple Choice (Key is A)

Country	Percent Correct	
Russian Federation 6hr+	69 (2.5)	▲
Lebanon	62 (3.4)	▲
Russian Federation	59 (1.5)	▲
United States	43 (2.7)	
Italy	42 (2.0)	
International Avg.	42 (0.7)	
Slovenia	38 (1.5)	▼
Norway	35 (1.6)	▼
Sweden	34 (1.4)	▼
Portugal	33 (1.4)	▼
France	29 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_10 (MA33232): Find maximum animals given periodic function Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	52 (3.3) ▲	62 (3.1) ▲
Lebanon	45 (3.2) ▲	57 (3.3) ▲
United States	36 (2.6) ▲	51 (3.2) ▲
Russian Federation	32 (1.9) ▲	45 (2.0)
Portugal	30 (1.8)	44 (1.9)
Norway	28 (2.4)	51 (2.6) ▲
International Avg.	27 (0.7)	43 (0.8)
Slovenia	20 (1.7) ▼	31 (2.0) ▼
Sweden	18 (1.0) ▼	51 (2.0) ▲
Italy	17 (1.6) ▼	24 (1.7) ▼
France	13 (1.0) ▼	36 (1.4) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M4_11 (MA33178): Prove vertices of ABCD make a parallelogram Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	68 (3.1)	▲
Norway	54 (2.4)	▲
Russian Federation 6hr+	51 (2.5)	▲
France	46 (1.9)	▲
United States	42 (2.9)	
International Avg.	38 (0.7)	
Russian Federation	36 (1.8)	
Portugal	28 (1.5)	▼
Italy	26 (1.7)	▼
Slovenia	23 (1.7)	▼
Sweden	18 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_01 (MA23144): Sum of infinite geometric series
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	66 (3.2)	▲
Russian Federation	50 (2.1)	▲
Norway	43 (2.5)	▲
Slovenia	38 (2.6)	▲
United States	35 (3.1)	▲
Lebanon	35 (2.3)	▲
International Avg.	30 (0.7)	
Sweden	27 (1.8)	
Portugal	18 (1.7)	▼
France	13 (1.0)	▼
Italy	7 (0.9)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_02 (MA23185): Values of a and b in given function
Multiple Choice (Key is A)

Country	Percent Correct	
Russian Federation 6hr+	72 (2.6)	▲
Russian Federation	56 (2.1)	▲
United States	55 (2.5)	▲
Slovenia	53 (1.6)	▲
France	47 (1.7)	▲
International Avg.	40 (0.7)	
Sweden	35 (1.4)	▼
Norway	25 (1.4)	▼
Lebanon	12 (1.6)	▼
Italy	- -	
Portugal	- -	

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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▲ Percent significantly higher than international average

▼ Percent significantly lower than international average

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

A dash (-) indicates comparable data not available

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_03 (MA23054): What is the value of x in equation
Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	50 (2.5) ▲	69 (2.6) ▲
Russian Federation	40 (1.8) ▲	56 (2.1) ▲
Slovenia	27 (1.5) ▲	41 (1.9) ▲
Lebanon	18 (2.2)	56 (3.1) ▲
International Avg.	15 (0.5)	34 (0.7)
United States	13 (2.2)	30 (3.0)
Portugal	12 (1.1) ▼	38 (1.8) ▲
Norway	9 (1.0) ▼	19 (1.4) ▼
France	8 (0.8) ▼	23 (1.3) ▼
Sweden	6 (1.0) ▼	14 (1.6) ▼
Italy	6 (0.9) ▼	26 (1.7) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_04 (MA23064): What is the value of k in polynomial
Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	69 (2.3)	▲
Slovenia	44 (2.0)	▲
Russian Federation 6hr+	42 (3.1)	▲
International Avg.	34 (0.6)	
United States	34 (2.4)	
Russian Federation	33 (1.8)	
France	31 (1.6)	▼
Norway	27 (1.5)	▼
Portugal	26 (1.5)	▼
Sweden	24 (1.4)	▼
Italy	22 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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.

- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_05A (MA23131A): Length of straight line AB in meters
Constructed Response (1 Point)

Country	Percent Correct	
United States	60 (2.5)	▲
Portugal	57 (2.2)	▲
Russian Federation 6hr+	51 (2.1)	▲
Russian Federation	41 (2.7)	
International Avg.	37 (0.7)	
Sweden	36 (1.6)	
Lebanon	34 (2.6)	
Norway	34 (2.3)	
France	26 (1.5)	▼
Italy	21 (1.3)	▼
Slovenia	21 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_05B (MA23131B): Cost to paint the deck Constructed Response (1 Point)

Country	Percent Correct	
United States	30 (2.0)	▲
Sweden	18 (1.3)	▲
Russian Federation 6hr+	15 (2.0)	
Norway	13 (1.5)	
Russian Federation	13 (1.5)	
International Avg.	12 (0.4)	
Lebanon	11 (1.6)	
France	9 (0.8)	▼
Slovenia	5 (0.9)	▼
Italy	4 (0.7)	▼
Portugal	1 (0.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_06 (MA23157): Find point of maxima and inflection Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	41 (2.9) ▲	77 (2.2) ▲
United States	39 (2.9) ▲	72 (2.3) ▲
Russian Federation	32 (2.5) ▲	69 (1.6) ▲
Lebanon	22 (2.6)	63 (2.4) ▲
Portugal	19 (1.2)	54 (1.4) ▲
International Avg.	18 (0.6)	50 (0.6)
Norway	17 (1.4)	56 (1.9) ▲
Sweden	14 (1.2) ▼	37 (1.8) ▼
Italy	7 (1.0) ▼	25 (1.7) ▼
Slovenia	6 (0.8) ▼	38 (2.4) ▼
France	5 (0.7) ▼	39 (1.5) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_07 (MA23045): What is the value of a
Multiple Choice (Key is C)

Country	Percent Correct	
United States	36 (2.3)	▲
Russian Federation 6hr+	32 (2.4)	▲
Russian Federation	28 (1.5)	▲
Sweden	27 (1.3)	
International Avg.	24 (0.6)	
Lebanon	23 (2.7)	
Norway	22 (1.6)	
Portugal	21 (1.4)	▼
France	20 (1.2)	▼
Slovenia	20 (1.1)	▼
Italy	19 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_08 (MA23082): Coordinates of fourth vertex D
Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	71 (2.6)	▲
Russian Federation 6hr+	69 (2.7)	▲
Norway	62 (1.9)	▲
Russian Federation	61 (2.0)	▲
United States	59 (2.3)	
International Avg.	55 (0.6)	
France	54 (1.4)	
Slovenia	53 (1.8)	
Italy	53 (1.7)	
Sweden	44 (1.5)	▼
Portugal	37 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_09 (MA23020): Amplitude and period of function Multiple Choice (Key is D)

Country	Percent Correct	
United States	60 (3.1)	▲
Russian Federation 6hr+	54 (3.7)	▲
Portugal	51 (1.8)	▲
Russian Federation	45 (1.6)	
Slovenia	44 (1.7)	
International Avg.	43 (0.7)	
Sweden	43 (1.4)	
Norway	39 (1.9)	▼
Lebanon	38 (3.2)	
France	37 (1.6)	▼
Italy	30 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M5_10 (MA23094): Find length of BC in triangle ABC
Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	31 (3.1) ▲	44 (3.4) ▲
Russian Federation	18 (1.9) ▲	29 (2.0) ▲
Slovenia	14 (1.4) ▲	30 (1.9) ▲
Lebanon	13 (2.6) ▲	31 (2.8) ▲
International Avg.	6 (0.4)	18 (0.6)
Norway	3 (0.6) ▼	16 (1.8)
Sweden	3 (0.6) ▼	17 (1.1)
United States	3 (0.7) ▼	23 (1.7) ▲
Italy	2 (0.5) ▼	11 (1.4) ▼
France	1 (0.2) ▼	5 (0.7) ▼
Portugal	0 (0.1) ▼	2 (0.4) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_01 (MA33201): Recognize inverse functions g and f on graph Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	66 (2.4)	▲
United States	63 (2.9)	▲
France	56 (1.8)	▲
Portugal	56 (1.9)	▲
Russian Federation 6hr+	55 (2.9)	
Slovenia	52 (1.8)	
International Avg.	51 (0.7)	
Russian Federation	49 (1.6)	
Norway	38 (1.9)	▼
Italy	37 (1.6)	▼
Sweden	37 (1.8)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_02 (MA33016): Solve quadratic inequality given factored equation
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	84 (3.2)	▲
Russian Federation	77 (1.5)	▲
Italy	69 (1.5)	▲
Lebanon	66 (2.9)	▲
Portugal	59 (1.6)	
Slovenia	57 (1.7)	
International Avg.	57 (0.6)	
United States	48 (2.2)	▼
Norway	48 (1.5)	▼
Sweden	42 (1.5)	▼
France	42 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_03 (MA33083): Half life radioactivity threshold given $\ln(0.05)$
Constructed Response (1 Point)

Country	Percent Correct	
Portugal	69 (1.6)	▲
United States	57 (2.5)	▲
Norway	53 (1.9)	▲
France	45 (1.4)	▲
Russian Federation 6hr+	45 (3.0)	
Sweden	42 (1.6)	
Lebanon	42 (2.9)	
International Avg.	41 (0.6)	
Russian Federation	34 (2.1)	▼
Slovenia	17 (1.3)	▼
Italy	15 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_04 (MA33143): Use given root to find quadratic coefficients Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	60 (2.9)	▲
Lebanon	50 (3.5)	▲
Russian Federation	46 (2.4)	▲
United States	29 (2.3)	
Slovenia	26 (1.9)	
International Avg.	26 (0.7)	
Italy	24 (1.8)	
Norway	20 (1.4)	▼
Portugal	15 (1.3)	▼
Sweden	15 (1.3)	▼
France	7 (0.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_05 (MA33198): Find integral of sum involving e
Multiple Choice (Key is B)

Country	Percent Correct	
Lebanon	90 (1.6)	▲
Norway	75 (1.7)	▲
Russian Federation 6hr+	69 (2.1)	▲
Italy	69 (2.4)	▲
Slovenia	67 (1.7)	▲
France	66 (1.5)	
United States	66 (3.0)	
International Avg.	63 (0.7)	
Russian Federation	59 (2.0)	▼
Sweden	59 (1.9)	▼
Portugal	18 (1.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_06 (MA33227): Josh's statement about left- and right-hand limits
Constructed Response (1 Point)

Country	Percent Correct	
United States	43 (3.0)	▲
Lebanon	43 (3.7)	▲
Portugal	36 (1.8)	▲
International Avg.	24 (0.7)	
France	19 (1.2)	▼
Norway	19 (1.5)	▼
Slovenia	16 (1.3)	▼
Russian Federation 6hr+	16 (1.8)	▼
Italy	16 (1.3)	▼
Sweden	15 (1.2)	▼
Russian Federation	11 (1.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_07 (MA33079): Find function maximum given signed intervals
Multiple Choice (Key is C)

Country	Percent Correct	
Portugal	63 (1.9)	▲
United States	61 (2.3)	▲
Russian Federation 6hr+	59 (2.6)	▲
Lebanon	54 (2.9)	
Sweden	51 (2.2)	
International Avg.	51 (0.7)	
Russian Federation	51 (1.9)	
Italy	48 (1.8)	
Norway	48 (2.2)	
Slovenia	43 (1.8)	▼
France	40 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_08 (MA33220): Sketch function given point and properties Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Lebanon	56 (2.4) ▲	74 (2.6) ▲
United States	44 (2.8) ▲	69 (2.7) ▲
Italy	36 (2.0) ▲	53 (1.9) ▼
Russian Federation 6hr+	35 (2.2)	61 (2.7)
International Avg.	31 (0.6)	57 (0.7)
Slovenia	31 (1.8)	55 (2.3)
Portugal	29 (2.2)	52 (1.9) ▼
France	24 (1.5) ▼	68 (1.4) ▲
Russian Federation	24 (1.3) ▼	44 (1.8) ▼
Norway	19 (1.6) ▼	45 (2.3) ▼
Sweden	18 (1.0) ▼	51 (1.6) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_09 (MA33150): Find vector difference diagram given sum diagram
Multiple Choice (Key is C)

Country	Percent Correct	
France	76 (1.3)	▲
Norway	75 (1.8)	▲
Lebanon	67 (2.4)	▲
Russian Federation 6hr+	61 (3.3)	
Slovenia	58 (2.2)	
Russian Federation	57 (1.5)	
International Avg.	56 (0.7)	
Portugal	51 (1.9)	▼
Sweden	45 (1.8)	▼
United States	39 (2.4)	▼
Italy	38 (2.0)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_10 (MA33233): Explain length of radius of a circle Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	56 (2.9) ▲	63 (2.9) ▲
Russian Federation	39 (1.5) ▲	47 (1.7) ▲
Portugal	36 (1.8) ▲	49 (2.2) ▲
Lebanon	35 (3.0) ▲	41 (3.1)
Slovenia	33 (2.1) ▲	46 (2.1) ▲
Norway	32 (2.8)	38 (2.9)
International Avg.	29 (0.7)	38 (0.8)
France	25 (1.3) ▼	31 (1.5) ▼
Italy	25 (1.5) ▼	33 (1.8) ▼
Sweden	22 (1.8) ▼	33 (1.9) ▼
United States	15 (1.7) ▼	26 (2.6) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_11 (MA33157): Choose sinusoid parameter change for given graphs
Multiple Choice (Key is D)

Country	Percent Correct	
Portugal	41 (1.1)	▲
Norway	37 (2.0)	
United States	37 (2.0)	
Lebanon	36 (3.0)	
Russian Federation 6hr+	35 (3.2)	
Sweden	35 (1.6)	
France	34 (1.2)	
International Avg.	34 (0.6)	
Slovenia	33 (1.7)	
Russian Federation	31 (2.3)	
Italy	22 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M6_12 (MA33155): Prove property of supplementary angles' sines Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	35 (2.3)	▲
Lebanon	21 (3.6)	▲
Russian Federation	20 (1.7)	▲
Portugal	10 (0.9)	
International Avg.	9 (0.5)	
Sweden	8 (0.9)	
Slovenia	7 (1.3)	
Italy	7 (1.0)	
Norway	3 (0.8)	▼
France	2 (0.4)	▼
United States	1 (0.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_01 (MA33202): Find interval for greatest function relationship Multiple Choice (Key is A)

Country	Percent Correct	
Russian Federation 6hr+	58 (2.6)	▲
France	52 (1.6)	▲
Portugal	49 (1.5)	▲
Lebanon	48 (3.0)	▲
United States	43 (2.4)	
Russian Federation	41 (1.8)	
International Avg.	41 (0.6)	
Italy	36 (1.9)	▼
Norway	35 (1.7)	▼
Sweden	33 (1.4)	▼
Slovenia	31 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_02 (MA33042): Evaluate compound function $h(3)$ Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	81 (2.1)	▲
United States	75 (2.0)	▲
Portugal	70 (1.4)	▲
France	65 (1.8)	▲
Russian Federation 6hr+	62 (3.1)	
International Avg.	57 (0.7)	
Slovenia	55 (1.9)	
Norway	45 (2.3)	▼
Russian Federation	45 (2.2)	▼
Italy	39 (2.1)	▼
Sweden	38 (2.0)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_03 (MA33094): Given amps and ohms, solve for volts in Complex Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	85 (1.8)	▲
France	68 (1.7)	▲
Slovenia	63 (2.0)	▲
Portugal	53 (2.1)	▲
International Avg.	46 (0.6)	
Russian Federation 6hr+	45 (3.4)	
United States	41 (2.4)	▼
Sweden	38 (1.7)	▼
Russian Federation	30 (2.3)	▼
Italy	24 (1.4)	▼
Norway	11 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_04 (MA33123): Domain of ln with rational function argument Multiple Choice (Key is D)

Country	Percent Correct	
Russian Federation 6hr+	64 (2.8)	▲
Lebanon	55 (2.9)	▲
Italy	53 (2.2)	▲
Russian Federation	51 (1.8)	▲
United States	38 (2.1)	
International Avg.	36 (0.6)	
France	34 (1.4)	
Portugal	29 (1.5)	▼
Norway	28 (2.0)	▼
Sweden	21 (1.1)	▼
Slovenia	17 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_05 (MA33137): Bounds of integration difference and signed area Multiple Choice (Key is B)

Country	Percent Correct	
Lebanon	69 (2.8)	▲
United States	62 (2.7)	▲
Russian Federation 6hr+	55 (2.7)	▲
France	48 (1.7)	▲
International Avg.	44 (0.7)	
Russian Federation	43 (1.9)	
Sweden	43 (1.6)	
Norway	43 (2.4)	
Slovenia	34 (1.9)	▼
Italy	31 (2.1)	▼
Portugal	18 (1.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_06 (MA33067): Product rule derivative in terms of unknown Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	74 (2.3)	▲
United States	48 (2.3)	▲
France	45 (1.7)	▲
Russian Federation 6hr+	40 (3.3)	
Portugal	35 (1.7)	
International Avg.	35 (0.6)	
Russian Federation	25 (1.9)	▼
Slovenia	23 (1.8)	▼
Italy	23 (1.6)	▼
Norway	21 (1.9)	▼
Sweden	19 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_07 (MA33012): Show chicken house maximization given 3 walls Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	28 (3.2) ▲	39 (4.0) ▲
Portugal	19 (1.3) ▲	28 (1.2) ▲
Italy	15 (1.3) ▲	22 (1.3)
Russian Federation	15 (1.3) ▲	22 (1.5)
France	15 (1.2) ▲	21 (1.3)
Sweden	13 (1.2)	30 (1.5) ▲
International Avg.	13 (0.5)	23 (0.6)
Lebanon	12 (2.2)	27 (2.8)
United States	10 (1.3) ▼	24 (1.7)
Slovenia	7 (1.2) ▼	14 (1.8) ▼
Norway	6 (1.0) ▼	21 (2.4)

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_08 (MA33075): Derivative properties given graph
Multiple Choice (Key is D)

Country	Percent Correct	
Portugal	44 (1.7)	▲
United States	44 (2.5)	▲
Russian Federation 6hr+	40 (3.6)	
Lebanon	38 (2.9)	▲
Sweden	34 (1.3)	
International Avg.	32 (0.7)	
Russian Federation	32 (1.5)	
Norway	30 (1.8)	
Italy	30 (1.6)	
Slovenia	25 (2.4)	▼
France	14 (1.0)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_09 (MA33212): Limit of a rational function with k Multiple Choice (Key is B)

Country	Percent Correct	
Lebanon	67 (2.1)	▲
Russian Federation 6hr+	51 (3.2)	▲
Russian Federation	49 (1.8)	▲
Portugal	41 (1.6)	▲
United States	36 (2.1)	
International Avg.	36 (0.6)	
Italy	35 (2.2)	
Norway	30 (1.6)	▼
Slovenia	26 (1.7)	▼
Sweden	20 (1.2)	▼
France	17 (1.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_10 (MA33186): Choose sinusoidal graph transformation operations
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	75 (2.6)	▲
Russian Federation	63 (1.5)	▲
Lebanon	61 (3.2)	▲
Portugal	54 (2.0)	▲
Slovenia	53 (1.6)	
United States	51 (1.8)	
International Avg.	50 (0.7)	
Sweden	46 (1.4)	▼
Italy	46 (2.3)	▼
Norway	41 (2.0)	▼
France	40 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_11 (MA33239): Area of porch of a circular house Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	38 (3.3) ▲	52 (3.2) ▲
Russian Federation	27 (1.9) ▲	40 (2.2) ▲
United States	25 (2.0) ▲	52 (2.1) ▲
Norway	22 (1.4) ▲	36 (1.9)
Sweden	19 (1.3)	31 (1.8) ▼
Slovenia	19 (1.0)	40 (1.7) ▲
International Avg.	18 (0.5)	35 (0.6)
Portugal	17 (1.1)	38 (1.4) ▲
Lebanon	16 (2.3)	33 (2.7)
Italy	11 (1.3) ▼	22 (1.7) ▼
France	7 (0.7) ▼	21 (1.1) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M7_12 (MA33038): Explain $3\cos x + 2\sin x < 6$ for all values of x
Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	49 (3.9)	▲
Lebanon	41 (2.6)	▲
Russian Federation	29 (1.5)	▲
France	27 (1.6)	
United States	27 (2.1)	
International Avg.	26 (0.6)	
Slovenia	24 (1.4)	
Italy	24 (1.4)	
Sweden	23 (1.4)	▼
Portugal	19 (1.3)	▼
Norway	18 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_01 (MA33027): Compound quadratic function simplification Multiple Choice (Key is C)

Country	Percent Correct	
Lebanon	89 (2.4)	▲
United States	72 (2.3)	▲
Portugal	64 (1.7)	▲
Russian Federation 6hr+	64 (2.2)	▲
Slovenia	63 (2.0)	▲
France	58 (1.8)	
International Avg.	57 (0.7)	
Russian Federation	51 (1.9)	▼
Italy	41 (2.2)	▼
Sweden	40 (1.6)	▼
Norway	38 (2.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_02 (MA33091): Exact value of 7th of arithmetic sequence Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	73 (1.5)	▲
Russian Federation	61 (2.3)	▲
Slovenia	59 (1.6)	▲
Norway	41 (1.7)	
United States	41 (1.8)	
International Avg.	39 (0.6)	
Lebanon	35 (2.6)	
Sweden	33 (1.6)	▼
France	30 (1.6)	▼
Italy	28 (1.8)	▼
Portugal	24 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_03 (MA33106): Find expression value after variables change Multiple Choice (Key is B)

Country	Percent Correct	
Russian Federation 6hr+	79 (1.9)	▲
Russian Federation	63 (2.1)	▲
Lebanon	59 (2.5)	▲
United States	45 (2.5)	
Italy	43 (2.0)	
International Avg.	41 (0.6)	
Slovenia	36 (2.0)	▼
Portugal	36 (1.7)	▼
Norway	33 (1.7)	▼
Sweden	32 (1.4)	▼
France	27 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_04 (MA33090): Graph of ball thrown - find time above 8m
Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Portugal	51 (2.0) ▲	74 (1.4) ▲
Norway	46 (2.2) ▲	65 (2.0) ▲
Russian Federation 6hr+	40 (2.2) ▲	58 (2.6) ▲
Sweden	38 (1.7) ▲	44 (1.8) ▼
United States	30 (2.2)	42 (2.3) ▼
International Avg.	29 (0.6)	51 (0.7)
France	26 (1.5)	45 (1.8) ▼
Russian Federation	23 (1.6) ▼	41 (1.7) ▼
Lebanon	16 (2.2) ▼	64 (2.8) ▲
Slovenia	15 (1.4) ▼	44 (2.1) ▼
Italy	12 (1.2) ▼	40 (2.1) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_05 (MA33126): Rational function limit to negative infinity Multiple Choice (Key is B)

Country	Percent Correct	
Lebanon	92 (1.4)	▲
Italy	65 (2.1)	▲
Portugal	64 (1.7)	▲
Russian Federation 6hr+	64 (2.9)	
International Avg.	58 (0.7)	
United States	58 (3.0)	
Russian Federation	57 (2.3)	
Norway	53 (2.1)	▼
Slovenia	50 (2.4)	▼
France	43 (1.7)	▼
Sweden	42 (1.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_06 (MA33118): Continuity/differentiability at points (DERIVED) Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Lebanon	44 (2.6) ▲	61 (3.0) ▲
Italy	42 (2.0) ▲	62 (1.5) ▲
United States	40 (2.9) ▲	64 (2.3) ▲
France	30 (1.7)	60 (1.4) ▲
Norway	29 (1.9)	60 (1.8) ▲
International Avg.	28 (0.6)	53 (0.7)
Russian Federation 6hr+	23 (2.0) ▼	56 (2.2)
Russian Federation	18 (1.5) ▼	46 (2.0) ▼
Sweden	18 (1.4) ▼	47 (2.2) ▼
Portugal	17 (1.4) ▼	29 (1.7) ▼
Slovenia	14 (0.9) ▼	46 (1.7) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_06A (MA33118A): f is continuous at $x=1$
Multiple Choice (Key is A)

Country	Percent Correct	
France	84 (1.2)	▲
Norway	81 (1.2)	▲
Lebanon	80 (2.7)	▲
United States	79 (1.7)	▲
Russian Federation 6hr+	79 (2.4)	▲
Italy	78 (1.6)	▲
International Avg.	73 (0.6)	
Slovenia	71 (2.0)	
Russian Federation	69 (1.6)	▼
Sweden	69 (2.0)	▼
Portugal	44 (2.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_06B (MA33118B): f is continuous at $x=2$
Multiple Choice (Key is C)

Country	Percent Correct	
Italy	51 (2.1)	▲
United States	50 (3.0)	▲
Lebanon	49 (2.8)	▲
France	41 (1.7)	▲
International Avg.	36 (0.7)	
Norway	33 (2.2)	
Portugal	30 (1.9)	▼
Russian Federation 6hr+	27 (2.0)	▼
Sweden	25 (1.4)	▼
Russian Federation	24 (1.8)	▼
Slovenia	22 (1.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_06C (MA33118C): f is differentiable $x=3$
Multiple Choice (Key is B)

Country	Percent Correct	
United States	64 (2.3)	▲
Lebanon	64 (3.0)	▲
Norway	63 (1.7)	▲
Italy	62 (1.7)	▲
France	56 (1.6)	
Russian Federation 6hr+	55 (2.3)	
International Avg.	54 (0.7)	
Sweden	49 (2.2)	▼
Slovenia	48 (1.5)	▼
Russian Federation	47 (1.9)	▼
Portugal	35 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_07 (MA33243): Number of toy cars to maximize profit Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	29 (2.9) ▲	32 (3.2) ▲
Norway	26 (1.6) ▲	30 (1.9) ▲
Portugal	24 (1.4) ▲	29 (1.6) ▲
Sweden	23 (1.3) ▲	26 (1.6) ▲
Lebanon	20 (2.2)	21 (2.3)
United States	19 (1.8)	23 (1.9)
France	19 (1.5)	22 (1.7)
International Avg.	19 (0.5)	22 (0.6)
Russian Federation	15 (1.3) ▼	18 (1.3) ▼
Slovenia	11 (1.2) ▼	13 (1.4) ▼
Italy	10 (1.1) ▼	13 (1.3) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_08 (MA33229): Find trig antiderivative given formula Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	36 (3.1)	▲
Russian Federation 6hr+	18 (2.2)	▲
Italy	12 (1.5)	
United States	12 (1.4)	
Russian Federation	11 (1.5)	
International Avg.	11 (0.5)	
France	9 (1.1)	
Slovenia	6 (0.8)	▼
Norway	6 (1.1)	▼
Sweden	5 (0.9)	▼
Portugal	0 (0.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_09 (MA33011): Find vector perpendicular to given vector
Multiple Choice (Key is A)

Country	Percent Correct	
Lebanon	76 (2.9)	▲
Russian Federation 6hr+	55 (3.4)	▲
Norway	54 (2.0)	▲
France	50 (1.5)	▲
International Avg.	41 (0.7)	
Russian Federation	41 (2.2)	
Portugal	39 (2.1)	
Slovenia	39 (1.8)	
Sweden	27 (1.6)	▼
Italy	26 (1.8)	▼
United States	21 (2.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_10 (MA33159): Find triangle side lengths given one special angle Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	67 (2.9)	▲
Russian Federation	58 (2.5)	▲
Lebanon	55 (2.9)	▲
Slovenia	32 (1.7)	
International Avg.	31 (0.6)	
Portugal	27 (1.4)	▼
Norway	27 (1.7)	▼
Italy	25 (1.8)	▼
United States	23 (1.6)	▼
Sweden	20 (1.4)	▼
France	12 (1.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M8_11 (MA33054): Rhombus diagonal length in terms of side length
Multiple Choice (Key is D)

Country	Percent Correct	
Russian Federation 6hr+	60 (2.5)	▲
Russian Federation	47 (2.0)	▲
Lebanon	46 (2.7)	▲
Slovenia	33 (1.7)	
International Avg.	32 (0.6)	
United States	30 (2.2)	
Norway	29 (2.0)	
Italy	28 (1.3)	▼
Sweden	27 (1.3)	▼
France	24 (1.4)	▼
Portugal	23 (1.4)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_01 (MA33085): Identify equation of increasing function Multiple Choice (Key is D)

Country	Percent Correct	
France	65 (1.6)	▲
Portugal	65 (1.5)	▲
Lebanon	63 (2.8)	▲
Russian Federation 6hr+	62 (3.6)	▲
International Avg.	54 (0.7)	
United States	52 (2.5)	
Russian Federation	51 (1.7)	
Sweden	51 (1.6)	
Slovenia	46 (2.4)	▼
Italy	46 (2.2)	▼
Norway	44 (2.3)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_02 (MA33190): Possible values for compound exponent expression Constructed Response (1 Point)

Country	Percent Correct	
United States	71 (2.9)	▲
Slovenia	67 (2.2)	▲
France	66 (1.5)	▲
Russian Federation 6hr+	61 (2.2)	
Portugal	60 (2.1)	
International Avg.	59 (0.8)	
Norway	58 (1.8)	
Sweden	55 (2.2)	
Lebanon	54 (3.2)	
Russian Federation	50 (2.1)	▼
Italy	49 (1.8)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_03 (MA33115): Values of linear term when parabola is above axis
Multiple Choice (Key is C)

Country	Percent Correct	
United States	58 (2.5)	▲
Portugal	53 (1.7)	▲
Russian Federation 6hr+	52 (3.1)	▲
Russian Federation	43 (1.5)	▲
Norway	42 (1.7)	▲
International Avg.	38 (0.6)	
France	38 (1.6)	
Sweden	36 (1.7)	
Lebanon	28 (2.7)	▼
Italy	24 (1.3)	▼
Slovenia	23 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_04 (MA33237): Find constant given solutions of function Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	63 (3.1)	▲
Lebanon	63 (2.8)	▲
Russian Federation	49 (2.2)	▲
United States	41 (2.4)	▲
France	37 (1.5)	
International Avg.	36 (0.6)	
Sweden	32 (1.5)	▼
Portugal	31 (1.7)	▼
Slovenia	28 (1.5)	▼
Norway	28 (1.6)	▼
Italy	19 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_05 (MA33077): Piecewise graph - discontinuous/not differentiable Multiple Choice (Key is A)

Country	Percent Correct	
United States	62 (3.1)	▲
Russian Federation 6hr+	60 (3.1)	▲
France	50 (1.6)	▲
Russian Federation	48 (1.6)	▲
Italy	45 (2.0)	
International Avg.	45 (0.7)	
Lebanon	43 (3.5)	
Norway	40 (1.8)	▼
Slovenia	40 (2.2)	▼
Portugal	40 (1.6)	▼
Sweden	35 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_06 (MA33132): Derivative graph of piecewise function graph
Multiple Choice (Key is A)

Country	Percent Correct	
Russian Federation 6hr+	57 (2.9)	▲
Portugal	55 (1.6)	▲
United States	55 (2.7)	▲
Lebanon	54 (3.1)	▲
France	54 (1.7)	▲
Russian Federation	50 (1.7)	
International Avg.	47 (0.7)	
Norway	46 (2.1)	
Sweden	39 (1.5)	▼
Italy	39 (2.0)	▼
Slovenia	32 (1.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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.

- ▲ Percent significantly higher than international average
- ▼ Percent significantly lower than international average
- () Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_07 (MA33218): Find line parallel to cubic tangent given points Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Lebanon	50 (2.9) ▲	65 (2.9) ▲
Slovenia	31 (2.0) ▲	38 (2.2) ▲
United States	29 (2.6) ▲	39 (2.7) ▲
Portugal	29 (1.7) ▲	35 (1.6) ▲
Russian Federation 6hr+	24 (3.5)	26 (3.5)
International Avg.	23 (0.6)	30 (0.7)
Sweden	18 (1.3) ▼	23 (1.6) ▼
Russian Federation	13 (1.5) ▼	16 (1.6) ▼
Italy	13 (1.3) ▼	16 (1.6) ▼
Norway	13 (2.0) ▼	17 (1.9) ▼
France	10 (1.0) ▼	18 (1.3) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_08 (MA33236): Given derivative, describe f (DERIVED)
Constructed Response (2 Points)

Country	Percent Full Credit	Percent at Least 1 Point
Russian Federation 6hr+	34 (2.3) ▲	54 (2.6) ▲
France	28 (1.5) ▲	44 (1.8) ▲
Portugal	26 (1.7) ▲	41 (1.8) ▲
United States	26 (2.3) ▲	44 (2.8) ▲
Russian Federation	24 (1.9) ▲	37 (2.4)
Lebanon	24 (2.6) ▲	40 (3.1) ▲
International Avg.	19 (0.6)	33 (0.7)
Norway	13 (1.2) ▼	28 (1.7) ▼
Sweden	12 (1.1) ▼	26 (1.4) ▼
Italy	9 (1.2) ▼	17 (1.3) ▼
Slovenia	7 (0.9) ▼	18 (1.3) ▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_08A (MA33236A): The graph of f passes through (0,1)
Multiple Choice (Key is C)

Country	Percent Correct	
Lebanon	53 (2.7)	▲
Russian Federation 6hr+	51 (2.7)	▲
France	50 (1.5)	▲
United States	45 (2.4)	▲
Portugal	43 (2.1)	▲
International Avg.	39 (0.7)	
Norway	39 (1.5)	
Russian Federation	37 (2.3)	
Sweden	33 (1.9)	▼
Italy	26 (1.7)	▼
Slovenia	23 (1.5)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_08B (MA33236B): f decreases for all x
Multiple Choice (Key is B)

Country	Percent Correct	
Russian Federation 6hr+	66 (2.5)	▲
United States	64 (2.4)	▲
France	54 (1.8)	▲
Portugal	53 (1.6)	▲
Lebanon	53 (2.8)	
Russian Federation	51 (2.0)	
International Avg.	49 (0.7)	
Norway	45 (2.2)	▼
Sweden	43 (1.5)	▼
Slovenia	38 (2.1)	▼
Italy	37 (2.1)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_08C (MA33236C): f increases for $x < 2$
Multiple Choice (Key is A)

Country	Percent Correct	
Russian Federation 6hr+	60 (2.1)	▲
United States	51 (2.3)	▲
France	50 (1.7)	▲
Lebanon	49 (2.5)	▲
Portugal	49 (1.7)	▲
Russian Federation	46 (1.9)	▲
International Avg.	42 (0.7)	
Norway	37 (2.3)	▼
Sweden	36 (1.5)	▼
Italy	33 (1.6)	▼
Slovenia	31 (1.9)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_08D (MA33236D): f has a minimum for $x=2$
Multiple Choice (Key is B)

Country	Percent Correct	
United States	63 (2.5)	▲
Russian Federation 6hr+	60 (2.7)	▲
France	57 (1.6)	▲
Portugal	55 (1.4)	▲
Norway	54 (1.7)	
International Avg.	51 (0.7)	
Russian Federation	50 (2.1)	
Lebanon	47 (3.1)	
Slovenia	46 (1.6)	▼
Sweden	45 (1.4)	▼
Italy	43 (2.2)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_09 (MA33181): Similar triangles ABC and DEF side length
Multiple Choice (Key is C)

Country	Percent Correct	
Russian Federation 6hr+	87 (1.4)	▲
United States	73 (1.7)	▲
Russian Federation	73 (1.5)	▲
Norway	67 (1.4)	▲
International Avg.	60 (0.6)	
Slovenia	59 (1.9)	
Portugal	58 (1.6)	
Lebanon	57 (2.9)	
Italy	56 (2.0)	▼
Sweden	53 (2.1)	▼
France	44 (1.6)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_10 (MA33002): Given midpoint write coordinates of boundaries
Constructed Response (1 Point)

Country	Percent Correct	
Lebanon	70 (2.7)	▲
Russian Federation 6hr+	54 (2.0)	▲
Russian Federation	43 (1.8)	▲
United States	42 (2.7)	▲
International Avg.	35 (0.7)	
France	30 (1.4)	▼
Slovenia	30 (2.0)	▼
Italy	27 (1.7)	▼
Portugal	26 (1.5)	▼
Norway	26 (1.8)	▼
Sweden	25 (1.8)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_11 (MA33169): Find sinusoid temperature graph coefficients
Multiple Choice (Key is B)

Country	Percent Correct	
United States	56 (3.0)	▲
Portugal	47 (1.6)	▲
Russian Federation 6hr+	46 (2.9)	
Norway	45 (1.5)	▲
Russian Federation	44 (1.7)	
International Avg.	42 (0.6)	
Sweden	40 (1.3)	
France	39 (1.6)	
Italy	36 (1.6)	▼
Slovenia	35 (1.4)	▼
Lebanon	34 (2.9)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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TIMSS Advanced 2015 Percent Correct Statistics for Achievement Items

M9_12 (MA33235): Prove triangle property for ABC Constructed Response (1 Point)

Country	Percent Correct	
Russian Federation 6hr+	42 (3.4)	▲
Lebanon	31 (2.7)	▲
Russian Federation	25 (1.7)	▲
Portugal	23 (1.7)	▲
Italy	19 (2.5)	
International Avg.	17 (0.6)	
Slovenia	16 (1.4)	
United States	13 (2.3)	▼
Sweden	13 (1.2)	▼
Norway	9 (1.2)	▼
France	6 (0.7)	▼

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS Advanced 2015

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