

M1_01 (MA13011): Algebra / Knowing Type: MC Key: A
Label: Find an equivalent fraction

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	61.6	61.6	10.8	6.3	11.6	5.1	4.6	0.0	66.3	59.1
	2015	1103	57.7	57.7	12.0	7.7	12.2	4.5	5.3	0.7	61.0	55.9
Lebanon	2008	810	86.1	86.1	2.4	1.1	1.0	8.8	0.6	0.0	87.0	85.7
	2015	385	78.6	78.6	3.1	1.5	1.0	11.4	2.7	1.8	78.9	78.4
Norway	2008	965	24.7	24.7	12.4	12.5	39.1	7.5	3.7	0.0	26.1	23.8
	2015	853	23.0	23.0	21.9	13.8	26.7	7.9	6.2	0.4	19.6	25.1
Russian Federation 6hr+	2008	1597	82.2	82.2	5.5	3.7	4.8	3.2	0.5	0.0	81.2	83.1
	2015	1151	77.1	77.1	8.8	5.6	4.3	2.7	1.1	0.4	76.6	77.4
Slovenia	2008	1066	59.6	59.6	9.7	7.6	15.6	5.8	1.8	0.0	59.0	60.6
	2015	981	55.1	55.1	12.9	6.1	20.3	3.7	1.5	0.3	54.5	56.1
Sweden	2008	1159	22.6	22.6	8.4	12.0	45.5	8.0	3.5	0.0	19.9	24.3
	2015	1321	20.4	20.4	12.0	11.7	41.2	7.4	6.2	1.2	16.1	23.2
International Avg (n=5)	2008	5061	50.9	50.9	8.7	7.9	22.6	7.0	2.9	0.0	51.7	50.7
	2015	4643	47.0	47.0	12.4	8.2	20.3	7.0	4.3	0.9	46.0	47.7

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_02 (MA13012): Algebra / Knowing Type: MC Key: C
Label: Cubing a trigonometric function

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1060	24.0	1.8	11.5	24.0	34.0	7.0	21.7	0.0	17.4	27.5
	2015	1103	23.8	3.4	11.5	23.8	33.7	10.9	15.9	0.8	24.3	23.5
Lebanon	2008	809	77.6	0.2	7.1	77.6	6.4	6.1	2.6	0.0	81.3	76.1
	2015	385	77.0	1.9	3.7	77.0	8.1	5.1	2.4	1.8	78.0	76.5
Norway	2008	963	24.2	2.5	12.6	24.2	44.0	6.7	10.0	0.0	24.3	24.1
	2015	853	21.5	1.9	13.0	21.5	44.2	8.1	10.8	0.6	19.3	22.8
Russian Federation 6hr+	2008	1596	65.2	1.5	5.6	65.2	16.5	9.1	2.2	0.0	64.7	65.6
	2015	1151	47.6	0.7	5.1	47.6	31.2	10.1	4.9	0.4	46.6	48.5
Slovenia	2008	1066	23.4	2.8	7.9	23.4	31.2	26.5	8.3	0.0	24.3	21.8
	2015	981	21.5	3.5	8.2	21.5	32.9	26.7	7.0	0.3	21.1	22.1
Sweden	2008	1159	40.2	6.1	20.1	40.2	21.6	8.3	3.7	0.0	40.2	40.2
	2015	1322	30.7	3.6	18.2	30.7	27.2	13.1	5.6	1.6	28.5	32.2
International Avg (n=5)	2008	5057	37.9	2.7	11.8	37.9	27.4	10.9	9.3	0.0	37.5	37.9
	2015	4644	34.9	2.9	10.9	34.9	29.2	12.8	8.3	1.0	34.2	35.4

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_03 (MA13013): Algebra / Applying Type: MC Key: E
Label: Value of x to make function negative

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	67.7	2.7	15.3	4.9	4.4	67.7	4.9	0.0	72.7	65.2
	2015	1103	56.1	4.8	20.4	5.7	5.6	56.1	6.2	1.1	59.9	54.0
Lebanon	2008	810	71.5	4.4	12.7	1.6	3.5	71.5	6.3	0.0	76.1	69.6
	2015	385	65.2	5.6	12.6	4.8	3.6	65.2	6.2	1.9	67.9	63.7
Norway	2008	965	47.6	8.3	13.6	8.9	13.6	47.6	7.9	0.0	50.6	45.7
	2015	853	44.8	6.7	17.7	9.1	11.0	44.8	10.2	0.6	48.6	42.5
Russian Federation 6hr+	2008	1597	88.6	1.1	4.8	1.6	2.7	88.6	1.1	0.0	87.8	89.3
	2015	1151	82.2	2.8	4.8	2.3	4.7	82.2	2.6	0.6	82.0	82.4
Slovenia	2008	1066	47.4	11.3	16.5	6.8	9.2	47.4	8.7	0.0	46.1	49.5
	2015	981	48.6	9.7	17.0	7.8	11.5	48.6	5.1	0.3	48.7	48.4
Sweden	2008	1159	40.6	10.3	17.4	12.3	13.1	40.6	6.3	0.0	40.0	41.0
	2015	1321	34.0	9.8	17.3	13.8	13.4	34.0	9.6	2.1	28.5	37.7
International Avg (n=5)	2008	5061	55.0	7.4	15.1	6.9	8.8	55.0	6.8	0.0	57.1	54.2
	2015	4643	49.7	7.3	17.0	8.2	9.0	49.7	7.5	1.2	50.7	49.3

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_05 (MA13015): Calculus / Knowing Type: MC Key: C
Label: Derivative of exponential function

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1060	68.1	8.4	10.7	68.1	8.8	1.7	2.3	0.0	71.7	66.1
	2015	1103	61.7	9.9	12.1	61.7	10.0	2.7	2.1	1.4	64.5	60.1
Lebanon	2008	810	93.5	2.4	2.4	93.5	0.6	0.4	0.8	0.0	94.9	92.9
	2015	385	86.9	1.4	2.8	86.9	1.2	1.6	3.3	2.8	84.4	88.2
Norway	2008	964	57.1	11.1	17.2	57.1	10.1	3.0	1.5	0.0	59.3	55.8
	2015	853	72.9	7.3	7.6	72.9	6.7	1.4	2.9	1.2	75.4	71.3
Russian Federation 6hr+	2008	1596	73.3	11.2	8.1	73.3	6.0	0.7	0.7	0.0	73.1	73.4
	2015	1151	68.9	11.1	10.1	68.9	7.5	0.6	1.1	0.6	69.9	68.1
Slovenia	2008	1066	48.1	17.2	13.5	48.1	15.7	3.5	2.0	0.0	48.7	47.1
	2015	981	43.9	17.7	13.0	43.9	19.7	4.3	1.1	0.3	44.6	42.9
Sweden	2008	1159	52.0	12.3	15.8	52.0	14.2	5.0	0.7	0.0	49.7	53.6
	2015	1321	48.3	16.2	15.2	48.3	9.8	4.9	3.1	2.5	49.3	47.7

International Avg (n=5)	2008	5059	63.8	10.3	11.9	63.8	9.9	2.7	1.5	0.0	64.8	63.1
	2015	4643	62.7	10.5	10.2	62.7	9.5	3.0	2.5	1.6	63.6	62.1

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_06 (MA13016): Calculus / Applying Type: MC Key: D
Label: Cylinder radius with maximum volume

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	32.1	6.3	11.3	11.1	32.1	23.2	16.0	0.0	28.4	34.0
	2015	1103	28.6	7.5	14.9	16.0	28.6	17.3	14.0	1.7	25.5	30.3
Lebanon	2008	807	20.5	13.1	12.6	14.0	20.5	18.9	21.0	0.0	15.7	22.5
	2015	385	18.6	14.7	13.5	17.4	18.6	8.9	24.1	2.8	20.9	17.5
Norway	2008	963	34.4	9.7	18.4	12.8	34.4	21.4	3.4	0.0	36.7	33.0
	2015	853	27.8	9.8	18.5	16.2	27.8	18.9	7.7	1.2	28.7	27.3
Russian Federation 6hr+	2008	1597	46.7	8.7	18.8	11.6	46.7	11.9	2.3	0.0	44.4	48.6
	2015	1151	52.3	8.6	13.8	9.3	52.3	13.4	1.9	0.7	49.1	55.0
Slovenia	2008	1066	30.5	8.8	12.3	17.2	30.5	24.1	7.1	0.0	26.9	36.3
	2015	981	34.6	9.2	14.2	15.4	34.6	20.3	6.1	0.3	30.3	40.7
Sweden	2008	1159	33.9	11.1	21.5	16.6	33.9	14.0	2.8	0.1	34.2	33.7
	2015	1321	31.1	10.3	19.7	15.4	31.1	13.4	7.6	2.6	30.9	31.2
International Avg (n=5)	2008	5056	30.3	9.8	15.2	14.3	30.3	20.3	10.1	0.0	28.4	31.9
	2015	4643	28.1	10.3	16.2	16.1	28.1	15.7	11.9	1.7	27.3	29.4

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_07 (MA13017): Geometry / Applying Type: MC Key: E
Label: Equation of perpendicular line

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1060	44.6	21.3	5.7	9.2	9.2	44.6	10.1	0.0	46.6	43.5
	2015	1103	40.1	19.1	5.7	9.6	13.0	40.1	9.3	3.2	44.0	37.9
Lebanon	2008	806	66.2	17.8	0.8	6.2	5.6	66.2	3.3	0.1	66.2	66.2
	2015	383	53.0	18.8	3.3	8.4	8.0	53.0	4.0	4.6	58.9	49.9
Norway	2008	962	22.9	27.2	9.6	14.0	12.7	22.9	13.6	0.0	23.1	22.8
	2015	853	22.7	25.5	9.5	17.2	10.5	22.7	12.8	1.8	23.4	22.3
Russian Federation 6hr+	2008	1597	48.6	34.1	3.5	5.5	5.7	48.6	2.7	0.0	46.9	49.9
	2015	1151	45.2	28.9	3.1	9.1	6.5	45.2	6.3	0.9	42.5	47.5
Slovenia	2008	1066	46.6	17.9	4.9	12.6	10.3	46.6	7.7	0.0	46.9	46.2
	2015	981	46.5	17.6	6.5	12.2	10.5	46.5	6.0	0.7	46.8	46.0
Sweden	2008	1159	23.3	26.4	11.0	17.6	14.3	23.3	7.1	0.3	23.2	23.3
	2015	1321	18.7	26.9	11.3	18.9	12.7	18.7	6.9	4.6	16.7	20.0
International Avg (n=5)	2008	5053	40.7	22.1	6.4	11.9	10.4	40.7	8.4	0.1	41.2	40.4
	2015	4641	36.2	21.6	7.2	13.3	11.0	36.2	7.8	3.0	38.0	35.2

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_08 (MA13018): Geometry / Knowing Type: MC Key: B
Label: Difference of two vectors

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	50.9	2.0	50.9	24.6	3.7	3.3	15.5	0.0	49.2	51.8
	2015	1103	36.9	3.3	36.9	28.1	7.0	4.5	16.3	3.9	38.2	36.1
Lebanon	2008	809	85.7	0.4	85.7	11.3	0.2	0.8	1.4	0.1	86.4	85.5
	2015	385	72.2	2.2	72.2	12.6	1.6	2.2	4.5	4.7	78.3	69.0
Norway	2008	964	78.0	0.7	78.0	18.5	0.6	1.6	0.5	0.0	79.0	77.4
	2015	853	79.5	0.6	79.5	14.0	0.6	1.3	1.6	2.3	82.7	77.5
Russian Federation 6hr+	2008	1597	81.7	1.0	81.7	14.6	0.6	1.8	0.3	0.0	81.4	81.9
	2015	1151	76.9	0.6	76.9	18.4	0.8	1.7	0.3	1.4	75.3	78.1
Slovenia	2008	1066	50.2	2.8	50.2	29.5	8.5	2.8	6.1	0.1	52.2	46.9
	2015	981	47.3	3.6	47.3	32.2	7.6	2.8	5.7	0.7	46.6	48.2
Sweden	2008	1159	44.7	3.4	44.7	32.7	7.0	5.2	6.2	0.8	42.3	46.3
	2015	1321	37.4	4.3	37.4	29.2	8.9	6.5	7.6	6.1	33.4	40.1

International Avg (n=5)	2008	5059	61.9	1.9	61.9	23.3	4.0	2.7	6.0	0.2	61.8	61.6
	2015	4643	54.6	2.8	54.6	23.2	5.2	3.5	7.2	3.5	55.8	54.2

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_09 (MA13019): Geometry / Applying Type: MC Key: B
Label: Equation representing set of points

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	23.5	19.1	23.5	16.8	10.5	30.1	0.1	20.8	24.9
	2015	1103	20.4	21.3	20.4	21.3	9.7	19.5	7.9	18.7	21.3
Lebanon	2008	809	32.2	19.4	32.2	20.9	9.1	18.3	0.1	35.0	31.0
	2015	385	34.6	14.1	34.6	17.7	9.6	17.5	6.4	36.8	33.4
Norway	2008	965	20.8	28.5	20.8	29.0	6.8	14.9	0.0	14.5	24.7
	2015	853	26.6	23.1	26.6	28.8	7.8	11.2	2.4	24.3	28.0
Russian Federation 6hr+	2008	1597	33.5	30.0	33.5	22.7	9.2	4.5	0.0	30.8	35.7
	2015	1151	34.8	24.6	34.8	20.0	12.0	7.1	1.4	35.9	34.0
Slovenia	2008	1066	16.9	27.6	16.9	35.9	6.5	12.9	0.2	15.2	19.7
	2015	981	18.6	25.7	18.6	36.0	6.6	11.1	2.1	15.2	23.3
Sweden	2008	1159	20.4	26.8	20.4	31.2	9.9	10.7	1.0	17.1	22.6
	2015	1321	22.6	25.7	22.6	29.2	9.2	6.3	7.0	22.2	22.8
International Avg (n=5)	2008	5060	22.8	24.3	22.8	26.8	8.6	17.4	0.3	20.5	24.6
	2015	4643	24.5	22.0	24.5	26.6	8.6	13.1	5.2	23.4	25.8

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M1_10 (MA13020): Geometry / Applying Type: MC Key: C
Label: Value of vector in triangle

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	23.2	13.4	9.2	23.2	8.4	8.8	36.9	0.1	19.3	25.2
	2015	1103	17.9	13.1	17.2	17.9	9.8	12.8	17.5	11.7	15.3	19.3
Lebanon	2008	807	51.1	12.2	4.7	51.1	3.5	9.2	19.1	0.2	50.3	51.5
	2015	385	43.9	10.3	4.7	43.9	6.5	10.0	14.4	10.2	43.1	44.4
Norway	2008	963	36.2	15.4	20.0	36.2	8.3	12.0	8.2	0.0	37.3	35.5
	2015	853	49.3	10.1	12.3	49.3	6.5	10.4	5.2	6.1	45.2	51.8
Russian Federation 6hr+	2008	1596	62.2	16.9	5.3	62.2	2.3	10.4	3.0	0.0	57.4	66.0
	2015	1151	55.8	15.8	8.5	55.8	4.2	8.5	4.5	2.7	55.3	56.1
Slovenia	2008	1066	36.8	15.5	15.5	36.8	6.5	12.6	13.0	0.2	37.0	36.5
	2015	981	42.1	15.9	13.6	42.1	7.8	10.0	6.6	4.0	40.3	44.8
Sweden	2008	1159	18.9	15.7	29.7	18.9	14.6	9.9	10.1	1.0	21.5	17.3
	2015	1320	18.4	18.3	25.8	18.4	13.7	8.3	7.4	8.2	20.3	17.1
International Avg (n=5)	2008	5056	33.3	14.5	15.8	33.3	8.2	10.5	17.4	0.3	33.1	33.2
	2015	4642	34.3	13.5	14.7	34.3	8.8	10.3	10.2	8.0	32.8	35.5

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M3_01 (MA23005): Algebra / Knowing Type: MC Key: B
Label: Which term has a value of 243

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1081	38.8	13.2	38.8	10.5	26.2	11.3	0.0	30.6	43.0
	2015	1118	35.6	13.3	35.6	10.5	26.7	13.7	0.1	26.5	41.0
Lebanon	2008	799	48.3	25.1	48.3	3.8	16.5	6.4	0.0	52.4	46.6
	2015	382	46.5	24.5	46.5	4.2	19.1	5.8	0.0	47.2	46.2
Norway	2008	965	60.2	13.2	60.2	5.5	18.2	2.8	0.0	54.5	63.8
	2015	839	58.8	14.9	58.8	7.0	16.0	3.3	0.0	55.0	60.9
Russian Federation 6hr+	2008	1588	76.3	11.0	76.3	3.5	8.3	1.0	0.0	74.8	77.4
	2015	1134	79.5	8.9	79.5	3.1	8.0	0.6	0.0	75.9	83.0
Slovenia	2008	1090	50.8	12.1	50.8	7.5	22.9	6.7	0.0	42.7	61.7
	2015	984	56.9	10.6	56.9	8.3	19.3	4.9	0.0	50.3	67.3
Sweden	2008	1144	43.1	14.9	43.1	12.4	25.3	4.2	0.1	34.8	48.7
	2015	1318	44.5	14.2	44.5	11.5	23.9	5.7	0.0	35.2	50.3
International Avg (n=5)	2008	5079	48.2	15.7	48.2	7.9	21.8	6.3	0.0	43.0	52.8
	2015	4641	48.5	15.5	48.5	8.3	21.0	6.7	0.0	42.8	53.1

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M3_02 (MA23145): Algebra / Knowing Type: CR 1 Point
Label: How many 3 digit numbers formed

COUNTRY	Year	N	10 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1082	15.9	4.1	63.0	17.0	0.0	15.9	14.2	16.8
	2015	1116	17.5	3.3	57.7	21.4	0.1	17.5	15.3	18.7
Lebanon	2008	802	41.5	9.0	40.0	9.5	0.0	41.5	47.7	39.1
	2015	383	44.0	4.1	40.1	11.8	0.0	44.0	45.8	42.9
Norway	2008	966	29.9	11.0	49.7	9.4	0.0	29.9	25.5	32.5
	2015	839	41.6	6.1	40.3	12.0	0.0	41.6	41.9	41.5
Russian Federation 6hr+	2008	1588	37.6	2.7	48.0	11.7	0.0	37.6	32.7	41.6
	2015	1134	47.8	5.4	38.4	8.4	0.0	47.8	45.8	49.8
Slovenia	2008	1090	45.4	2.6	46.1	5.9	0.0	45.4	39.7	53.0
	2015	984	53.7	2.2	38.1	6.0	0.0	53.7	50.5	58.5
Sweden	2008	1144	19.1	9.7	63.2	7.9	0.1	19.1	15.3	21.6
	2015	1318	32.2	6.1	54.9	6.8	0.0	32.2	27.4	35.1

International Avg (n=5)	2008	5084	30.3	7.3	52.4	10.0	0.0	30.3	28.5	32.6
	2015	4640	37.8	4.4	46.2	11.6	0.0	37.8	36.2	39.4

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M3_03 (MA23187): Algebra / Applying Type: CR 2 Points
Label: New diameter of soup can

COUNTRY	Year	N	20 %	21 %	10 %	11 %	12 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1069	32.1	0.1	5.3	0.0	0.0	0.2	39.3	22.9	0.1	37.5	32.2	27.4	34.6
	2015	1117	31.6	0.0	3.3	6.0	0.0	0.1	35.2	23.6	0.1	41.0	31.6	30.3	32.4
Lebanon	2008	802	42.2	0.1	7.4	0.0	0.0	0.2	34.5	15.6	0.0	49.7	42.4	44.7	41.4
	2015	383	36.5	0.0	10.7	2.1	0.0	0.0	32.0	18.7	0.0	49.3	36.5	31.3	39.5
Norway	2008	966	55.6	0.7	2.7	15.3	0.2	0.5	17.6	7.5	0.0	74.4	56.3	57.7	55.4
	2015	839	50.9	0.3	8.9	14.5	0.0	0.0	17.0	8.3	0.1	74.6	51.2	58.3	47.2
Russian Federation 6hr+	2008	1588	55.8	0.1	8.1	2.0	0.2	0.0	21.5	12.4	0.0	66.0	55.9	54.9	56.6
	2015	1134	54.4	0.6	12.3	0.4	0.1	0.1	20.0	12.1	0.0	67.8	55.0	52.8	57.2
Slovenia	2008	1090	45.2	0.0	16.3	1.6	0.0	0.0	27.5	9.4	0.0	63.1	45.2	45.6	44.8
	2015	983	32.2	0.0	16.4	17.4	0.2	0.0	26.9	7.0	0.0	66.1	32.2	28.9	37.4
Sweden	2008	1144	59.5	0.2	5.2	9.8	0.0	0.2	19.3	5.8	0.1	74.6	59.7	62.1	58.0
	2015	1318	57.4	0.1	8.3	0.7	0.0	0.0	25.1	8.3	0.1	66.5	57.5	63.0	54.1
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International Avg (n=5)	2008	5071	46.9	0.2	7.4	5.3	0.0	0.2	27.7	12.2	0.0	59.9	47.1	47.5	46.9
	2015	4640	41.7	0.1	9.5	8.1	0.0	0.0	27.2	13.2	0.1	59.5	41.8	42.4	42.1
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V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M3_04 (MA23201): Algebra / Reasoning Type: CR 1 Point
Label: What is the error Carl made

COUNTRY	Year	N	10 %	11 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1081	40.7	0.0	39.8	19.5	0.1	40.7	47.1	37.4
	2015	1118	29.5	1.0	49.9	19.4	0.1	30.6	28.2	32.0
Lebanon	2008	802	79.1	0.0	15.0	5.9	0.0	79.1	83.8	77.3
	2015	383	66.6	2.0	27.4	4.1	0.0	68.6	68.5	68.6
Norway	2008	966	23.7	0.0	54.4	22.0	0.0	23.7	18.6	26.8
	2015	839	41.2	1.7	41.5	15.4	0.1	42.9	46.5	40.9
Russian Federation 6hr+	2008	1587	67.7	0.0	28.4	3.9	0.0	67.7	68.7	67.0
	2015	1134	60.1	1.9	31.8	6.2	0.0	62.0	57.7	66.3
Slovenia	2008	1090	34.5	0.0	50.6	15.0	0.0	34.5	33.7	35.5
	2015	983	43.4	1.4	44.5	10.6	0.0	44.9	40.5	51.6
Sweden	2008	1144	32.1	0.0	41.4	26.2	0.3	32.1	30.1	33.5
	2015	1317	36.7	0.9	39.6	22.6	0.1	37.7	37.1	38.0
International Avg (n=5)	2008	5083	42.0	0.0	40.2	17.7	0.1	42.0	42.7	42.1
	2015	4640	43.5	1.4	40.6	14.4	0.1	44.9	44.1	46.2

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M3_05 (MA23154): Calculus / Knowing Type: CR 2 Points
Label: Second derivative of function given

COUNTRY	Year	N	20 %	10 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1082	40.6	11.8	36.8	10.8	0.1	52.4	40.6	46.3	37.6
	2015	1118	33.0	12.1	41.5	13.1	0.2	45.2	33.0	33.9	32.5
Lebanon	2008	802	74.3	13.9	10.8	0.9	0.0	88.2	74.3	75.1	74.0
	2015	383	68.8	22.6	7.7	0.9	0.0	91.4	68.8	65.0	71.0
Norway	2008	966	21.1	8.5	62.0	8.4	0.0	29.6	21.1	18.8	22.6
	2015	839	41.8	12.5	41.3	3.8	0.6	54.4	41.8	40.3	42.7
Russian Federation 6hr+	2008	1587	63.9	11.2	20.3	4.5	0.0	75.1	63.9	65.3	62.8
	2015	1134	59.1	4.3	26.2	10.3	0.0	63.4	59.1	57.2	60.9
Slovenia	2008	1090	31.4	11.1	49.2	8.3	0.0	42.4	31.4	29.3	34.3
	2015	984	34.3	13.1	46.0	6.6	0.0	47.4	34.3	32.8	36.6
Sweden	2008	1144	35.7	10.2	44.4	9.3	0.3	46.0	35.7	37.6	34.5
	2015	1318	42.6	12.6	38.1	6.7	0.1	55.2	42.6	41.9	43.0

International Avg (n=5)	2008	5084	40.6	11.1	40.6	7.5	0.1	51.7	40.6	41.4	40.6
	2015	4642	44.1	14.6	34.9	6.2	0.2	58.7	44.1	42.8	45.1

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M3_06 (MA23206): Calculus / Reasoning Type: MC Key: D
Label: Sign of derivative function

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1081	45.2	44.1	1.6	4.4	45.2	4.7	0.1	46.7	44.4
	2015	1118	37.5	42.9	3.0	8.3	37.5	8.1	0.2	36.1	38.3
Lebanon	2008	801	80.2	16.5	0.5	2.2	80.2	0.6	0.0	80.3	80.2
	2015	383	80.0	14.9	2.1	1.6	80.0	1.4	0.0	80.5	79.7
Norway	2008	966	53.4	28.1	8.3	8.0	53.4	2.3	0.0	45.3	58.3
	2015	839	73.3	14.7	3.9	5.9	73.3	1.5	0.6	72.7	73.7
Russian Federation 6hr+	2008	1588	69.6	23.9	1.1	4.6	69.6	0.8	0.0	65.6	72.7
	2015	1134	78.6	14.7	0.9	4.2	78.6	1.5	0.0	76.7	80.6
Slovenia	2008	1090	39.1	41.4	4.4	11.8	39.1	3.3	0.0	32.8	47.6
	2015	984	42.9	36.9	4.6	12.0	42.9	3.6	0.0	38.3	50.0
Sweden	2008	1144	68.4	16.0	5.2	8.8	68.4	1.3	0.3	64.7	71.0
	2015	1317	71.2	12.4	5.5	8.5	71.2	2.4	0.1	68.3	73.0
International Avg (n=5)	2008	5082	57.3	29.2	4.0	7.0	57.3	2.4	0.1	54.0	60.3
	2015	4641	61.0	24.4	3.8	7.2	61.0	3.4	0.2	59.2	62.9

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M3_07 (MA23166): Calculus / Applying Type: CR 1 Point
Label: Units of commodity to max profit

COUNTRY	Year	N	10 %	11 %	70 %	71 %	72 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1081	2.4	0.0	0.4	0.0	0.0	26.1	71.2	0.1	2.4	2.4	2.3
	2015	1115	3.0	0.1	0.5	0.0	0.0	31.7	64.2	0.5	3.1	1.0	4.3
Lebanon	2008	802	4.7	0.0	0.1	0.1	0.1	59.2	35.8	0.0	4.7	6.2	4.2
	2015	383	9.1	0.0	0.3	0.0	0.0	49.3	41.3	0.0	9.1	10.5	8.3
Norway	2008	966	7.4	3.8	1.4	0.7	6.9	43.6	36.2	0.0	11.2	7.1	13.8
	2015	839	10.4	1.3	1.7	0.1	3.1	44.8	37.9	0.6	11.7	6.8	14.5
Russian Federation 6hr+	2008	1587	20.8	0.0	0.7	0.0	0.1	36.8	41.5	0.0	20.9	19.1	22.3
	2015	1134	17.4	0.1	0.8	0.1	0.1	40.3	41.2	0.0	17.5	12.5	22.4
Slovenia	2008	1090	2.3	0.0	0.2	0.0	0.5	71.1	26.0	0.0	2.3	1.1	4.0
	2015	983	4.6	0.1	0.4	0.0	0.0	67.6	27.2	0.1	4.7	2.4	8.2
Sweden	2008	1144	11.2	2.0	0.8	0.3	1.1	63.7	20.3	0.6	13.3	12.2	14.0
	2015	1317	10.5	1.8	0.7	0.1	2.2	58.5	26.2	0.2	12.3	10.2	13.6
International Avg (n=5)	2008	5083	5.6	1.2	0.6	0.2	1.7	52.7	37.9	0.1	6.8	5.8	7.7
	2015	4637	7.5	0.6	0.7	0.0	1.1	50.4	39.4	0.3	8.2	6.2	9.8

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M3_08 (MA23043): Calculus / Applying Type: CR 2 Points
Label: Area enclosed by graphs of functions

COUNTRY	Year	N	20 %	21 %	10 %	11 %	12 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1081	8.5	0.0	9.1	0.0	0.0	0.1	34.6	47.6	0.1	17.5	8.5	9.8	7.8
	2015	1118	6.2	0.1	7.5	0.0	0.6	0.0	31.9	53.2	0.5	14.4	6.3	6.2	6.3
Lebanon	2008	802	18.4	0.0	13.1	0.1	1.4	0.0	51.7	15.3	0.0	33.0	18.4	23.4	16.4
	2015	383	19.6	0.8	15.5	0.0	0.6	0.0	43.4	20.0	0.0	36.6	20.5	18.3	21.7
Norway	2008	966	7.3	12.6	4.3	1.4	0.2	6.2	21.5	46.3	0.1	25.9	19.9	17.1	21.7
	2015	839	16.1	3.7	9.9	0.0	1.1	2.2	28.7	37.5	0.8	30.8	19.8	24.4	17.3
Russian Federation 6hr+	2008	1587	32.0	0.0	9.6	0.1	0.3	0.0	39.8	18.1	0.0	42.1	32.0	29.6	34.0
	2015	1134	21.9	0.1	7.8	0.1	0.7	0.1	37.7	31.7	0.1	30.4	21.9	18.7	25.1
Slovenia	2008	1090	14.5	0.0	16.2	0.0	1.7	0.0	54.8	12.8	0.1	32.3	14.5	12.9	16.6
	2015	984	15.2	0.1	15.4	0.1	1.6	0.1	54.7	12.8	0.1	32.3	15.3	14.7	16.2
Sweden	2008	1144	14.7	4.4	10.7	0.8	0.1	2.2	34.8	31.7	0.7	30.6	19.1	19.9	18.5
	2015	1318	16.4	6.2	6.1	0.4	0.5	2.5	36.2	31.2	0.4	29.7	22.6	22.1	23.0
International Avg (n=5)	2008	5083	12.7	3.4	10.7	0.5	0.7	1.7	39.5	30.7	0.2	27.9	16.1	16.7	16.2
	2015	4642	14.7	2.2	10.9	0.1	0.9	1.0	39.0	30.9	0.4	28.8	16.9	17.1	16.9

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M3_09 (MA23076): Geometry / Applying Type: MC Key: C
Label: How long is distance between B and Q

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1081	49.5	11.0	19.1	49.5	7.6	12.7	0.1	46.2	51.2
	2015	1118	46.2	14.0	20.8	46.2	7.9	10.7	0.5	42.9	48.3
Lebanon	2008	802	55.6	13.2	13.9	55.6	6.5	10.5	0.2	57.4	54.9
	2015	382	53.8	11.9	15.5	53.8	4.4	14.4	0.0	53.5	54.0
Norway	2008	966	46.1	10.8	25.2	46.1	13.4	4.3	0.2	41.7	48.8
	2015	839	54.1	10.0	20.1	54.1	8.8	6.3	0.8	53.1	54.6
Russian Federation 6hr+	2008	1588	69.4	7.1	16.1	69.4	5.5	1.9	0.0	65.0	72.9
	2015	1134	69.1	5.4	17.9	69.1	5.4	2.2	0.1	67.0	71.1
Slovenia	2008	1090	57.1	9.7	18.3	57.1	9.3	5.6	0.1	51.1	65.2
	2015	984	58.4	10.8	16.6	58.4	9.5	4.6	0.1	52.9	66.9
Sweden	2008	1144	48.5	12.4	25.7	48.5	9.2	3.3	0.8	41.5	53.3
	2015	1318	49.2	12.6	23.9	49.2	8.1	5.3	0.8	43.1	53.0
International Avg (n=5)	2008	5083	51.4	11.4	20.4	51.4	9.2	7.3	0.3	47.6	54.7
	2015	4641	52.3	11.9	19.4	52.3	7.7	8.3	0.4	49.1	55.3

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M3_10 (MA23176): Geometry / Applying Type: MC Key: B
Label: What is the height of the lighthouse

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1080	53.2	8.7	53.2	18.6	8.5	10.5	0.5	48.6	55.5
	2015	1118	50.4	9.9	50.4	20.8	8.1	10.3	0.5	49.5	50.9
Lebanon	2008	801	64.3	1.7	64.3	19.5	5.2	8.9	0.3	67.4	63.1
	2015	383	61.5	2.3	61.5	18.5	6.3	11.4	0.0	54.7	65.4
Norway	2008	965	60.4	5.1	60.4	19.7	8.7	5.8	0.3	62.6	59.0
	2015	839	63.1	4.5	63.1	19.4	5.1	7.2	0.8	63.0	63.2
Russian Federation 6hr+	2008	1587	66.3	9.1	66.3	13.9	6.6	4.1	0.0	62.4	69.4
	2015	1133	62.0	9.5	62.0	13.9	6.6	7.9	0.1	60.6	63.4
Slovenia	2008	1090	56.8	4.1	56.8	18.1	7.2	13.6	0.2	53.0	61.8
	2015	984	58.7	3.9	58.7	21.5	5.3	10.5	0.2	55.0	64.3
Sweden	2008	1144	63.1	3.6	63.1	21.1	5.9	4.8	1.5	62.8	63.3
	2015	1318	65.3	5.0	65.3	17.6	5.2	5.4	1.4	65.8	65.1
International Avg (n=5)	2008	5080	59.5	4.6	59.5	19.4	7.1	8.7	0.6	58.9	60.6
	2015	4642	59.8	5.1	59.8	19.5	6.0	9.0	0.6	57.6	61.8

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M3_11 (MA23098): Geometry / Knowing Type: MC Key: C
Label: Which is equivalent to equation

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1080	34.0	9.1	24.1	34.0	12.1	20.3	0.5	30.0	36.0
	2015	1118	33.8	13.6	30.3	33.8	9.3	12.5	0.5	36.8	32.1
Lebanon	2008	800	35.4	13.0	23.8	35.4	15.3	12.2	0.3	33.0	36.3
	2015	382	31.6	13.3	28.1	31.6	13.3	13.7	0.0	28.8	33.2
Norway	2008	961	32.7	12.1	35.0	32.7	15.2	4.6	0.4	31.7	33.4
	2015	839	40.2	9.9	30.9	40.2	13.3	5.0	0.8	34.0	43.6
Russian Federation 6hr+	2008	1588	55.1	8.9	23.4	55.1	9.3	3.4	0.0	49.6	59.4
	2015	1134	56.5	8.8	20.9	56.5	8.7	4.8	0.3	53.1	59.8
Slovenia	2008	1090	43.2	10.0	26.3	43.2	13.5	6.6	0.4	37.0	51.6
	2015	984	42.7	10.1	27.4	42.7	13.5	5.9	0.4	40.5	46.1
Sweden	2008	1144	39.5	10.1	25.1	39.5	14.8	8.7	1.8	39.1	39.8
	2015	1318	40.9	10.9	30.4	40.9	9.7	6.0	2.0	41.9	40.3

International Avg (n=5)	2008	5075	37.0	10.8	26.9	37.0	14.2	10.5	0.7	34.1	39.4
	2015	4641	37.8	11.6	29.5	37.8	11.8	8.6	0.7	36.4	39.1

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_01 (MA23144): Algebra / Knowing Type: MC Key: C
Label: Sum of infinite geometric series

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1067	10.2	2.9	68.0	10.2	5.5	12.8	0.5	9.2	10.8
	2015	1097	7.2	3.8	72.0	7.2	5.3	11.0	0.7	3.8	9.3
Lebanon	2008	801	36.9	12.8	29.9	36.9	5.3	14.7	0.3	44.7	33.6
	2015	393	34.8	11.3	30.5	34.8	6.6	14.7	2.0	35.1	34.7
Norway	2008	960	49.5	12.8	22.3	49.5	9.1	5.6	0.7	49.2	49.7
	2015	845	42.7	12.2	27.1	42.7	7.0	9.2	1.8	41.6	43.4
Russian Federation 6hr+	2008	1596	72.8	12.0	8.7	72.8	4.0	2.4	0.2	74.7	71.3
	2015	1146	66.0	13.6	12.8	66.0	4.0	3.4	0.3	65.2	66.6
Slovenia	2008	1079	36.9	15.4	26.6	36.9	9.5	11.1	0.5	36.0	38.2
	2015	957	37.8	13.7	28.4	37.8	9.2	10.6	0.3	33.4	44.3
Sweden	2008	1159	29.4	11.9	42.4	29.4	8.4	6.8	1.1	24.5	32.7
	2015	1297	27.1	14.2	39.9	27.1	9.5	7.3	1.9	21.1	31.5
International Avg (n=5)	2008	5066	32.6	11.2	37.9	32.6	7.5	10.2	0.6	32.7	33.0
	2015	4589	29.9	11.0	39.6	29.9	7.5	10.5	1.4	27.0	32.7

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_02 (MA23185): Algebra / Applying Type: MC Key: A
Label: Values of a and b in given function

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	56.3	56.3	10.6	11.9	5.7	14.8	0.7	60.9	54.1
	2015	0	.	.	.	.	.	.	.	.	.
Lebanon	2008	801	11.7	11.7	4.7	77.6	1.6	3.8	0.7	10.4	12.2
	2015	392	12.0	12.0	7.8	70.0	2.2	5.5	2.4	9.0	13.8
Norway	2008	959	27.4	27.4	19.7	25.5	10.6	15.9	0.9	27.7	27.2
	2015	844	25.0	25.0	18.0	32.7	7.9	14.1	2.4	21.2	27.5
Russian Federation 6hr+	2008	1596	76.0	76.0	8.0	9.7	2.0	4.1	0.2	75.9	76.1
	2015	1146	71.9	71.9	9.6	10.9	3.0	4.2	0.3	67.2	75.6
Slovenia	2008	1079	54.4	54.4	10.4	18.5	5.5	10.2	0.8	55.3	53.2
	2015	957	52.6	52.6	11.4	19.7	5.6	10.2	0.4	53.6	51.1
Sweden	2008	1159	39.6	39.6	16.7	20.4	11.3	9.8	2.2	41.4	38.4
	2015	1297	35.4	35.4	19.4	24.6	9.3	8.8	2.5	34.7	36.0
International Avg (n=5)	2008	5066	37.9	37.9	12.4	30.8	6.9	10.9	1.1	39.1	37.0
	2015	3490	31.3	31.3	14.2	36.7	6.3	9.7	1.9	29.6	32.1

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_03 (MA23054): Algebra / Applying Type: CR 2 Points
Label: What is the value of x in equation

COUNTRY	Year	N	20 %	21 %	10 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	13.5	0.0	16.5	0.0	0.7	27.0	40.7	1.7	30.0	13.5	13.0	13.7
	2015	1095	5.7	0.0	20.6	0.5	5.8	25.4	40.9	1.2	26.3	5.7	4.5	6.4
Lebanon	2008	801	30.1	1.4	30.7	0.2	0.1	27.5	9.5	0.7	62.2	31.4	34.9	30.0
	2015	392	18.2	0.2	37.2	5.8	0.3	18.7	16.5	3.3	55.5	18.3	24.5	14.8
Norway	2008	961	2.5	3.7	2.4	0.7	16.9	38.7	33.5	1.6	8.6	6.2	6.5	6.1
	2015	845	7.2	1.4	10.3	0.5	21.0	34.1	22.7	2.8	18.9	8.6	5.4	10.7
Russian Federation 6hr+	2008	1595	67.5	0.0	12.2	0.0	1.5	13.0	5.5	0.3	79.7	67.5	70.6	65.0
	2015	1146	50.2	0.0	18.3	0.1	3.4	13.6	13.9	0.5	68.5	50.2	50.2	50.2
Slovenia	2008	1079	18.3	0.0	8.6	0.0	12.3	40.3	19.4	1.0	26.9	18.3	18.0	18.8
	2015	957	27.1	0.1	13.7	0.0	4.0	37.7	16.9	0.5	40.9	27.2	27.1	27.4
Sweden	2008	1159	1.3	2.4	2.4	0.8	5.3	39.7	45.1	3.0	6.1	3.7	1.6	5.1
	2015	1297	2.7	3.2	8.0	0.4	4.7	33.9	43.9	3.0	14.0	6.0	4.3	7.2
International Avg (n=5)	2008	5068	13.1	1.5	12.1	0.3	7.1	34.6	29.6	1.6	26.8	14.6	14.8	14.7
	2015	4586	12.2	1.0	18.0	1.4	7.1	30.0	28.2	2.2	31.1	13.2	13.2	13.3

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M5_04 (MA23064): Algebra / Knowing Type: MC Key: A
Label: What is the value of k in polynomial

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	22.7	22.7	13.5	14.4	14.1	33.3	1.9	17.2	25.5
	2015	1097	21.8	21.8	18.6	19.2	15.5	22.7	2.2	23.0	21.0
Lebanon	2008	800	72.3	72.3	9.3	2.6	8.4	6.5	1.0	67.0	74.5
	2015	391	68.8	68.8	8.7	2.0	9.2	7.0	4.4	65.6	70.6
Norway	2008	960	23.0	23.0	17.7	22.9	12.1	22.5	1.8	20.2	24.8
	2015	845	27.3	27.3	19.9	19.6	12.3	18.0	2.9	26.3	28.0
Russian Federation 6hr+	2008	1595	47.0	47.0	15.3	16.3	11.6	9.5	0.3	46.6	47.3
	2015	1146	42.3	42.3	17.2	19.0	9.8	10.9	0.7	40.1	44.0
Slovenia	2008	1079	35.9	35.9	12.9	17.7	18.6	13.7	1.1	35.9	36.0
	2015	957	43.6	43.6	13.1	14.5	16.4	11.9	0.6	43.5	43.6
Sweden	2008	1159	25.5	25.5	21.2	22.2	14.8	13.1	3.2	24.3	26.3
	2015	1297	23.9	23.9	24.3	18.1	16.8	13.3	3.6	24.1	23.8
International Avg (n=5)	2008	5066	35.9	35.9	14.9	16.0	13.6	17.8	1.8	32.9	37.4
	2015	4587	37.1	37.1	16.9	14.7	14.0	14.6	2.7	36.5	37.4

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_05A (MA23131A): Algebra / Applying Type: CR 1 Point
Label: Length of straight line AB in meters

COUNTRY	Year	N	10 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	29.7	2.4	16.5	49.1	2.3	29.7	24.0	32.5
	2015	1097	21.2	1.7	18.0	56.2	2.9	21.2	19.2	22.4
Lebanon	2008	801	37.2	2.4	27.4	31.9	1.1	37.2	37.5	37.1
	2015	393	33.9	6.0	19.0	35.2	5.8	33.9	34.1	33.8
Norway	2008	961	51.9	2.6	18.7	24.8	2.0	51.9	48.7	53.9
	2015	845	33.5	4.0	24.4	33.9	4.1	33.5	31.2	35.1
Russian Federation 6hr+	2008	1596	59.7	6.9	15.0	17.6	0.8	59.7	55.3	63.3
	2015	1146	51.5	4.0	20.4	22.7	1.4	51.5	47.8	54.4
Slovenia	2008	1079	20.2	4.5	28.4	45.2	1.6	20.2	15.1	27.6
	2015	957	20.9	2.7	30.4	44.8	1.2	20.9	16.6	27.3
Sweden	2008	1159	38.7	2.1	29.4	26.3	3.4	38.7	35.7	40.8
	2015	1297	35.9	2.5	26.5	30.3	4.8	35.9	37.8	34.5

International Avg (n=5)	2008	5068	35.6	2.8	24.1	35.5	2.1	35.6	32.2	38.4
	2015	4589	29.1	3.4	23.6	40.1	3.8	29.1	27.7	30.6

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M5_05B (MA23131B): Calculus / Applying Type: CR 1 Point
Label: Cost to paint the deck

COUNTRY	Year	N	10 %	11 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	8.4	0.0	1.8	20.4	65.8	3.5	8.5	7.4	9.0
	2015	1097	4.1	0.2	1.6	22.5	67.9	3.7	4.2	3.0	5.0
Lebanon	2008	801	8.4	0.0	4.5	34.9	50.4	1.8	8.4	6.7	9.2
	2015	393	10.6	0.0	2.3	28.0	52.4	6.7	10.6	10.9	10.5
Norway	2008	961	30.0	0.4	2.6	28.4	36.3	2.2	30.5	27.1	32.6
	2015	845	12.8	0.4	3.5	30.5	48.4	4.4	13.2	12.3	13.8
Russian Federation 6hr+	2008	1596	26.1	0.1	8.7	35.2	29.1	0.9	26.2	23.0	28.9
	2015	1146	14.6	0.1	6.9	38.9	37.8	1.6	14.8	14.0	15.4
Slovenia	2008	1079	5.1	0.3	3.0	25.4	64.4	1.8	5.4	3.7	7.9
	2015	957	4.0	0.5	3.4	26.3	64.5	1.3	4.5	3.0	6.8
Sweden	2008	1159	17.6	0.5	3.1	38.3	36.8	3.8	18.1	15.8	19.7
	2015	1297	17.2	0.3	2.7	34.5	39.6	5.6	17.6	15.2	19.3
International Avg (n=5)	2008	5068	13.9	0.3	3.0	29.5	50.7	2.6	14.2	12.1	15.7
	2015	4589	9.7	0.3	2.7	28.4	54.6	4.3	10.0	8.9	11.1

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M5_06 (MA23157): Calculus / Reasoning Type: CR 2 Points
Label: Find point of maxima and inflection

COUNTRY	Year	N	20 %	10 %	11 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	8.0	5.3	12.6	25.4	44.9	3.9	25.8	8.0	4.9	9.5
	2015	1095	6.6	3.4	15.2	26.9	43.7	4.1	25.3	6.6	6.0	7.0
Lebanon	2008	801	13.7	7.5	41.7	26.6	8.4	2.1	63.0	13.7	11.2	14.8
	2015	393	21.7	5.8	35.5	22.1	8.2	6.7	62.9	21.7	16.0	24.9
Norway	2008	961	5.7	0.8	43.4	28.1	19.5	2.5	50.0	5.7	3.4	7.2
	2015	845	17.1	2.0	37.4	25.0	13.8	4.8	56.5	17.1	13.6	19.4
Russian Federation 6hr+	2008	1596	36.0	18.0	24.0	11.4	9.7	0.9	78.1	36.0	32.5	39.0
	2015	1146	40.7	16.0	19.9	10.5	11.1	1.8	76.6	40.7	37.8	43.0
Slovenia	2008	1079	3.7	5.4	25.1	44.9	19.0	1.8	34.3	3.7	3.1	4.6
	2015	957	6.5	6.1	25.5	40.5	20.1	1.4	38.1	6.5	4.0	10.1
Sweden	2008	1159	9.1	10.4	11.2	44.8	20.3	4.2	30.7	9.1	8.5	9.4
	2015	1297	14.3	8.5	14.6	36.7	19.7	6.1	37.5	14.3	12.4	15.8

International Avg (n=5)	2008	5068	8.0	5.9	26.8	34.0	22.4	2.9	40.8	8.0	6.2	9.1
	2015	4587	13.2	5.2	25.6	30.3	21.1	4.6	44.0	13.2	10.4	15.4

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.

M5_07 (MA23045): Calculus / Applying Type: MC Key: C
Label: What is the value of a

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1067	21.1	15.4	22.9	21.1	8.2	28.2	4.2	16.6	23.3
	2015	1097	19.2	15.0	30.2	19.2	7.8	23.5	4.3	14.2	22.4
Lebanon	2008	801	19.8	27.4	13.6	19.8	10.3	26.9	2.1	13.6	22.4
	2015	393	23.1	22.6	14.1	23.1	9.6	23.9	6.7	20.2	24.7
Norway	2008	960	23.3	18.4	27.4	23.3	13.8	13.6	3.4	22.2	24.0
	2015	845	22.4	14.6	32.2	22.4	10.1	15.6	5.1	20.3	23.7
Russian Federation 6hr+	2008	1595	37.4	17.3	21.9	37.4	13.7	8.6	1.0	32.4	41.6
	2015	1146	32.2	13.7	30.0	32.2	11.1	11.1	1.9	29.6	34.2
Slovenia	2008	1079	21.1	25.4	21.0	21.1	13.2	17.4	1.9	18.8	24.4
	2015	957	19.9	21.4	29.6	19.9	11.7	16.0	1.4	17.2	23.9
Sweden	2008	1159	27.5	15.5	26.9	27.5	15.0	10.5	4.6	24.7	29.4
	2015	1297	26.6	16.5	24.2	26.6	13.4	12.5	6.8	22.2	29.8
International Avg (n=5)	2008	5066	22.5	20.4	22.4	22.5	12.1	19.3	3.3	19.2	24.7
	2015	4589	22.2	18.0	26.1	22.2	10.5	18.3	4.9	18.8	24.9

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_08 (MA23082): Geometry / Applying Type: MC Key: A
Label: Coordinates of fourth vertex D

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1061	55.9	55.9	13.5	8.7	8.0	9.0	5.0	53.2	57.3
	2015	1097	52.8	52.8	17.4	9.2	7.4	8.4	4.7	52.8	52.8
Lebanon	2008	0	.	.	.	.	.	.	.	.	.
	2015	393	70.7	70.7	6.1	2.2	3.4	8.6	9.0	73.6	69.0
Norway	2008	958	56.3	56.3	13.2	10.0	8.8	7.1	4.7	57.9	55.3
	2015	845	62.2	62.2	9.1	8.0	6.0	8.5	6.2	58.4	64.7
Russian Federation 6hr+	2008	1595	73.3	73.3	9.1	6.2	3.6	6.7	1.1	73.1	73.4
	2015	1146	69.3	69.3	12.1	5.9	3.5	6.7	2.5	69.8	69.0
Slovenia	2008	1079	52.5	52.5	19.8	5.9	7.1	11.8	3.0	49.3	57.0
	2015	957	53.3	53.3	18.1	9.8	7.4	9.5	1.9	50.8	57.1
Sweden	2008	1159	48.8	48.8	20.8	11.7	8.4	4.8	5.5	46.9	50.1
	2015	1297	43.7	43.7	18.6	12.3	8.9	7.0	9.5	43.5	43.7
International Avg (n=5)	2008	4257	53.4	53.4	16.8	9.0	8.1	8.2	4.5	51.8	54.9
	2015	4589	56.5	56.5	13.9	8.3	6.6	8.4	6.3	55.8	57.5

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_09 (MA23020): Geometry / Knowing Type: MC Key: D
Label: Amplitude and period of function

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1067	31.9	21.6	8.0	11.4	31.9	21.7	5.4	26.6	34.5
	2015	1097	29.7	26.1	9.2	15.3	29.7	14.9	4.8	25.0	32.7
Lebanon	2008	801	45.4	26.7	3.2	6.7	45.4	13.8	4.3	49.6	43.6
	2015	393	38.4	30.7	5.2	5.4	38.4	11.1	9.2	36.8	39.3
Norway	2008	959	46.2	31.2	4.2	5.7	46.2	7.6	5.1	47.4	45.4
	2015	845	38.5	37.1	3.5	4.7	38.5	8.9	7.3	36.6	39.8
Russian Federation 6hr+	2008	1596	56.9	26.1	5.3	7.4	56.9	2.9	1.3	53.7	59.5
	2015	1146	54.0	23.8	6.7	8.2	54.0	4.6	2.6	51.5	55.9
Slovenia	2008	1079	39.2	27.6	7.3	15.4	39.2	7.4	3.0	39.6	38.5
	2015	957	44.4	24.8	8.1	13.2	44.4	7.6	1.9	43.7	45.5
Sweden	2008	1159	42.4	34.9	5.6	7.5	42.4	3.6	6.1	40.5	43.6
	2015	1297	43.0	29.8	4.9	8.2	43.0	4.2	9.9	41.7	44.0
International Avg (n=5)	2008	5065	41.0	28.4	5.7	9.4	41.0	10.8	4.8	40.8	41.1
	2015	4589	38.8	29.7	6.1	9.4	38.8	9.3	6.6	36.7	40.3

DIFF = Percent correct
Because of missing gender information, some totals may appear inconsistent.

M5_10 (MA23094): Geometry / Applying Type: CR 2 Points
Label: Find length of BC in triangle ABC

COUNTRY	Year	N	20 %	21 %	22 %	10 %	11 %	12 %	13 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	1068	2.2	0.5	0.1	3.7	0.9	0.0	0.0	0.0	44.0	38.7	9.9	7.3	2.8	2.9	2.8
	2015	1095	2.4	0.0	0.0	3.8	4.4	0.1	0.0	0.1	43.2	38.0	8.1	10.7	2.4	4.1	1.3
Lebanon	2008	801	10.8	0.0	0.0	10.9	6.2	0.0	0.0	0.0	58.8	8.6	4.7	27.9	10.8	13.7	9.7
	2015	393	12.9	0.0	0.1	6.9	10.6	0.0	0.0	0.8	46.2	12.3	10.1	30.6	13.1	19.0	9.7
Norway	2008	961	4.9	0.1	0.5	15.6	9.1	0.5	0.0	0.2	50.6	12.2	6.2	30.7	5.5	6.0	5.2
	2015	845	3.0	0.0	0.0	7.3	5.5	0.1	0.0	0.2	52.1	22.7	9.0	15.9	3.0	4.8	1.9
Russian Federation 6hr+	2008	1596	32.1	0.8	0.0	9.9	6.5	0.2	0.0	0.3	36.1	12.5	1.7	49.4	32.9	33.6	32.3
	2015	1146	30.3	0.2	0.0	9.0	4.1	0.1	0.4	0.0	30.9	21.6	3.4	44.1	30.6	30.4	30.7
Slovenia	2008	1079	9.6	0.0	0.0	7.3	5.4	0.0	0.0	0.0	67.1	6.9	3.7	22.3	9.6	10.3	8.6
	2015	957	13.5	0.2	0.0	10.4	5.3	0.2	0.5	0.1	60.5	6.8	2.5	30.2	13.8	13.2	14.5
Sweden	2008	1159	2.8	0.0	0.3	19.0	4.9	0.1	0.0	0.1	53.0	12.5	7.4	27.0	3.1	3.7	2.7
	2015	1296	2.8	0.0	0.0	8.0	5.5	0.0	0.1	0.0	49.1	23.7	10.7	16.5	2.8	3.5	2.3
International Avg (n=5)	2008	5068	6.1	0.1	0.2	11.3	5.3	0.1	0.0	0.1	54.7	15.8	6.4	23.0	6.4	7.3	5.8
	2015	4586	6.9	0.0	0.0	7.3	6.3	0.1	0.1	0.2	50.2	20.7	8.1	20.8	7.0	8.9	6.0

V1 = Percent scoring 1 pt or better; V2 = Percent scoring 2 pts; Percent right for boys and girls corresponds to percent obtaining full credit.
Because of missing gender information, some totals may appear inconsistent.