

Pl_01 (PA13011): Wave Phenom. & Atomic/Nuclear / Knowing Type: MC Key: B
Label: Fraunhofer lines

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	52.7	10.0	52.7	10.8	6.7	6.1	13.7	0.0	55.0	51.1
	2015	1150	42.1	16.8	42.1	11.4	7.2	9.7	12.3	0.5	43.8	40.5
Lebanon	2008	802	52.5	22.8	52.5	10.0	3.7	5.4	5.7	0.0	56.8	50.7
	2015	386	47.1	18.5	47.1	9.0	4.7	8.6	11.2	0.9	49.0	46.0
Norway	2008	819	74.4	4.2	74.4	11.0	2.8	6.6	1.0	0.0	79.1	72.4
	2015	831	87.3	1.3	87.3	6.5	1.3	2.4	1.0	0.1	89.0	86.6
Russian Federation	2008	1576	39.7	32.2	39.7	9.8	9.3	8.1	0.9	0.0	41.2	38.5
	2015	1270	43.5	28.7	43.5	11.6	6.2	7.6	2.2	0.2	47.0	40.9
Slovenia	2008	544	53.2	11.4	53.2	12.2	11.4	10.3	1.4	0.0	60.4	50.6
	2015	375	60.1	14.3	60.1	9.9	8.5	5.5	1.6	0.0	67.9	56.8
Sweden	2008	1153	50.7	9.1	50.7	18.2	8.5	12.6	0.8	0.2	59.9	45.6
	2015	1234	44.5	13.6	44.5	15.4	8.2	15.3	2.6	0.4	48.1	41.9
International Avg (n=6)	2008	5823	53.9	15.0	53.9	12.0	7.1	8.2	3.9	0.0	58.7	51.5
	2015	5246	54.1	15.6	54.1	10.7	6.0	8.2	5.2	0.4	57.5	52.1

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

Pl_02 (PA13012): Mechanics & Thermodynamics / Applying Type: MC Key: C
Label: Force on connected springs

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	927	10.8	53.0	2.2	10.8	29.0	5.0	0.0	8.7	12.2
	2015	1150	9.1	51.4	2.7	9.1	31.1	5.2	0.5	6.4	11.5
Lebanon	2008	804	10.3	56.0	0.5	10.3	30.9	2.2	0.0	11.2	10.0
	2015	386	12.9	50.9	2.6	12.9	27.4	5.0	1.1	12.8	12.9
Norway	2008	819	23.4	43.0	0.8	23.4	32.6	0.1	0.0	19.4	25.1
	2015	831	33.7	35.6	1.3	33.7	28.4	0.9	0.1	23.3	37.9
Russian Federation	2008	1576	30.3	33.8	1.3	30.3	34.4	0.2	0.0	24.4	34.9
	2015	1270	35.2	34.1	0.9	35.2	28.9	0.7	0.2	35.9	34.7
Slovenia	2008	544	29.5	38.9	1.1	29.5	30.4	0.0	0.0	21.0	32.6
	2015	375	34.6	37.9	0.5	34.6	26.3	0.8	0.0	30.1	36.4
Sweden	2008	1153	23.6	34.7	1.2	23.6	40.2	0.2	0.2	15.8	27.9
	2015	1234	20.3	38.4	1.2	20.3	37.1	2.6	0.5	16.6	22.9
International Avg (n=6)	2008	5823	21.3	43.2	1.2	21.3	32.9	1.3	0.0	16.8	23.8
	2015	5246	24.3	41.4	1.5	24.3	29.9	2.5	0.4	20.9	26.1

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

Pl_03 (PA13013): Wave Phenom. & Atomic/Nuclear / Reasoning Type: MC Key: C
Label: Rutherford experiment

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	36.8	8.0	10.7	36.8	27.5	17.0	0.0	32.4	39.8
	2015	1150	34.5	10.3	12.5	34.5	27.2	15.0	0.5	29.9	38.5
Lebanon	2008	804	26.0	12.0	18.2	26.0	31.0	12.8	0.0	22.0	27.6
	2015	385	22.7	12.8	20.0	22.7	25.5	17.2	1.8	23.1	22.4
Norway	2008	819	37.1	7.2	8.5	37.1	45.4	1.9	0.0	27.4	41.2
	2015	831	39.6	6.2	11.7	39.6	39.1	3.3	0.1	35.7	41.2
Russian Federation	2008	1576	48.0	6.6	15.2	48.0	29.3	0.8	0.0	42.3	52.6
	2015	1270	49.2	7.6	15.4	49.2	26.4	1.2	0.2	46.8	51.0
Slovenia	2008	544	32.2	10.4	22.8	32.2	33.1	1.5	0.0	30.0	33.0
	2015	375	30.8	9.6	22.0	30.8	35.2	2.4	0.0	33.8	29.6
Sweden	2008	1153	40.6	8.1	13.3	40.6	36.1	1.7	0.2	39.3	41.3
	2015	1234	32.4	9.5	15.0	32.4	40.1	2.3	0.6	28.6	35.3
International Avg (n=6)	2008	5825	36.8	8.7	14.8	36.8	33.8	6.0	0.0	32.2	39.2
	2015	5245	34.9	9.3	16.1	34.9	32.3	6.9	0.5	33.0	36.3

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

Pl_04 (PA13014): Mechanics & Thermodynamics / Reasoning Type: MC Key: B
Label: Speed of aircraft

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	46.0	14.4	46.0	11.0	12.6	8.5	7.5	0.0	45.7	46.2
	2015	1150	39.3	17.9	39.3	8.8	15.0	9.7	8.6	0.6	40.3	38.4
Lebanon	2008	803	41.4	14.9	41.4	7.1	13.5	16.1	7.1	0.0	43.8	40.5
	2015	385	33.5	18.8	33.5	10.6	14.0	11.7	9.5	1.8	34.4	33.1
Norway	2008	818	71.1	4.8	71.1	3.4	9.0	10.2	1.4	0.0	69.8	71.7
	2015	831	67.8	4.7	67.8	3.1	12.3	10.3	1.5	0.3	72.9	65.7
Russian Federation	2008	1576	73.0	10.4	73.0	4.5	5.9	5.8	0.4	0.0	71.6	74.1
	2015	1270	74.5	8.2	74.5	4.4	6.0	5.5	1.0	0.3	74.3	74.6
Slovenia	2008	544	63.7	7.9	63.7	4.9	11.6	10.0	1.8	0.0	65.2	63.2
	2015	375	59.1	9.4	59.1	7.2	15.2	8.8	0.3	0.0	51.5	62.2
Sweden	2008	1153	42.1	18.7	42.1	6.6	12.2	18.3	1.9	0.2	44.7	40.6
	2015	1234	38.1	14.8	38.1	9.6	16.1	17.7	3.1	0.6	40.4	36.4
International Avg (n=6)	2008	5823	56.2	11.9	56.2	6.2	10.8	11.5	3.3	0.0	56.8	56.1
	2015	5245	52.0	12.3	52.0	7.3	13.1	10.6	4.0	0.6	52.3	51.7

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

Pl_05 (PA13015): Mechanics & Thermodynamics / Knowing Type: MC Key: C
Label: Heat transfer

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	928	70.9	0.9	1.9	70.9	23.8	2.5	0.0	64.7	75.0
	2015	1150	71.0	2.3	1.5	71.0	22.0	2.6	0.6	65.6	75.6
Lebanon	2008	804	50.6	0.8	1.2	50.6	41.0	6.4	0.0	46.5	52.3
	2015	386	51.9	1.2	1.2	51.9	35.5	8.4	1.8	42.8	57.2
Norway	2008	819	82.8	0.2	0.7	82.8	15.9	0.3	0.0	79.0	84.4
	2015	831	67.6	0.6	2.7	67.6	27.0	1.8	0.3	62.7	69.5
Russian Federation	2008	1576	75.7	1.3	1.5	75.7	21.5	0.1	0.0	70.1	80.1
	2015	1270	83.6	0.6	0.8	83.6	14.7	0.1	0.3	82.6	84.4
Slovenia	2008	544	66.4	3.1	1.9	66.4	27.8	0.9	0.0	53.5	71.1
	2015	375	62.8	1.8	2.5	62.8	32.7	0.2	0.0	49.7	68.3
Sweden	2008	1153	89.6	0.1	0.3	89.6	9.6	0.3	0.2	85.5	91.8
	2015	1234	81.5	0.6	0.8	81.5	13.3	3.0	0.8	81.2	81.7
International Avg (n=6)	2008	5824	72.7	1.1	1.2	72.7	23.3	1.8	0.0	66.5	75.8
	2015	5246	69.7	1.2	1.6	69.7	24.2	2.7	0.6	64.1	72.8

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

Pl_06 (PA13016): Electricity & Magnetism / Applying Type: MC Key: D
Label: Direction of magnetic force on wire

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	27.4	15.4	11.2	21.8	27.4	15.3	8.8	0.0	28.8	26.5
	2015	1150	19.1	14.6	14.1	25.1	19.1	16.1	10.5	0.6	16.2	21.6
Lebanon	2008	800	20.5	14.4	18.6	25.2	20.5	17.4	3.9	0.0	18.6	21.3
	2015	386	18.4	15.3	16.5	23.5	18.4	14.7	9.8	1.8	14.5	20.6
Norway	2008	819	29.3	14.0	18.8	26.3	29.3	10.6	1.1	0.0	25.9	30.8
	2015	831	31.2	12.1	18.9	27.5	31.2	8.2	1.8	0.3	31.7	31.0
Russian Federation	2008	1576	41.3	10.2	17.3	21.4	41.3	8.7	1.0	0.0	39.3	43.0
	2015	1270	51.0	8.2	14.9	16.5	51.0	7.4	1.8	0.3	49.6	52.0
Slovenia	2008	544	27.7	16.2	18.2	26.5	27.7	10.5	0.9	0.0	27.8	27.7
	2015	375	27.5	15.0	17.8	27.9	27.5	11.2	0.6	0.0	30.1	26.5
Sweden	2008	1153	26.9	15.2	19.0	25.4	26.9	12.3	0.9	0.2	27.0	26.9
	2015	1234	20.0	16.1	18.3	27.1	20.0	15.3	2.4	0.8	17.9	21.6
International Avg (n=6)	2008	5821	28.9	14.2	17.2	24.4	28.9	12.5	2.8	0.0	27.9	29.4
	2015	5246	27.9	13.6	16.7	24.6	27.9	12.1	4.5	0.6	26.7	28.9

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

Pl_07 (PA13017): Wave Phenom. & Atomic/Nuclear / Reasoning Type: MC Key: D
Label: Photoelectric effect

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	928	46.9	9.8	9.2	16.1	46.9	17.9	0.1	49.2	45.4
	2015	1150	48.7	11.8	9.4	16.8	48.7	12.5	0.8	49.8	47.8
Lebanon	2008	803	54.1	17.0	15.8	11.0	54.1	2.1	0.0	60.4	51.6
	2015	386	44.2	22.2	15.3	12.7	44.2	3.7	2.0	47.6	42.2
Norway	2008	819	60.8	12.8	11.6	12.0	60.8	2.8	0.0	68.0	57.7
	2015	831	55.8	13.0	14.8	13.5	55.8	2.6	0.3	59.7	54.3
Russian Federation	2008	1576	68.1	8.7	14.5	7.9	68.1	0.8	0.0	67.9	68.2
	2015	1270	67.0	11.7	11.8	7.7	67.0	1.4	0.3	69.6	65.2
Slovenia	2008	544	68.0	16.3	4.0	11.0	68.0	0.6	0.0	73.3	66.0
	2015	375	68.1	17.7	4.5	8.4	68.1	1.2	0.0	74.6	65.4
Sweden	2008	1153	70.4	8.8	7.4	12.4	70.4	0.9	0.2	78.3	66.0
	2015	1234	64.1	9.6	9.2	12.3	64.1	3.8	1.0	63.2	64.8
International Avg (n=6)	2008	5823	61.4	12.2	10.4	11.7	61.4	4.2	0.0	66.2	59.2
	2015	5246	58.0	14.3	10.8	11.9	58.0	4.2	0.7	60.7	56.6

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

Pl_08 (PA13018): Electricity & Magnetism / Reasoning Type: MC Key: C
Label: Bulbs using least power

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	40.4	29.2	7.7	40.4	18.5	4.0	0.1	40.9	40.1
	2015	1150	36.3	28.5	9.4	36.3	19.0	6.0	0.9	34.1	38.2
Lebanon	2008	802	51.3	22.6	11.4	51.3	12.6	2.2	0.0	53.6	50.4
	2015	386	50.1	17.3	12.4	50.1	14.4	3.9	2.0	52.5	48.7
Norway	2008	818	54.0	25.8	7.5	54.0	12.5	0.3	0.0	49.1	56.1
	2015	831	50.3	27.6	7.2	50.3	13.1	1.3	0.5	48.7	50.9
Russian Federation	2008	1576	35.6	26.2	14.0	35.6	23.9	0.2	0.0	28.4	41.5
	2015	1270	41.0	28.6	9.6	41.0	19.2	1.0	0.6	38.4	42.8
Slovenia	2008	544	57.6	17.0	10.3	57.6	14.5	0.6	0.0	57.3	57.6
	2015	375	58.8	16.1	12.2	58.8	12.3	0.6	0.0	55.8	60.1
Sweden	2008	1153	58.4	17.7	17.5	58.4	5.7	0.6	0.2	55.3	60.1
	2015	1234	51.4	21.7	16.1	51.4	6.1	3.7	1.0	49.1	53.0
International Avg (n=6)	2008	5822	49.6	23.1	11.4	49.6	14.6	1.3	0.0	47.4	51.0
	2015	5246	48.0	23.3	11.1	48.0	14.0	2.7	0.8	46.4	49.0

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

Pl_09 (PA13019): Wave Phenom. & Atomic/Nuclear / Applying Type: MC Key: B
Label: Nuclear change in an atom

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	E %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	15.2	10.0	15.2	10.2	20.2	21.7	22.5	0.2	16.4	14.3
	2015	1150	12.7	9.6	12.7	14.0	18.8	24.1	19.7	1.1	13.3	12.3
Lebanon	2008	798	60.4	6.3	60.4	5.3	9.2	11.7	7.0	0.1	67.8	57.5
	2015	386	57.1	7.5	57.1	7.8	8.7	7.6	9.4	2.0	57.0	57.2
Norway	2008	819	15.0	19.2	15.0	10.0	28.4	24.2	3.3	0.0	9.4	17.3
	2015	831	24.0	15.0	24.0	8.5	26.6	21.1	4.3	0.5	17.5	26.7
Russian Federation	2008	1576	61.3	12.1	61.3	6.3	10.7	8.4	1.2	0.0	61.1	61.5
	2015	1270	73.1	7.1	73.1	4.1	5.7	8.0	1.3	0.8	68.4	76.4
Slovenia	2008	544	46.9	13.2	46.9	7.7	12.7	18.0	1.5	0.0	51.6	45.2
	2015	375	41.1	18.2	41.1	7.2	16.4	16.0	1.2	0.0	39.8	41.6
Sweden	2008	1153	29.5	18.0	29.5	10.2	19.5	20.6	2.1	0.2	31.3	28.5
	2015	1234	22.3	23.3	22.3	12.2	18.3	19.9	3.0	1.0	21.1	23.2
International Avg (n=6)	2008	5819	38.0	13.1	38.0	8.3	16.8	17.4	6.2	0.1	39.6	37.4
	2015	5246	38.4	13.4	38.4	9.0	15.7	16.1	6.5	0.9	36.2	39.5

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

P3_01 (PA23071): Mechanics & Thermodynamics / Applying Type: MC Key: B
Label: Graph of ball's potential energy

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	929	52.5	26.4	52.5	6.7	12.6	1.8	0.0	52.7	52.3
	2015	1134	50.9	30.7	50.9	6.9	8.6	2.6	0.1	50.5	51.3
Lebanon	2008	791	56.0	35.9	56.0	3.7	2.7	1.4	0.3	54.0	56.8
	2015	379	59.8	33.1	59.8	3.3	2.9	0.9	0.0	53.4	63.5
Norway	2008	821	65.0	25.6	65.0	3.5	5.5	0.3	0.1	57.3	68.0
	2015	820	57.6	32.7	57.6	4.9	4.3	0.5	0.0	42.2	63.8
Russian Federation	2008	1590	43.6	42.9	43.6	7.2	5.7	0.6	0.0	39.6	46.8
	2015	1281	45.3	44.0	45.3	5.8	4.4	0.5	0.0	43.6	46.6
Slovenia	2008	553	62.7	30.3	62.7	3.2	3.5	0.2	0.0	58.0	64.5
	2015	368	63.9	26.9	63.9	4.7	4.5	0.0	0.0	56.1	67.5
Sweden	2008	1138	63.6	14.9	63.6	6.2	14.8	0.4	0.1	61.2	64.9
	2015	1237	60.8	18.7	60.8	6.0	13.8	0.6	0.1	53.4	66.0

International Avg (n=6)	2008	5822	57.2	29.3	57.2	5.1	7.5	0.8	0.1	53.8	58.9
	2015	5219	56.4	31.0	56.4	5.3	6.4	0.8	0.0	49.9	59.8

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

P3_02 (PA23146): Mechanics & Thermodynamics / Knowing Type: CR 1 Point
Label: Direction of acceleration of body

COUNTRY	Year	N	10 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	38.8	16.2	4.2	21.9	18.9	0.0	38.8	38.0	39.3
	2015	1133	33.6	16.3	6.4	24.8	18.8	0.1	33.6	32.0	34.9
Lebanon	2008	791	30.9	14.4	0.6	43.8	9.9	0.3	30.9	33.0	30.1
	2015	379	24.4	8.5	0.2	53.5	13.4	0.0	24.4	24.7	24.2
Norway	2008	821	86.0	4.5	2.1	6.0	1.3	0.1	86.0	87.1	85.5
	2015	804	83.3	4.1	0.9	8.9	2.9	0.0	83.3	81.4	84.0
Russian Federation	2008	1590	73.0	8.7	0.7	11.4	6.2	0.0	73.0	67.3	77.7
	2015	1281	81.7	5.4	0.2	8.7	4.0	0.0	81.7	82.2	81.4
Slovenia	2008	553	59.2	17.8	3.7	17.0	2.3	0.0	59.2	63.1	57.7
	2015	366	59.5	14.9	4.5	17.8	3.2	0.0	59.5	70.0	54.6
Sweden	2008	1138	54.4	21.3	6.2	14.8	3.2	0.1	54.4	54.4	54.4
	2015	1235	54.6	20.2	6.4	15.2	3.6	0.1	54.6	56.6	53.2
International Avg (n=6)	2008	5825	57.0	13.8	2.9	19.2	7.0	0.1	57.0	57.1	57.5
	2015	5198	56.2	11.6	3.1	21.5	7.7	0.0	56.2	57.8	55.4

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.

P3_03 (PA23029): Mechanics & Thermodynamics / Knowing Type: MC Key: D
Label: Explain tennis ball rebound height

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	931	30.4	47.9	14.3	3.4	30.4	4.0	0.0	30.1	30.7
	2015	1134	23.0	49.5	17.6	7.7	23.0	2.1	0.1	18.2	27.1
Lebanon	2008	784	33.9	35.6	14.8	13.4	33.9	1.9	0.3	31.8	34.8
	2015	379	33.4	26.3	19.0	16.9	33.4	4.4	0.0	36.0	31.9
Norway	2008	820	58.5	32.3	5.9	2.7	58.5	0.5	0.1	54.8	59.9
	2015	820	58.3	28.3	10.1	2.5	58.3	0.8	0.0	52.1	60.8
Russian Federation	2008	1590	45.4	27.2	19.6	7.6	45.4	0.2	0.0	40.1	49.8
	2015	1281	51.0	28.9	12.7	6.8	51.0	0.6	0.0	51.0	51.0
Slovenia	2008	553	56.4	34.3	4.5	4.4	56.4	0.4	0.0	56.0	56.6
	2015	368	57.8	32.3	5.3	4.1	57.8	0.5	0.0	51.2	60.8
Sweden	2008	1138	55.7	30.7	9.9	2.8	55.7	0.9	0.1	52.7	57.3
	2015	1237	44.2	34.3	15.2	4.3	44.2	1.9	0.1	37.5	48.8
International Avg (n=6)	2008	5816	46.7	34.7	11.5	5.7	46.7	1.3	0.1	44.2	48.2
	2015	5219	44.6	33.3	13.3	7.1	44.6	1.7	0.0	41.0	46.7

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

P3_04 (PA23104): Electricity & Magnetism / Applying Type: MC Key: C
Label: Direction of electric force

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	931	59.9	26.1	6.6	59.9	5.7	1.7	0.0	57.5	61.5
	2015	1134	48.5	30.8	11.0	48.5	6.5	3.1	0.1	47.2	49.6
Lebanon	2008	791	47.2	24.4	14.0	47.2	10.5	3.5	0.3	47.3	47.2
	2015	379	42.7	22.2	19.6	42.7	11.8	3.7	0.0	48.3	39.4
Norway	2008	821	56.9	25.7	8.4	56.9	8.3	0.6	0.1	53.6	58.2
	2015	820	58.5	26.0	6.8	58.5	8.3	0.3	0.0	52.7	60.9
Russian Federation	2008	1590	56.4	21.1	14.3	56.4	7.3	0.9	0.0	55.4	57.2
	2015	1281	65.0	20.2	7.6	65.0	6.6	0.7	0.0	64.7	65.2
Slovenia	2008	553	55.0	23.4	10.6	55.0	10.8	0.3	0.0	60.6	52.8
	2015	368	58.5	24.4	8.1	58.5	9.0	0.0	0.0	64.6	55.8
Sweden	2008	0
	2015	1237	53.8	20.4	10.6	53.8	13.4	1.7	0.1	51.7	55.3
International Avg (n=6)	2008	4686	55.1	24.1	10.8	55.1	8.5	1.4	0.1	54.9	55.4
	2015	5219	54.5	24.0	10.6	54.5	9.2	1.6	0.0	54.9	54.4

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

P3_05 (PA23038): Electricity & Magnetism / Applying Type: MC Key: A
Label: Connections in decreasing resistance

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	931	38.9	38.9	28.8	15.5	13.7	3.1	0.0	32.6	43.0
	2015	1134	31.6	31.6	22.0	22.5	19.1	4.7	0.1	30.0	32.9
Lebanon	2008	790	36.0	36.0	21.5	26.4	13.8	1.9	0.3	35.0	36.5
	2015	379	32.4	32.4	14.3	34.0	17.5	1.8	0.0	33.9	31.5
Norway	2008	821	45.5	45.5	19.9	21.8	11.4	1.3	0.1	40.3	47.5
	2015	820	42.3	42.3	17.4	25.0	13.7	1.7	0.0	42.4	42.2
Russian Federation	2008	1590	55.9	55.9	20.6	13.5	9.6	0.5	0.0	50.1	60.7
	2015	1281	60.2	60.2	19.8	11.6	8.2	0.2	0.0	58.0	61.8
Slovenia	2008	553	58.1	58.1	23.5	8.0	9.4	1.0	0.0	59.7	57.5
	2015	368	61.5	61.5	19.7	10.3	7.7	0.8	0.0	57.6	63.2
Sweden	2008	1138	43.2	43.2	18.6	22.9	14.3	0.9	0.1	35.7	47.3
	2015	1237	37.5	37.5	18.3	24.4	17.9	1.9	0.1	34.9	39.3
International Avg (n=6)	2008	5823	46.3	46.3	22.2	18.0	12.0	1.5	0.1	42.2	48.7
	2015	5219	44.2	44.2	18.6	21.3	14.0	1.8	0.0	42.8	45.1

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

P3_06 (PA23041): Electricity & Magnetism / Knowing Type: CR 1 Point
Label: Explain what symbols represent

COUNTRY	Year	N	10 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	77.3	13.0	4.5	5.3	0.0	77.3	81.3	74.7
	2015	1134	66.3	21.3	6.2	6.0	0.2	66.3	67.6	65.1
Lebanon	2008	791	52.2	29.7	10.4	7.3	0.3	52.2	59.8	49.1
	2015	379	50.8	19.8	17.9	11.5	0.0	50.8	60.0	45.5
Norway	2008	821	78.7	17.5	3.2	0.6	0.1	78.7	83.4	76.8
	2015	820	74.6	15.5	7.6	2.3	0.0	74.6	75.2	74.4
Russian Federation	2008	1590	70.7	19.9	5.6	3.8	0.0	70.7	68.1	72.8
	2015	1281	71.5	20.8	4.4	3.3	0.0	71.5	74.5	69.3
Slovenia	2008	553	79.1	17.1	3.1	0.7	0.0	79.1	86.1	76.4
	2015	365	70.6	23.7	4.8	0.8	0.0	70.6	74.2	68.9
Sweden	2008	1138	63.1	23.2	10.0	3.7	0.1	63.1	67.0	60.9
	2015	1236	54.2	23.5	18.0	4.3	0.1	54.2	58.8	51.1
International Avg (n=6)	2008	5825	70.2	20.1	6.1	3.6	0.1	70.2	74.3	68.4
	2015	5215	64.7	20.8	9.8	4.7	0.0	64.7	68.4	62.4

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.

P3_07 (PA23053): Mechanics & Thermodynamics / Applying Type: CR 2 Points
Label: Gas volume when pressure doubled

COUNTRY	Year	N	20 %	10 %	11 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	20.4	6.4	16.2	0.2	3.5	23.9	29.3	0.0	42.9	20.4	20.0	20.6
	2015	1132	12.4	3.2	18.7	0.3	15.0	17.9	32.3	0.2	34.3	12.4	9.9	14.5
Lebanon	2008	791	26.7	8.8	20.7	1.9	0.3	21.4	19.9	0.3	56.2	26.7	21.6	28.8
	2015	379	21.4	10.4	10.1	1.0	0.7	16.2	40.1	0.0	41.9	21.4	26.3	18.5
Norway	2008	821	16.5	7.4	24.1	0.2	8.2	18.0	25.6	0.1	48.0	16.5	14.2	17.3
	2015	820	5.7	2.7	10.1	0.0	6.7	27.6	47.2	0.0	18.6	5.7	3.8	6.5
Russian Federation	2008	1590	41.9	10.4	7.4	0.8	1.1	17.0	21.4	0.0	59.8	41.9	38.9	44.4
	2015	1281	41.5	7.9	8.6	0.5	0.4	16.4	24.7	0.0	58.0	41.5	42.5	40.8
Slovenia	2008	553	42.8	14.9	11.3	0.3	4.7	22.6	3.4	0.0	69.0	42.8	52.7	38.9
	2015	367	49.8	11.5	6.2	0.5	1.1	28.3	2.7	0.0	67.5	49.8	41.6	53.6
Sweden	2008	1138	8.0	3.4	16.3	0.1	4.4	43.2	24.4	0.1	27.8	8.0	9.5	7.2
	2015	1237	11.6	3.7	14.9	0.0	10.1	32.6	27.1	0.1	30.2	11.6	9.1	13.3
International Avg (n=6)	2008	5825	26.0	8.6	16.0	0.6	3.7	24.4	20.7	0.1	50.6	26.0	26.2	26.2
	2015	5216	23.7	6.6	11.4	0.4	5.7	23.2	29.0	0.0	41.7	23.7	22.2	24.5

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.

P3_08 (PA23148): Mechanics & Thermodynamics / Applying Type: MC Key: B
Label: Why temp decrease when air rises

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	64.5	10.7	64.5	12.3	6.9	5.1	0.5	62.3	66.0
	2015	1134	59.4	9.5	59.4	10.3	13.8	6.8	0.2	53.5	64.5
Lebanon	2008	789	48.6	10.6	48.6	15.8	17.4	7.3	0.3	47.8	49.0
	2015	376	46.9	15.9	46.9	16.1	13.3	7.0	0.8	47.7	46.5
Norway	2008	821	79.2	3.8	79.2	9.1	7.0	0.8	0.1	76.7	80.2
	2015	820	81.8	2.8	81.8	8.6	5.7	1.1	0.0	77.4	83.6
Russian Federation	2008	1590	72.0	12.3	72.0	8.0	6.8	0.9	0.0	69.0	74.6
	2015	1281	71.4	13.7	71.4	6.0	8.2	0.7	0.0	70.3	72.2
Slovenia	2008	553	62.6	12.0	62.6	6.7	17.9	0.8	0.0	63.4	62.3
	2015	368	71.5	7.3	71.5	4.4	15.9	1.0	0.0	76.2	69.2
Sweden	2008	1138	65.0	8.9	65.0	17.8	7.5	0.8	0.1	62.8	66.2
	2015	1237	66.2	7.6	66.2	14.2	9.4	2.5	0.1	64.7	67.2
International Avg (n=6)	2008	5823	65.3	9.7	65.3	11.6	10.6	2.6	0.2	63.6	66.4
	2015	5216	66.2	9.5	66.2	9.9	11.1	3.2	0.2	65.0	67.2

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

P3_09 (PA23119): Mechanics & Thermodynamics / Reasoning Type: CR 2 Points
Label: Why food stays at same temp in Sun

COUNTRY	Year	N	20 %	21 %	10 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	931	4.5	2.0	3.9	1.1	6.0	32.8	49.1	0.5	10.4	6.5	5.9	6.9
	2015	1133	2.0	1.0	6.9	1.7	7.9	23.3	57.0	0.2	9.9	3.1	1.8	4.1
Lebanon	2008	791	0.9	0.2	7.8	7.3	0.0	44.6	38.9	0.3	8.8	1.0	1.8	0.7
	2015	379	0.0	0.0	1.0	0.3	0.0	43.0	54.9	0.8	1.0	0.0	0.0	0.0
Norway	2008	821	14.2	3.3	1.8	8.6	12.6	33.9	25.5	0.1	19.3	17.5	11.0	20.0
	2015	820	12.2	3.9	0.3	1.3	2.7	49.0	30.7	0.0	16.3	16.1	11.3	18.0
Russian Federation	2008	1590	8.5	2.1	10.6	2.1	4.5	41.1	31.1	0.0	21.2	10.6	8.3	12.5
	2015	1281	4.2	2.4	13.4	7.8	2.0	31.0	39.2	0.0	20.0	6.5	5.7	7.1
Slovenia	2008	553	14.7	3.4	8.8	5.4	18.6	32.0	16.9	0.2	26.9	18.1	19.7	17.5
	2015	366	21.6	1.3	5.4	8.9	17.5	27.8	17.6	0.0	28.3	22.9	14.5	26.8
Sweden	2008	1138	15.2	1.4	5.1	4.8	11.9	41.2	20.3	0.1	21.7	16.6	12.9	18.6
	2015	1235	11.0	1.3	2.7	5.6	6.1	47.1	26.1	0.1	15.0	12.3	7.5	15.6
International Avg (n=6)	2008	5824	9.7	2.0	6.3	4.9	9.0	37.6	30.3	0.2	18.1	11.7	9.9	12.7
	2015	5214	8.5	1.6	4.9	4.3	6.0	36.9	37.6	0.2	15.1	10.1	6.8	11.9

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.

P3_10 (PA23088): Wave Phenom. & Atomic/Nuclear / Knowing Type: CR 1 Point
Label: Protons and neutrons in isotopes

COUNTRY	Year	N	10 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	26.6	5.4	0.6	30.5	36.4	0.5	26.6	27.4	26.1
	2015	1126	20.1	6.6	0.8	31.5	40.8	0.3	20.1	19.5	20.6
Lebanon	2008	791	71.2	1.3	1.3	19.2	6.6	0.5	71.2	70.9	71.4
	2015	379	60.7	1.7	1.7	22.6	12.4	1.1	60.7	66.7	57.1
Norway	2008	821	51.3	7.4	1.8	34.1	5.3	0.1	51.3	50.1	51.8
	2015	820	62.5	5.3	1.4	27.2	3.6	0.0	62.5	63.2	62.3
Russian Federation	2008	1590	66.3	2.6	2.0	21.7	7.4	0.0	66.3	64.6	67.7
	2015	1281	71.3	1.8	2.9	16.2	7.6	0.1	71.3	74.2	69.2
Slovenia	2008	553	52.5	4.5	1.3	34.8	6.7	0.2	52.5	62.4	48.7
	2015	367	55.3	3.2	1.1	30.5	9.9	0.0	55.3	58.6	53.8
Sweden	2008	1138	53.0	5.4	2.0	34.6	4.9	0.2	53.0	53.2	52.9
	2015	1237	48.3	4.3	1.6	37.9	7.8	0.1	48.3	51.4	46.1
International Avg (n=6)	2008	5825	53.5	4.4	1.5	29.2	11.2	0.2	53.5	54.8	53.1
	2015	5210	53.0	3.8	1.6	27.6	13.7	0.3	53.0	55.6	51.5

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.

P3_11 (PA23066): Wave Phenom. & Atomic/Nuclear / Applying Type: CR 1 Point
Label: Complete equation for reaction

COUNTRY	Year	N	10 %	11 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	6.8	6.5	6.8	14.1	65.3	0.5	13.3	11.1	14.7
	2015	1134	2.5	1.0	2.5	20.4	73.3	0.3	3.5	2.3	4.6
Lebanon	2008	791	36.6	0.0	10.2	39.7	13.1	0.5	36.6	36.9	36.5
	2015	379	39.6	0.7	3.2	36.0	19.5	1.1	40.3	40.9	40.0
Norway	2008	821	21.9	22.3	15.1	26.0	14.6	0.1	44.2	46.3	43.4
	2015	820	35.1	17.2	12.5	27.8	7.4	0.0	52.3	49.4	53.4
Russian Federation	2008	1590	45.3	4.0	12.7	25.4	12.7	0.0	49.2	45.4	52.4
	2015	1281	49.8	1.5	7.3	29.6	11.7	0.1	51.3	53.1	50.0
Slovenia	2008	553	32.6	14.0	14.7	21.4	17.1	0.2	46.6	52.0	44.4
	2015	367	21.5	10.7	11.1	33.3	23.3	0.0	32.3	33.9	31.5
Sweden	2008	1138	16.9	18.2	16.7	28.1	19.9	0.2	35.1	36.7	34.2
	2015	1237	17.4	16.7	14.7	31.9	19.3	0.1	34.0	35.6	33.0
International Avg (n=6)	2008	5825	26.7	10.8	12.7	25.8	23.8	0.2	37.5	38.1	37.6
	2015	5218	27.6	8.0	8.6	29.8	25.7	0.3	35.6	35.8	35.4

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.

P5_01 (PA23048): Wave Phenom. & Atomic/Nuclear / Knowing Type: MC Key: C
Label: Interval with wavelengths of light

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	60.9	8.2	4.9	60.9	17.8	7.9	0.4	56.4	64.1
	2015	1140	59.1	5.6	5.8	59.1	20.8	7.7	1.1	57.5	60.4
Lebanon	2008	802	80.6	4.6	1.4	80.6	13.1	0.1	0.3	78.6	81.4
	2015	387	81.8	3.2	2.4	81.8	11.4	1.0	0.2	80.2	82.8
Norway	2008	820	93.8	1.8	0.6	93.8	3.1	0.6	0.1	94.7	93.4
	2015	821	91.2	1.3	2.1	91.2	4.7	0.7	0.0	89.5	91.8
Russian Federation	2008	1587	78.0	6.6	3.6	78.0	11.5	0.4	0.0	76.9	78.8
	2015	1271	77.1	6.1	3.3	77.1	12.1	1.0	0.4	78.1	76.3
Slovenia	2008	535	82.6	2.6	4.2	82.6	9.9	0.6	0.0	78.7	84.1
	2015	363	88.6	2.1	2.4	88.6	6.0	0.7	0.3	82.4	91.0
Sweden	2008	1141	91.2	1.8	2.1	91.2	4.2	0.5	0.2	90.9	91.4
	2015	1255	82.5	3.6	3.5	82.5	9.5	0.8	0.1	84.5	81.3
International Avg (n=6)	2008	5817	81.2	4.3	2.8	81.2	9.9	1.7	0.2	79.4	82.2
	2015	5237	80.1	3.7	3.2	80.1	10.7	2.0	0.3	78.7	80.6

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

P5_02 (PA23039): Electricity & Magnetism / Applying Type: MC Key: A
Label: Internal resistance of battery

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	30.4	30.4	19.6	20.5	6.1	23.0	0.4	27.9	32.1
	2015	1140	26.7	26.7	18.3	23.7	7.5	22.5	1.3	25.1	28.0
Lebanon	2008	805	45.9	45.9	17.2	12.0	11.7	12.9	0.3	42.4	47.4
	2015	367	39.2	39.2	23.5	14.8	10.6	11.8	0.2	38.6	39.5
Norway	2008	818	38.1	38.1	28.1	20.4	5.6	7.7	0.1	30.6	41.2
	2015	821	32.1	32.1	24.3	27.7	9.0	6.9	0.0	29.5	33.2
Russian Federation	2008	1587	57.4	57.4	18.3	17.1	4.9	2.2	0.0	54.6	59.6
	2015	1271	54.8	54.8	18.4	17.4	4.2	4.8	0.4	52.0	56.9
Slovenia	2008	535	38.1	38.1	24.1	22.9	7.7	7.1	0.0	37.8	38.2
	2015	363	40.7	40.7	19.9	21.3	8.7	9.2	0.3	36.9	42.1
Sweden	2008	1141	36.4	36.4	24.1	21.7	11.7	5.8	0.2	33.1	38.2
	2015	1255	31.8	31.8	27.5	25.9	10.0	4.7	0.1	28.7	33.8
International Avg (n=6)	2008	5818	41.1	41.1	21.9	19.1	8.0	9.8	0.2	37.8	42.8
	2015	5217	37.5	37.5	22.0	21.8	8.4	10.0	0.4	35.1	38.9

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

P5_03 (PA23035): Electricity & Magnetism / Applying Type: CR 1 Point
Label: Resistance of bulb when it shines

COUNTRY	Year	N	10 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	32.6	4.7	0.1	18.8	43.0	0.8	32.6	29.8	34.5
	2015	1140	26.3	5.0	0.2	23.2	44.0	1.4	26.3	25.2	27.3
Lebanon	2008	805	66.1	9.0	0.0	12.4	11.9	0.5	66.1	67.8	65.4
	2015	391	51.9	9.7	0.0	12.6	25.1	0.7	51.9	57.0	48.8
Norway	2008	820	53.9	6.1	0.0	27.0	12.9	0.1	53.9	53.5	54.1
	2015	821	32.0	4.5	0.3	37.5	25.6	0.0	32.0	30.1	32.8
Russian Federation	2008	1586	57.4	5.5	0.7	15.4	21.0	0.0	57.4	52.4	61.4
	2015	1271	48.7	10.8	1.2	14.8	23.9	0.6	48.7	46.2	50.5
Slovenia	2008	535	67.6	9.0	0.0	18.5	4.9	0.0	67.6	74.8	65.0
	2015	363	67.8	7.4	1.3	16.0	7.1	0.3	67.8	58.2	71.5
Sweden	2008	1141	42.8	4.5	0.0	35.2	17.2	0.2	42.8	47.1	40.5
	2015	1254	39.4	4.1	0.2	36.2	19.9	0.2	39.4	39.9	39.1
International Avg (n=6)	2008	5819	53.4	6.5	0.1	21.2	18.5	0.3	53.4	54.2	53.5
	2015	5240	44.4	6.9	0.5	23.4	24.3	0.5	44.4	42.8	45.0

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.

P5_04 (PA23042): Electricity & Magnetism / Knowing Type: MC Key: A
Label: Paths particles follow

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	43.4	43.4	6.5	29.7	12.8	6.6	1.0	44.7	42.5
	2015	1140	42.3	42.3	8.2	27.2	13.8	7.0	1.5	38.4	45.6
Lebanon	2008	799	28.9	28.9	7.5	20.3	34.4	8.4	0.5	36.5	25.7
	2015	363	33.1	33.1	12.4	17.8	29.4	7.1	0.2	31.6	34.0
Norway	2008	819	64.3	64.3	2.5	22.4	9.5	1.3	0.1	66.4	63.4
	2015	821	64.1	64.1	5.4	21.5	7.4	1.4	0.2	64.2	64.1
Russian Federation	2008	1587	62.4	62.4	7.3	21.1	8.5	0.7	0.0	61.6	62.9
	2015	1271	67.3	67.3	6.4	14.8	8.3	2.4	0.6	69.3	65.9
Slovenia	2008	535	54.8	54.8	7.8	29.1	7.4	0.9	0.0	59.7	53.0
	2015	363	57.3	57.3	6.9	28.1	6.5	0.9	0.3	60.0	56.2
Sweden	2008	1141	45.3	45.3	5.1	32.5	15.3	1.3	0.5	43.9	46.0
	2015	1255	48.8	48.8	5.7	28.4	15.9	1.0	0.2	48.9	48.7
International Avg (n=6)	2008	5813	49.8	49.8	6.1	25.8	14.7	3.2	0.3	52.1	48.9
	2015	5213	52.2	52.2	7.5	23.0	13.5	3.3	0.5	52.1	52.4

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

P5_05 (PA23012): Mechanics & Thermodynamics / Reasoning Type: CR 1 Point
Label: Tension of string as system falls

COUNTRY	Year	N	10 %	70 %	71 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	5.4	6.0	8.4	19.1	60.1	1.1	5.4	3.5	6.7
	2015	1139	4.6	5.9	8.7	19.0	60.1	1.7	4.6	2.0	6.6
Lebanon	2008	805	5.6	15.3	8.8	41.3	27.9	1.0	5.6	5.2	5.8
	2015	391	8.5	11.2	0.0	36.1	41.3	2.9	8.5	7.2	9.3
Norway	2008	820	30.6	11.5	19.9	17.8	20.0	0.2	30.6	14.0	37.5
	2015	821	29.2	13.9	16.9	18.6	21.1	0.2	29.2	14.3	35.5
Russian Federation	2008	1587	29.8	19.4	7.8	21.0	22.0	0.0	29.8	22.9	35.1
	2015	1271	22.1	22.2	10.1	14.9	29.9	0.7	22.1	17.9	25.0
Slovenia	2008	535	22.7	7.6	7.7	47.3	14.7	0.0	22.7	11.1	27.0
	2015	362	34.3	12.9	10.3	28.8	13.5	0.3	34.3	13.8	42.0
Sweden	2008	1141	18.6	3.2	10.0	40.7	27.0	0.6	18.6	12.3	22.0
	2015	1253	17.6	8.1	8.4	32.1	33.6	0.2	17.6	9.7	22.7

International Avg (n=6)	2008	5820	18.8	10.5	10.4	31.2	28.6	0.5	18.8	11.5	22.3
	2015	5237	19.4	12.4	9.1	24.9	33.2	1.0	19.4	10.8	23.5

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.

P5_07 (PA23051): Mechanics & Thermodynamics / Applying Type: CR 1 Point
Label: Energy released for temp to fall

COUNTRY	Year	N	10 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	14.1	16.9	15.0	52.4	1.5	14.1	8.6	18.1
	2015	1138	13.0	20.0	11.9	52.4	2.7	13.0	9.7	15.7
Lebanon	2008	805	4.1	3.9	30.7	59.2	2.1	4.1	3.7	4.3
	2015	391	5.0	3.3	22.9	65.2	3.6	5.0	5.1	4.9
Norway	2008	820	38.3	10.0	15.0	36.0	0.7	38.3	34.8	39.8
	2015	821	27.8	7.9	18.3	45.7	0.4	27.8	19.6	31.2
Russian Federation	2008	1587	50.8	18.2	9.8	21.1	0.2	50.8	45.9	54.5
	2015	1271	56.7	18.4	5.2	18.6	1.1	56.7	52.6	59.7
Slovenia	2008	535	70.4	12.9	9.9	6.9	0.0	70.4	72.3	69.7
	2015	363	72.0	8.5	11.2	7.7	0.6	72.0	69.0	73.2
Sweden	2008	1141	34.1	12.4	20.7	32.1	0.7	34.1	33.5	34.4
	2015	1254	40.2	11.5	17.0	30.8	0.5	40.2	36.5	42.7

International Avg (n=6)	2008	5820	35.3	12.4	16.9	34.6	0.9	35.3	33.1	36.8
	2015	5238	35.8	11.6	14.4	36.7	1.5	35.8	32.1	37.9

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.

P5_08 (PA23085): Mechanics & Thermodynamics / Applying Type: MC Key: C
Label: Temp when two rods have same length

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	38.0	6.0	21.3	38.0	8.4	23.6	2.7	34.0	40.8
	2015	1140	32.5	11.2	26.5	32.5	7.6	18.7	3.5	28.3	36.0
Lebanon	2008	804	28.9	9.2	20.7	28.9	10.9	26.8	3.4	23.0	31.4
	2015	342	39.3	8.7	20.4	39.3	9.7	20.1	1.8	41.0	38.2
Norway	2008	815	53.5	3.4	22.5	53.5	11.1	8.2	1.2	56.6	52.3
	2015	821	46.5	4.8	29.0	46.5	12.0	6.7	1.0	47.1	46.3
Russian Federation	2008	1586	46.3	13.2	27.1	46.3	6.2	6.7	0.4	45.8	46.7
	2015	1271	46.6	9.8	24.4	46.6	6.1	11.6	1.5	47.0	46.3
Slovenia	2008	535	53.5	5.6	12.4	53.5	12.9	15.2	0.4	49.5	55.0
	2015	363	47.5	6.1	15.9	47.5	15.7	13.7	1.1	37.0	51.5
Sweden	2008	1141	46.4	5.8	19.7	46.4	20.2	6.8	1.1	46.9	46.1
	2015	1255	40.2	7.8	24.1	40.2	17.9	9.2	0.8	35.1	43.5
International Avg (n=6)	2008	5813	44.4	7.2	20.6	44.4	11.6	14.6	1.5	42.6	45.4
	2015	5192	42.1	8.1	23.4	42.1	11.5	13.3	1.6	39.2	43.7

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

P5_09 (PA23130): Wave Phenom. & Atomic/Nuclear / Knowing Type: CR 2 Points
Label: Why petals look black in green light

COUNTRY	Year	N	20 %	10 %	70 %	79 %	OMITTED %	NOT REACHED %	V1 %	V2 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	931	10.0	5.8	2.3	28.1	50.1	3.7	15.8	10.0	5.5	13.1
	2015	1138	6.1	3.3	1.6	31.7	52.7	4.5	9.4	6.1	4.0	7.9
Lebanon	2008	805	4.8	7.7	2.6	46.0	35.1	3.8	12.5	4.8	5.1	4.7
	2015	391	3.5	4.1	1.3	44.1	40.8	6.2	7.6	3.5	3.0	3.7
Norway	2008	820	37.7	10.0	8.2	24.6	17.9	1.6	47.7	37.7	38.4	37.4
	2015	821	26.4	8.6	3.8	37.1	23.1	1.0	35.0	26.4	26.3	26.5
Russian Federation	2008	1587	19.8	6.6	2.4	44.1	26.4	0.8	26.4	19.8	18.7	20.7
	2015	1271	12.9	14.1	4.5	34.6	31.4	2.4	27.0	12.9	11.8	13.6
Slovenia	2008	535	16.1	12.4	4.9	40.8	24.6	1.2	28.6	16.1	18.3	15.3
	2015	363	18.6	12.9	2.0	41.5	23.0	2.0	31.5	18.6	7.1	23.0
Sweden	2008	1141	19.5	12.5	4.7	38.0	24.1	1.2	32.1	19.5	21.7	18.3
	2015	1253	15.0	7.5	3.8	40.9	31.6	1.2	22.5	15.0	15.3	14.8

International Avg (n=6)	2008	5819	18.0	9.2	4.2	36.9	29.7	2.0	27.2	18.0	17.9	18.3
	2015	5237	13.7	8.4	2.9	38.3	33.8	2.9	22.2	13.7	11.2	14.9

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.

P5_10 (PA23086): Wave Phenom. & Atomic/Nuclear / Reasoning Type: CR 1 Point
Label: Explain blue as hotter than red

COUNTRY	Year	N	10 %	11 %	79 %	OMITTED %	NOT REACHED %	V1 %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	1.1	23.2	26.7	42.7	6.3	24.3	22.0	25.9
	2015	1136	1.3	17.3	27.8	47.7	6.0	18.5	15.5	21.0
Lebanon	2008	805	11.0	1.8	33.9	48.3	5.0	12.8	14.8	12.0
	2015	391	6.4	4.9	27.4	51.5	9.8	11.3	12.9	10.3
Norway	2008	820	4.2	42.4	30.6	20.0	2.8	46.6	38.2	50.0
	2015	821	0.3	28.6	55.1	14.5	1.5	28.9	28.1	29.2
Russian Federation	2008	1587	1.8	13.9	30.4	52.3	1.6	15.7	13.7	17.3
	2015	1271	9.9	13.3	26.5	45.8	4.5	23.2	22.2	23.9
Slovenia	2008	535	3.4	13.3	50.6	31.1	1.6	16.7	16.4	16.9
	2015	363	4.7	26.9	44.1	21.0	3.3	31.6	19.0	36.4
Sweden	2008	1141	3.0	41.8	30.6	22.9	1.7	44.9	43.4	45.7
	2015	1251	0.7	23.6	49.0	24.3	2.4	24.3	21.6	26.1

International Avg (n=6)	2008	5820	4.1	22.7	33.8	36.2	3.1	26.8	24.8	27.9
	2015	5233	3.9	19.1	38.3	34.1	4.6	23.0	19.9	24.5

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.

P5_11 (PA23064): Wave Phenom. & Atomic/Nuclear / Applying Type: MC Key: B
Label: Years passed since mammoth died

COUNTRY	Year	N	DIFF %	A %	B %	C %	D %	OMITTED %	NOT REACHED %	GIRL PCT RIGHT	BOY PCT RIGHT
Italy	2008	932	45.4	6.7	45.4	21.9	7.7	9.9	8.3	36.7	51.5
	2015	1140	41.1	8.7	41.1	23.5	9.9	10.5	6.3	38.1	43.6
Lebanon	2008	804	42.9	5.3	42.9	27.3	8.2	9.8	6.5	42.3	43.1
	2015	357	42.5	6.7	42.5	28.6	5.9	10.3	6.1	41.8	42.9
Norway	2008	818	63.8	3.2	63.8	16.4	10.2	3.1	3.2	62.8	64.3
	2015	821	65.8	4.1	65.8	15.7	10.3	2.4	1.6	60.1	68.2
Russian Federation	2008	1587	43.1	10.2	43.1	29.6	10.0	3.5	3.5	38.0	47.1
	2015	1271	49.0	6.7	49.0	24.8	8.5	5.1	5.8	41.5	54.4
Slovenia	2008	535	59.0	5.2	59.0	18.5	11.1	3.9	2.3	57.5	59.5
	2015	363	57.4	4.6	57.4	20.1	8.7	4.9	4.3	51.6	59.6
Sweden	2008	1141	61.4	6.3	61.4	19.0	9.8	1.7	1.8	58.6	63.0
	2015	1255	57.0	5.8	57.0	20.8	9.6	4.3	2.6	54.5	58.7
International Avg (n=6)	2008	5817	52.6	6.2	52.6	22.1	9.5	5.3	4.3	49.3	54.8
	2015	5207	52.1	6.1	52.1	22.2	8.8	6.3	4.4	47.9	54.6

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