**Overall Percent Correct** 

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Attributes and Units	Knowing Facts and Procedures

## Weight of an adult

Г

	Higher Not different Lower	▲ ○ ▼
	Country averag	e vs. erage:
	Tunisia	32
	Philippines	36
	Morocco	44
	Iran, Islamic Republic of	45
	Scotland	50
	England	54
	United States	54
	Slovenia	61
	International average	72
	Cyprus	76
	Armenia	76
	Norway	78
	New Zealand	78
	Australia	79
	Belgium (Flemish)	80
	Moldova Republic of	81
	Hong Kong, SAR	81
) 600 kg	Hungary	00 07
.) 00 kg	Russian Federation	87
) 60 kg	Netherlands	87
) 6 kg	Lithuania	88
JIKg	Latvia	89
1 kg	Japan	89
men of these could be the weight (mass) of an adult?	Singapore	90
Which of these sould be the mainhet (mean) of an edult?	Chinese Taipei	91

Item Number: M011023

Correct Response: C

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Attributes and Units	Knowing Facts and Procedures

## Units to measure mass of egg

What units would be best to use to measure the weight (mass) of an egg?
(A) centimeters
(B) milliliters
© grams
D kilograms

## **Overall Percent Correct**

91

88

83

82

82

81

80

80

78

77

76

75

74

69

68

67

67

65

59

59

55

54

50

47

43

40

**A** 0

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Japan

Cyprus

Lithuania

Singapore Latvia

England

Italy

Hungary

Australia

Armenia

Norway

Slovenia

Scotland

Morocco

Philippines

Tunisia

United States

Iran, Islamic Republic of

Higher

Not different Lower

Country average vs. International average:

Belgium (Flemish)

Hong Kong, SAR

**Russian Federation** 

Chinese Taipei

New Zealand

Moldova, Republic of

International average

Netherlands

Item Number: M012023

Correct Response:

С

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Attributes and Units	Knowing Facts and Procedures

## Which could equal 150 milliliters

Which of these could equal 150 milliliters?

- (A) The amount of water in a cup
- (B) The length of a kitten
- $\bigcirc$  The weight of an egg
- D The area of a coin

Item Number: M031338

**Overall Percent Correct** 

Chinese Taipei	87	
Hong Kong, SAR	86	
Lithuania	82	
Singapore	81	
Japan	75	
Hungary	74	
Russian Federation	72	
England	72	
Cyprus	71	
Latvia	69	
Belgium (Flemish)	69	
Italy	68	
Moldova, Republic of	68	
Slovenia	63	0
Slovenia International average	63 <mark>61</mark>	0
Slovenia International average Australia	63 <b>61</b> 60	0
Slovenia International average Australia Scotland	63 <b>61</b> 60 60	0
Slovenia International average Australia Scotland Netherlands	63 <b>61</b> 60 60 59	0 0 0 0
Slovenia International average Australia Scotland Netherlands New Zealand	63 60 60 59 55	0 0 0 0
Slovenia International average Australia Scotland Netherlands New Zealand United States	63 60 60 59 55 48	0 0 0 0 V
Slovenia International average Australia Scotland Netherlands New Zealand United States Armenia	63 60 60 59 55 48 41	0 0 0 ♥ ♥
Slovenia International average Australia Scotland Netherlands New Zealand United States Armenia Norway	63 60 60 59 55 48 41 39	0 0 0 ♥ ♥ ♥
Slovenia International average Australia Scotland Netherlands New Zealand United States Armenia Norway Philippines	63 60 60 59 55 48 41 39 36	0 0 0 ♥ ♥ ♥
Slovenia International average Australia Scotland Netherlands New Zealand United States Armenia Norway Philippines Morocco	63 60 60 59 55 48 41 39 36 32	<ul> <li>○</li> <li>○</li></ul>
Slovenia International average Australia Scotland Netherlands New Zealand United States Armenia Norway Philippines Morocco Tunisia	63 60 60 59 55 48 41 39 36 32 28	0 0 0 V V V V V
Slovenia International average Australia Scotland Netherlands New Zealand United States Armenia Norway Philippines Morocco Tunisia Iran, Islamic Republic of	63 60 59 55 48 41 39 36 32 28 25	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

#### Country average vs. International average: Higher A Not different O Lower V

Correct Response:

Α

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Attributes and Units	Reasoning

## Which has largest area

## **Overall Percent Correct**

▼

Country average vs.

Higher

Not different Lower

▼

▼

▼

V

▼



Item Number: M011005

**Correct Response:** С

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Attributes and Units	Solving Routine Problems

## The length of the films

Simon wants to watch a film that is between $1\frac{1}{2}$ and 2 hours long.
Which of the following films should he choose?
<ul> <li>A a 59-minute film</li> <li>B a 102-minute film</li> </ul>
© a 121-minute film
D a 150-minute film

## **Overall Percent Correct**

46

42

41

38

37

37

37

Singapore

England

Hungary

Australia Hong Kong, SAR

Netherlands

Russian Federation

United States	34	
Belgium (Flemish)	33	0
Chinese Taipei	32	0
Lithuania	30	0
Slovenia	30	õ
International average	30	
New Zealand	29	0
Norway	29	0
Scotland	28	0
Latvia	27	0
Italy	26	•
Moldova. Republic of	26	0
Cyprus	25	•
Japan	25	•
Armenia	22	•
Iran, Islamic Republic of	22	▼
Philippines	22	▼
Tunisia	17	▼
Morocco	16	▼
Country average International ave	e vs. rage:	
Higher Not different		

▼

Lower

Item Number: M031008

**Correct Response:** 

В

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, techniques, and formulas	Knowing Facts and Procedures

## How much did temperature rise

When Tracy left for school, the temperature was minus 3 degrees.



At recess, the temperature was 5 degrees.



How many degrees did the temperature rise?

Item Number: M011013

**Correct Response:** 

D

## **Overall Percent Correct**

Netherlands	78	
England	76	
Belgium (Flemish)	76	
Hungary	74	
Japan	71	
Latvia	70	
Italy	66	
Norway	65	
Lithuania	63	
Russian Federation	63	
Chinese Taipei	60	0
Scotland	59	0
Hong Kong, SAR	58	0
International average	57	
International average Cyprus	<b>57</b> 55	0
International average Cyprus Moldova, Republic of	<b>57</b> 55 55	0 0
International average Cyprus Moldova, Republic of Slovenia	<b>57</b> 55 55 54	0 0 0
International average Cyprus Moldova, Republic of Slovenia Singapore	<b>57</b> 55 55 54 53	0 0 0
International average Cyprus Moldova, Republic of Slovenia Singapore United States	<b>57</b> 55 54 53 52	0 0 0 V
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia	<b>57</b> 55 54 53 52 51	0 0 0 ▼ ▼
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia New Zealand	<b>57</b> 55 54 53 52 51 49	0 0 ♥ ♥
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia New Zealand Australia	<b>57</b> 55 54 53 52 51 49 46	0 0 ▼ ▼ ▼
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia New Zealand Australia Iran, Islamic Republic of	<b>57</b> 55 54 53 52 51 49 46 46	0 0 V V V
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia New Zealand Australia Iran, Islamic Republic of Philippines	<b>57</b> 55 54 53 52 51 49 46 46 46 44	0 0 7 7 7 7 7 7
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia New Zealand Australia Iran, Islamic Republic of Philippines Morocco	55 55 54 53 52 51 49 46 46 44 29	0 0 7 7 7 7 7 7
International average Cyprus Moldova, Republic of Slovenia Singapore United States Armenia New Zealand Australia Iran, Islamic Republic of Philippines Morocco Tunisia	57 55 54 53 52 51 49 46 46 46 44 29 27	0 0 7 7 7 7 7 7 7 7

Country average vs. International average:			
Higher	▲		
Not different	○		
Lower	▼		

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, techniques, and formulas	Knowing Facts and Procedures

## Draw a triangle with AB as the base

	Α		В			

Draw a triangle in the grid so that the line AB is the base of the triangle and the two new sides are the same length as each other.

## Item Number: M031322

#### SCORING

#### **Correct Response**

Triangle with two new sides equal (i.e. meeting on or within 2mm of the gridline that is the perpendicular bisector of AB)

#### **Incorrect Response**

- Triangle with two new sides unequal
- · Other incorrect (including crossed out/erased, stray marks, illegible, or off task)

## **Overall Percent Correct**

Hong Kong SAR	95	
Latvia	8/	
lanan	80	
Now Zoaland	80	
Australia	00 77	
Australia	77	
Ildiy Russian Fodoration	// 77	
	77	-
Singapore	77	
Belgium (Flemish)	//	
Lithuania	/4	
England	73	
Hungary	72	
Scotland	71	0
Chinese Taipei	70	0
Moldova, Republic of	67	0
International average	67	
Slovenia	64	0
Linite of Chatter	62	
United States	05	
Norway	58	V
Norway Cyprus	58 57	• •
Norway Cyprus Armenia	58 57 56	• •
Norway Cyprus Armenia Iran, Islamic Republic of	58 57 56 48	* * *
Norway Cyprus Armenia Iran, Islamic Republic of Philippines	58 57 56 48 45	* * * *
Norway Cyprus Armenia Iran, Islamic Republic of Philippines Morocco	58 57 56 48 45 42	* * * *
Norway Cyprus Armenia Iran, Islamic Republic of Philippines Morocco Tunisia	58 57 56 48 45 42 28	* * * * *
Norway Cyprus Armenia Iran, Islamic Republic of Philippines Morocco Tunisia Netherlands	58 57 56 48 45 42 28 0	

Country average vs.				
International average:				
Higher				
Not different	0			
Lower <b>V</b>				

Draw a triangle with *AB* as the base (continued) *Item Number: M031322* 

## **Student Responses**

**Correct Response:** 



Draw a triangle in the grid so that the line AB is the base of the triangle and the two new sides are the same length as each other.

#### **Incorrect Response:**



Draw a triangle in the grid so that the line AB is the base of the triangle and the two new sides are the same length as each other.

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Reasoning

## Distance on map



Item Number: M012065

## **Overall Percent Correct**

Netherlands	69	
Singapore	62	
Japan	61	
Belgium (Flemish)	61	
Hong Kong, SAR	60	
Lithuania	59	
Latvia	57	
Hungary	55	
Russian Federation	52	
England	51	
Chinese Taipei	49	
Australia	46	0
New Zealand	45	0
International average	45	
International average Italy	<b>45</b> 44	0
International average Italy Moldova, Republic of	<b>45</b> 44 44	0 0
International average Italy Moldova, Republic of United States	<b>45</b> 44 44 41	0 0 V
International average Italy Moldova, Republic of United States Slovenia	<b>45</b> 44 44 41 38	0 0 ▼
International average Italy Moldova, Republic of United States Slovenia Cyprus	<b>45</b> 44 41 38 37	0 0 V V
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway	<b>45</b> 44 41 38 37 36	0 0 ▼ ▼
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway Scotland	<b>45</b> 44 41 38 37 36 35	0 0 V V V
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway Scotland Armenia	45 44 41 38 37 36 35 33	0 0 V V V
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway Scotland Armenia Morocco	45 44 41 38 37 36 35 33 26	0 0 V V V V
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway Scotland Armenia Morocco Iran, Islamic Republic of	45 44 41 38 37 36 35 33 26 21	0 0 7 7 7 7 7 7
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway Scotland Armenia Morocco Iran, Islamic Republic of Tunisia	45 44 41 38 37 36 35 33 26 21 21	○ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼ ▼
International average Italy Moldova, Republic of United States Slovenia Cyprus Norway Scotland Armenia Morocco Iran, Islamic Republic of Tunisia Philippines	45 44 41 38 37 36 35 33 26 21 21 20	○ ▼ ▼ ▼ ▼ ▼ ▼

Country average vs.				
International average:				
Higher				
Not different	0			
Lower				

Correct Response: C

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Reasoning

Complete the figure with an area of 13 cm<sup>2</sup>

The squares in the grid above have areas of 1 square centimeter. Draw lines to complete the figure so that it has an area of 13 square centimeters.

Overall	Percent	Correct
ovorum	1 01 00110	

Japan	68	
, Chinese Taipei	66	
Hong Kong, SAR	52	
Latvia	43	
Singapore	43	
Lithuania	40	
Netherlands	37	
Moldova, Republic of	35	
Cyprus	34	
Russian Federation	30	0
Australia	29	0
England	29	0
Scotland	29	0
International average	29	
International average Belgium (Flemish)	<b>29</b> 28	0
International average Belgium (Flemish) Hungary	<b>29</b> 28 26	0 0
International average Belgium (Flemish) Hungary Armenia	<b>29</b> 28 26 25	0 0 0
International average Belgium (Flemish) Hungary Armenia United States	<b>29</b> 28 26 25 24	0 0 0
International average Belgium (Flemish) Hungary Armenia United States Italy	29 28 26 25 24 22	0 0 0 V
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand	29 28 26 25 24 22 15	0 0 0 V
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand Iran, Islamic Republic of	29 28 26 25 24 22 15 11	0 0 0 V V
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand Iran, Islamic Republic of Slovenia	<ul> <li>29</li> <li>28</li> <li>26</li> <li>25</li> <li>24</li> <li>22</li> <li>15</li> <li>11</li> <li>11</li> </ul>	0 0 ♥ ♥ ♥
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand Iran, Islamic Republic of Slovenia Norway	<ul> <li>29</li> <li>28</li> <li>26</li> <li>25</li> <li>24</li> <li>22</li> <li>15</li> <li>11</li> <li>11</li> <li>10</li> </ul>	0 0 V V V
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand Iran, Islamic Republic of Slovenia Norway Morocco	29 28 26 25 24 22 15 11 11 10 9	○ ○ ▼ ▼ ▼ ▼
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand Iran, Islamic Republic of Slovenia Norway Morocco Tunisia	29 28 26 25 24 22 15 11 11 10 9 9	0 0 7 7 7 7 7 7 7
International average Belgium (Flemish) Hungary Armenia United States Italy New Zealand Iran, Islamic Republic of Slovenia Norway Morocco Tunisia Philippines	29 28 25 24 22 15 11 11 10 9 9 5	0 0 7 7 7 7 7 7 7 7

Country average vs.				
International average:				
Higher				
Not different	0			
Lower <b>V</b>				

Item Number: M031298

#### SCORING

#### **Correct Response**

• Lines drawn to give area of 13 square cm

#### **Incorrect Response**

- · Error due to counting half squares as full square centimeters
- One line drawn to close given figure
- Symmetrical figure drawn
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task)

Complete the figure with an area of 13 cm<sup>2</sup> (continued) *Item Number: M031298* 

## **Student Responses**

#### **Correct Response:**



The squares in the grid above have areas of 1 square centimeter. Draw lines to complete the figure so that it has an area of 13 square centimeters.

#### **Incorrect Response:**



The squares in the grid above have areas of 1 square centimeter. Draw lines to complete the figure so that it has an area of 13 square centimeters.

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Solving Routine Problems

## When is Mary's trip

Here is a calendar for December.

DECEMBER						
$\mathbf{S}$	М	Т	W	Т	F	$\mathbf{S}$
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Mary's birthday is on Thursday, December 2. She is going on a trip exactly 3 weeks later. On what date will she go on the trip?

- (A) December 16th
- (B) December 21st
- © December 23rd
- (D) December 30th

Item Number: M011017

## **Overall Percent Correct**

Japan	83	
England	82	
Belgium (Flemish)	81	
Netherlands	79	
Scotland	79	
Hong Kong, SAR	76	
Australia	75	
Chinese Taipei	75	
Singapore	75	
United States	75	
New Zealand	74	
Latvia	69	
Hungary	67	0
Russian Federation	67	0
Italy	66	0
Slovenia	66	0
Lithuania	65	0
Moldova, Republic of	64	0
International average	64	
Norway	62	0
Cyprus	61	0
Armenia	51	▼
Philippines	36	▼
Iran, Islamic Republic of	31	▼
Morocco	26	▼
Tunisia	25	▼

Country average vs. International average:		
Higher Not different	0	
Lower	•	

Correct Response: C

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Solving Routine Problems

## Perimeter of rectangle



Item Number: M011025

## **Overall Percent Correct**

Singapore	93	
Latvia	77	
Lithuania	73	
Russian Federation	72	
Armenia	66	
United States	64	
Hong Kong, SAR	62	
Moldova, Republic of	62	
Belgium (Flemish)	61	
Australia	57	
Hungary	57	
Italy	57	
Cyprus	53	0
England	52	0
International average	51	
Chinese Taipei	42	▼
New Zealand	39	
N I a service i s	20	-
Norway	29	•
Philippines	39	•
Norway Philippines Scotland	39 39 36	• •
Norway Philippines Scotland Netherlands	39 39 36 35	* * *
Philippines Scotland Netherlands Iran, Islamic Republic of	39 36 35 34	* * *
Philippines Scotland Netherlands Iran, Islamic Republic of Slovenia	39 36 35 34 33	* * * *
Philippines Scotland Netherlands Iran, Islamic Republic of Slovenia Japan	39 36 35 34 33 25	* * * *
Philippines Scotland Netherlands Iran, Islamic Republic of Slovenia Japan Tunisia	39 36 35 34 33 25 25	* * * * *
Philippines Scotland Netherlands Iran, Islamic Republic of Slovenia Japan Tunisia Morocco	<ol> <li>39</li> <li>39</li> <li>36</li> <li>35</li> <li>34</li> <li>33</li> <li>25</li> <li>21</li> </ol>	* * * * *

Country average vs. International average:		
Higher		
Not different Lower	▼	

Correct Response: D

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Solving Routine Problems

## Betty's average driving speed

The distance from one town to another is 180 km. If Betty has to drive the distance in 3 hours, what must her average speed be in kilometers per hour?

- (A)  $180 \times 3$
- **B** 180 + 3
- C 180 ÷ 3
- D 180 3

Item Number: M031097

**Overall Percent Correct** 

Hona Kona, SAR	83	
Latvia	80	
Russian Federation	74	
Chinese Taipei	73	
Japan	73	
Lithuania	65	
Netherlands	62	
Singapore	59	
Belgium (Flemish)	56	
Armenia	54	
Hungary	53	0
Moldova, Republic of	53	0
International average	48	
Cyprus	39	▼
Cyprus Slovenia	39 37	•
Cyprus Slovenia United States	39 37 37	• •
Cyprus Slovenia United States England	39 37 37 36	<b>v</b> <b>v</b> <b>v</b>
Cyprus Slovenia United States England Italy	39 37 37 36 34	* * * *
Cyprus Slovenia United States England Italy New Zealand	39 37 37 36 34 32	* * * *
Cyprus Slovenia United States England Italy New Zealand Australia	39 37 37 36 34 32 31	<b>v</b> <b>v</b> <b>v</b> <b>v</b> <b>v</b> <b>v</b> <b>v</b> <b>v</b>
Cyprus Slovenia United States England Italy New Zealand Australia Norway	39 37 36 34 32 31 30	* * * * * *
Cyprus Slovenia United States England Italy New Zealand Australia Norway Scotland	39 37 36 34 32 31 30 29	* * * * * * *
Cyprus Slovenia United States England Italy New Zealand Australia Norway Scotland Tunisia	39 37 36 34 32 31 30 29 28	* * * * * * *
Cyprus Slovenia United States England Italy New Zealand Australia Norway Scotland Tunisia Morocco	39 37 36 34 32 31 30 29 28 27	* * * * * * * * *
Cyprus Slovenia United States England Italy New Zealand Australia Norway Scotland Tunisia Morocco Iran, Islamic Republic of	39 37 36 34 32 31 30 29 28 27 26	* * * * * * * * *
Cyprus Slovenia United States England Italy New Zealand Australia Norway Scotland Tunisia Morocco Iran, Islamic Republic of Philippines	39 37 36 34 32 31 30 29 28 27 26 25	* * * * * * * * * * * *

Country average vs.		
International average:		
Higher		
Not different	0	
Lower	•	

Correct Response:

С

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Solving Routine Problems

#### George practiced soccer 6 days a week

George practiced soccer six days a week. For 3 of the days he practiced for 45 minutes each day.

For 3 of the days he practiced for 20 minutes each day.

In hours and minutes, what is the total amount of time George practiced on these six days?

- (A) 2 hours 20 minutes
- (B) 2 hours 55 minutes
- © 3 hours 5 minutes
- (D) 3 hours 15 minutes

Item Number: M031178

**Overall Percent Correct** 

Singapore Chinese Taipei Russian Federation Japan Lithuania Hong Kong, SAR Latvia Hungary England Belgium (Flemish)	64 61 53 53 50 49 44 42 41	
International average	37	
United States Moldova, Republic of Armenia Australia Italy Netherlands Slovenia Cyprus New Zealand Scotland Norway Morocco Philippines Iran, Islamic Republic of Tunisia	36 35 34 33 32 31 28 27 24 17 15 13 11	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Country avera	ige vs. verage:
Higher	▲
Not different	○
Lower	▼

Correct Response:

D

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Using Concepts

## Volume of stack of cubes

Jasmine made a stack of cubes of the same size. The stack had 5 layers and each layer had 10 cubes. What is the volume of the stack?

- (A) 5 cubes
- B 15 cubes
- $\bigcirc$  30 cubes
- $\bigcirc$  50 cubes

Item Number: M011010

## **Overall Percent Correct**

Chinese Taipei	93	
Hong Kong, SAR	91	
Netherlands	85	
Singapore	85	
Russian Federation	82	
Lithuania	80	
Latvia	79	
Belgium (Flemish)	75	
Japan	73	
Moldova, Republic of	70	
Italy	67	0
United States	67	
England	65	0
Hungary	64	0
Hungary International average	64 63	0
Hungary International average Australia	64 <b>63</b> 61	0
Hungary International average Australia Cyprus	64 63 61 61	0
Hungary International average Australia Cyprus Scotland	64 63 61 61 60	0 0 0 0
Hungary International average Australia Cyprus Scotland New Zealand	64 61 61 60 56	0 0 0 0
Hungary International average Australia Cyprus Scotland New Zealand Armenia	64 61 61 60 56 53	0 0 0 0 ₹
Hungary International average Australia Cyprus Scotland New Zealand Armenia Slovenia	64 61 61 60 56 53 53	0 0 0 V V
Hungary International average Australia Cyprus Scotland New Zealand Armenia Slovenia Norway	64 61 61 60 56 53 53 46	0 0 0 ▼ ▼ ▼
Hungary International average Australia Cyprus Scotland New Zealand Armenia Slovenia Norway Iran, Islamic Republic of	64 61 61 60 56 53 53 46 36	0 0 0 ▼ ▼ ▼
Hungary International average Australia Cyprus Scotland New Zealand Armenia Slovenia Norway Iran, Islamic Republic of Morocco	64 63 61 60 56 53 53 46 36 29	0 0 0 ▼ ▼ ▼
Hungary International average Australia Cyprus Scotland New Zealand Armenia Slovenia Norway Iran, Islamic Republic of Morocco Tunisia	64 63 61 60 56 53 53 46 36 29 28	0 0 0 V V V V V
Hungary International average Australia Cyprus Scotland New Zealand Armenia Slovenia Norway Iran, Islamic Republic of Morocco Tunisia Philippines	64 61 61 56 53 53 46 36 29 28 28 26	

#### Country average vs. International average: Higher ▲ Not different O Lower ▼

Correct Response:

D

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing Facts and Procedures

## Sum of two numbers with decimals

What is the sum of 2.5 and 3.8?	Singapore
(A) 5.3	Bolgium (Elomish)
	Lithuania
(B) 6.3	Hong Kong SAR
(c) 6.4	Netherlands
	Italy
(D) 9.5	England
	Russian Endoration
	Hungary
	Moldova Republic of
	Latvia
	International average
	Armenia
	Philippines
	Australia
	Scotland
	Cyprus
	New Zealand
	Slovenia
	Norway
	Morocco
	Iran, Islamic Republic of
	Tunisia
	Country average International ave
	Higher Not different

## **Overall Percent Correct**

97

97

96

91

87

86

85

77

73

72

72

72

69

69

67

67

62

58

55

52 49

48

45

42

37

31

0

0

0

0

▼ ▼

▼

▼

▼

▼

▼

▼

V

▼

Country average vs. International average: Higher 0 Not different Lower ▼

Item Number: M011008

**Correct Response:** 

В

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing Facts and Procedures

## Subtraction with decimals

Subtract:	4.03 - 1.15	Singapore Hong Kong, SAR Chinese Taipei
<ul> <li>▲ 5.18</li> </ul>		Russian Federation
(H) 0.10		Armonia
<b>B</b> 4.45		Italy
$\bigcirc 312$		Lithuania
0.12		lapan
D 2.98		Moldova Republic of
F) 2.88		United States
L) 2.00		Belgium (Flemish)
		Netherlands
		Cyprus
		Hungary
		International average
		Scotland
		Tunisia
		Slovenia
		England
		Morocco
		Philippines
		Iran, Islamic Republic of
		Norway
		Australia
		New Zealand
		Country average International average
		Higher Not different Lower

Item Number: M011015

**Correct Response:** 

Ε

**Overall Percent Correct** 

94

84 83

81

79

74 74

73

72

72

72

71

69

65 63

61 51

47

44

43

41

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Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing Facts and Procedures

## Fraction to decimal

Wh	ich of these means $\frac{7}{10}$ ?	Singapore Hong Kong, SAR Chinese Taipei	95 78 74
	70	Belgium (Flemish)	73
$(\mathbf{A})$	10	Cyprus	65
B	7	United States	62
6	0.7	Japan	60
U	0.7	Italy	58
(D)	0.07	Moldova, Republic of	52
		Philippines	49
		Lithuania	48
		England	46
		International average	43
		Australia	42
		Armenia	42
		Russian Federation	39
		New Zealand	37
		Netherlands	29
		Morocco	23
		Scotland	22
		Hungary	17
		Norway	17
		Iran, Islamic Republic of	16
		Tunisia	15
		Latvia	12
		Slovenia	8
		Country averag International ave	e vs. erage:
		Higher Not different Lower	▲ 0 ▼

Item Number: M011020

**Correct Response:** 

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**Overall Percent Correct** 

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Content Domain	Main Topic	Cognitive Domain
A. NUMBER	Fractions and Decimals	Knowing Facts and Procedures
B. NUMBER	Fractions and Decimals	Reasoning

## Geometry Tiles: <sup>1</sup>/<sub>2</sub> black

A. WITHOUT using any triangle tiles, place 4 tiles so that  $\frac{1}{2}$  of a square shape is black. Then shade in the square below to show what you did with your tiles.

#### Shade in Here



B. Place 8 tiles so that  $\frac{5}{8}$  of the rectangle shape is black. Then shade in the rectangle below to show what you did with your tiles.

#### Shade in Here



#### Item Number: M031348A

#### SCORING

#### **Correct Response**

Draws a pattern made up of 2 black tiles and two white tiles. See examples below.



#### **Incorrect Response**

· Other incorrect (including crossed out/erased, stray marks, illegible, or off task)

## **Overall Percent Correct**

Singapore	56	
Belgium (Flemish)	51	
England	49	
United States	48	
Netherlands	46	
Japan	45	
New Zealand	44	
Hong Kong, SAR	43	
Australia	42	
Cyprus	39	
Hungary	39	0
Latvia	37	
Scotland	36	0
Lithuania	35	0
Lithuania International average	35 <b>33</b>	0
Lithuania International average Chinese Taipei	35 <b>33</b> 32	0
Lithuania International average Chinese Taipei Russian Federation	35 <b>33</b> 32 32	0
Lithuania International average Chinese Taipei Russian Federation Norway	35 <b>33</b> 32 32 31	0 0 0 0
Lithuania International average Chinese Taipei Russian Federation Norway Italy	35 <b>33</b> 32 32 31 30	0 0 0 0 0
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of	35 <b>33</b> 32 32 31 30 28	0 0 0 0
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of Slovenia	35 <b>33</b> 32 32 31 30 28 24	0 0 0 0 0 0
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of Slovenia Philippines	35 32 32 31 30 28 24 16	0 0 0 0 0 0 V V
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of Slovenia Philippines Armenia	35 32 32 31 30 28 24 16 11	0 0 0 0 ₹ ₹
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of Slovenia Philippines Armenia Iran, Islamic Republic of	35 32 32 31 30 28 24 16 11 7	
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of Slovenia Philippines Armenia Iran, Islamic Republic of Morocco	35 32 32 31 30 28 24 16 11 7 4	
Lithuania International average Chinese Taipei Russian Federation Norway Italy Moldova, Republic of Slovenia Philippines Armenia Iran, Islamic Republic of Morocco Tunisia	35 32 32 31 30 28 24 16 11 7 4 4	

Country avera	age vs.
International a	verage:
Higher	▲
Not different	○
Lower	▼

# Geometry Tiles: <sup>1</sup>/<sub>2</sub> black (continued)

Item Number: M031348A

## **Student Responses**

## **Correct Response:**

A. WITHOUT using any triangle tiles, place 4 tiles so that  $\frac{1}{2}$  of a square shape is black. Then shade in the square below to show what you did with your tiles.

#### Shade in Here



#### **Incorrect Response:**

A. WITHOUT using any triangle tiles, place 4 tiles so that  $\frac{1}{2}$  of a square shape is black. Then shade in the square below to show what you did with your tiles.

#### Shade in Here



Content Domain	Main Topic	Cognitive Domain
A. NUMBER	Fractions and Decimals	Knowing Facts and Procedures
B. NUMBER	Fractions and Decimals	Reasoning

## Geometry Tiles: 5/8 black

A. WITHOUT using any triangle tiles, place 4 tiles so that  $\frac{1}{2}$  of a square shape is black. Then shade in the square below to show what you did with your tiles.

#### Shade in Here



B. Place 8 tiles so that  $\frac{5}{8}$  of the rectangle shape is black. Then shade in the rectangle below to show what you did with your tiles.

#### Shade in Here



#### Item Number: M031348B

#### SCORING

#### **Correct Response**

• Any figure using 3 black, 1 white, and 4 triangle tiles:



#### **Partially Correct Response**

#### Incorrect Response

- $\frac{1}{2}$  of the figure shaded
- · Other incorrect (including crossed out/erased, stray marks, illegible, or off task)

#### **Overall Percent Correct**

lanan	13	
Latvia	13	
England	13	
Belgium (Elemish)	13	
Australia	11	
Singanore	11	
New Zealand	10	
Russian Endoration	10	
Chinasa Tainai	0	0
	0	0
Cyprus	0	0
Litnuania	ð o	0
Nethenanus	ð	0
United States	8	0
Hong Kong, SAR	/	0
Scotland	7	0
International average	7	
Italy	6	0
Norway	5	0
Hungary	4	
Iran, Islamic Republic of	1	
Moldova, Republic of	1	▼
Philippines	1	▼
Slovenia	1	
Tunisia	1	▼
Armenia	0	
Morocco	0	▼



## Geometry Tiles: 5% black (continued)

Item Number: M031348B

## **Student Responses**

## **Correct Response:**

B. Place 8 tiles so that  $\frac{5}{8}$  of the rectangle shape is black. Then shade in the

rectangle below to show what you did with your tiles.



#### **Incorrect Response:**

B. Place 8 tiles so that  $\frac{5}{8}$  of the rectangle shape is black. Then shade in the rectangle below to show what you did with your tiles.

#### Shade in Here



Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Solving Routine Problems

## Fraction of cake left

Janis, Maija, and their mother were eating a cake. Janis ate $\frac{1}{2}$ of the cake. Maija ate $\frac{1}{4}$ of the cake. Their mother ate $\frac{1}{4}$ of the cake. How much of the cake is left?
$\textcircled{A}  \frac{3}{4}$
$\textcircled{B}  \frac{1}{2}$
$\bigcirc \frac{1}{4}$
D None

Item Number: M012119

Correct Response:

D

## **Overall Percent Correct**

83

83

82

Singapore

England

Hong Kong, SAR

New Zealand	74	
Lithuania	73	
Scotland	70	
Australia	68	
United States	65	
Belgium (Flemish)	65	
Netherlands	63	0
Russian Federation	63	0
Hungary	61	0
Moldova, Republic of	61	0
Italy	60	0
Latvia	60	0
International average	59	
Slovenia	58	0
Cyprus	54	
Chinese Taipei	51	
Norway	49	▼
Armenia	48	▼
Iran, Islamic Republic of	48	▼
Japan	47	
Morocco	32	▼
Philippines	32	▼
Tunisia	24	▼
Country average International ave	e vs. rage:	
Higher Not different	▲ 0	

Lower

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Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Solving Routine Problems

## 1/3 of 600 balls in a box

There are 600 balls in a box, and $\frac{1}{3}$ of the balls are red.		
How many red balls are in the box?		
Answer: red balls		

#### Item Number: M031065

## SCORING

#### **Correct Response**

• 200

#### **Incorrect Response**

· Incorrect (including crossed out/erased, stray marks, illegible, or off task)

## **Overall Percent Correct**

Lithuania	85	
Singapore	84	
Latvia	82	
Belgium (Flemish)	82	
Russian Federation	78	
Moldova, Republic of	68	
Cyprus	64	
Hong Kong, SAR	64	
Armenia	63	
Netherlands	63	
Hungary	62	
Japan	56	
Chinese Taipei	55	
International average	49	
Italy	43	▼
England	41	
Scotland	40	▼
United States	38	▼
New Zealand	34	
Slovenia	32	▼
Australia	30	▼
Tunisia	24	
Nonway	19	▼
Norway	15	
Philippines	14	▼
Philippines Iran, Islamic Republic of	14 9	▼ ▼
Philippines Iran, Islamic Republic of Morocco	14 9 7	• • •
Philippines Iran, Islamic Republic of Morocco	14 9 7	•

#### International average: Higher A Not different O Lower V

# 1/3 of 600 balls in a box (continued)

Item Number: M031065

## **Student Responses**

#### **Correct Response:**



#### **Incorrect Response:**

There are 600 balls in a box, and  $\frac{1}{3}$  of the balls are red.

How many red balls are in the box?

Answer: 1,72729 red balls

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Solving Routine Problems

## What fraction of cake John ate

A cake was cut into 8 pieces of equal size. John ate 3 pieces of the cake. What fraction of the cake did John eat?	
$ (A)  \frac{1}{8} $	
$  B   \frac{3}{8} $	
$\bigcirc  \frac{3}{5}$	
$\bigcirc  \frac{8}{3}$	

## **Overall Percent Correct**

Chinese Taipei	97	
Hong Kong, SAR	93	
Singapore	89	
Belgium (Flemish)	89	
Japan	88	
United States	86	
Cyprus	85	
Netherlands	83	
England	80	
Australia	79	
New Zealand	77	
Lithuania	73	
Italy	72	0
Scotland	71	0
Latvia	69	0
Latvia International average	69 <b>69</b>	0
Latvia International average Hungary	69 <b>69</b> 64	0
Latvia International average Hungary Norway	69 <b>69</b> 64 62	0
Latvia International average Hungary Norway Iran, Islamic Republic of	69 64 62 58	0 V V
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation	69 64 62 58 58	<ul> <li>○</li> <li>▼</li> <li>▼</li> <li>▼</li> <li>▼</li> <li>▼</li> <li>▼</li> </ul>
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia	69 64 62 58 58 58 53	<ul> <li>○</li> <li>▼</li> <li>▼</li></ul>
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia Philippines	69 64 62 58 58 53 52	<ul> <li>○</li> <li>▼</li> <li>■</li> <li>&gt;</li></ul>
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia Philippines Moldova, Republic of	69 64 62 58 58 53 52 46	<ul> <li>○</li> <li>▼</li> <li>&lt;</li></ul>
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia Philippines Moldova, Republic of Slovenia	69 64 62 58 58 53 52 46 42	<ul> <li>○</li> <li>▼</li> <li>&lt;</li></ul>
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia Philippines Moldova, Republic of Slovenia Tunisia	69 64 62 58 53 52 46 42 28	0 • • • • • • • •
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia Philippines Moldova, Republic of Slovenia Tunisia Morocco	69 64 62 58 53 52 46 42 28 27	0 • • • • • • • • • • •
Latvia International average Hungary Norway Iran, Islamic Republic of Russian Federation Armenia Philippines Moldova, Republic of Slovenia Tunisia Morocco	69 64 62 58 53 52 46 42 28 27	0 * * * * *

Country average vs. International average:		
Higher		
Not different	0	
Lower	•	

Item Number: M031216

Correct Response:

В

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Using Concepts

## Which figure has one-half black dots



Overall	Percent	Correct
overun	1 Croone	

97 97 95 91 90 89 89 88 88 88 88 88 85 85 84	
97 95 91 90 89 89 88 88 88 88 88 88 85 85 84	
95 91 90 89 89 88 88 88 88 88 85 85 85	
91 90 89 89 88 88 88 88 88 85 85 85	
90 90 89 89 88 88 88 88 85 85 85	
90 89 88 88 88 88 86 85 85 85	
89 89 88 88 88 86 85 85 85	
89 88 88 86 85 85 85	
88 88 86 85 85 85	
88 86 85 85 84	
86 85 85 84	
85 85 84	
85 84	
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04	
84	
84	
79	
76	0
75	
66	▼
56	
47	
46	
42	
37	▼
	84 79 76 66 56 47 46 42 37

Country average	ge vs.
International av	erage:
Higher	
Not different	0
Lower	•

Item Number: M011001

Correct Response: B

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Using Concepts

## 3 of 4 squares shaded

In	this diagram, 2 out of every 3 squares are shaded.	Singapore Belgium (Flemish) Japan Lithuania Hong Kong, SAR Italy Netherlands United States England Cyprus Moldova, Republic of	77 74 73 71 70 68 65 63 63 63 60
A	B	Chinese Taipei	59
		Siovenia	56
		Scotland	50
		Australia	51
		New Zealand	51
C		Norway	46
		Russian Federation	46
		Hungary	45
		Latvia	45
		Armenia	43
		Iran, Islamic Republic of	43
		Philippines	33
		Morocco	25
		Tunisia	22
		Country averag	e vs.
		Higher Not different Lower	▲ 0 ▼

Item Number: M011016

**Overall Percent Correct** 

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**Correct Response:** С

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Using Concepts

## Figure showing fraction of shaded square



Item Number: M012044

Correct Response: E

**Overall Percent Correct** 

Singapore	93	
Hong Kong, SAR	86	
United States	82	
Chinese Taipei	81	
Belgium (Flemish)	79	
Japan	76	
Cyprus	75	
Netherlands	73	
England	67	
Australia	62	
Latvia	60	0
New Zealand	59	0
International average	57	
Hungary	56	0
Lithuania	ГС	0
Littiuailla	20	0
Italy	55	0
Italy Scotland	56 55 52	0
Italy Scotland Philippines	55 52 50	0 ▼ ▼
Italy Scotland Philippines Russian Federation	55 52 50 49	0 ▼ ▼
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of	55 52 50 49 47	0 • •
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of	55 52 50 49 47 43	0 • • •
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of Slovenia	56 55 52 50 49 47 43 34	0 V V V V V V
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of Slovenia Armenia	55 52 50 49 47 43 34 29	
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of Slovenia Armenia Norway	55 52 50 49 47 43 34 29 29	
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of Slovenia Armenia Norway Morocco	55 52 50 49 47 43 34 29 29 13	
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of Slovenia Armenia Norway Morocco Tunisia	55 52 50 49 47 43 34 29 29 13 12	
Italy Scotland Philippines Russian Federation Iran, Islamic Republic of Moldova, Republic of Slovenia Armenia Norway Morocco Tunisia	55 52 50 49 47 43 34 29 29 13 12	

Country average vs.		
International average:		
Higher		
Not different	0	
Lower	•	

Content Domain	Main Topic	Cognitive Domain
NUMBER	Ratio, Proportions, and Percent	Solving Routine Problems

## Maria collected soft drink bottles

For every soft drink bottle that Fred collected, Maria collected 3. Fred collected a total of 9 soft drink bottles. How many did Maria collect?
A 3
B 12
© 13
D 27

## **Overall Percent Correct**

Chinese Taipei	74	
Hong Kong, SAR	74	
Lithuania	67	
Singapore	67	
Japan	65	
Netherlands	63	
England	60	
Belgium (Flemish)	59	
Cyprus	58	
United States	55	
Hungary	52	0
Russian Federation	52	0
International average	49	
Scotland	47	0
Armenia	46	0
Slovenia	46	0
Moldova, Republic of	43	0
Australia	42	▼
Italy	40	▼
New Zealand	40	▼
Norway	40	•
Latvia	38	•
Iran Islamic Republic of	28	•
Tunisia	21	<b>•</b>
Morocco	20	÷
Philippings	20	÷
r milippines	20	•
0		

# Country average vs. International average: Higher ▲ Not different O Lower ▼

Item Number: M031108

Correct Response: D

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing Facts and Procedures

## Number rounded to 600

Which number would be rounded to 600 when rounded to the nearest hundred? (A) 62 (B) 160 (C) 546 (D) 586

(E) 660

Item Number: M011019

Correct Response: D

**Overall Percent Correct** 

Singapore Chinese Taipei Netherlands Japan England Hungary Hong Kong, SAR United States Australia Scotland Belgium (Flemish) Moldova, Republic of	87 86 85 84 83 82 80 78 78 78 78 70 70	
New Zealand	/U	
	64	
Lithuania	61	0
Norway	59	0
ltoly/	53	•
Italy	50	_
Morocco Latvia	52 50	•
Morocco Latvia Armenia	52 50 46	▼ ▼ ▼
Morocco Latvia Armenia Russian Federation	52 50 46 45	• • •
Morocco Latvia Armenia Russian Federation Slovenia	52 50 46 45 39	• • • •
Morocco Latvia Armenia Russian Federation Slovenia Tunisia	52 50 46 45 39 38	* * * *

Country average vs. International average:	
Higher	
Not different	0
Lower	•

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing Facts and Procedures

## Which number is it

What number equals 3 ones + 5 tens + 4 hundreds + 60 thousands?	
(A) 6,453	
B 60,453	
© 64,530	
D 354,060	
E 604,530	

## **Overall Percent Correct**

Singapore

Japan

Italy

Cyprus

Lithuania

England

Australia

Slovenia

Norway

Morocco

Scotland

Philippines

Armenia

Tunisia

New Zealand

Hong Kong, SAR

Moldova, Republic of

Higher

Not different Lower

Hungary Latvia

Netherlands

Chinese Taipei

United States

Russian Federation

Belgium (Flemish)

International average

Iran, Islamic Republic of

88

85

84

83

83

80

80

80

80

72

70

69

68

68

63

62

62

61

61

60

59

53

52

51

45

42

**▲** 0

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Country average vs. International average: 0

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Item Number: M011021

Correct Response:

В

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing Facts and Procedures

#### Express number in words

Which of these is a name for 9,740?

- (A) Nine thousand seventy-four
- B  $% \ensuremath{\mathbb{B}}$  Nine thousand seven hundred forty
- © Nine thousand seventy-four hundred
- (D) Nine hundred seventy-four thousand

**Overall Percent Correct** 

Chinese Taipei	98	
Hong Kong, SAR	98	
Singapore	97	
Japan	96	
England	95	
Belgium (Flemish)	95	
Netherlands	92	
Italy	91	
Lithuania	91	
United States	91	
Latvia	90	
Russian Federation	90	
Australia	89	0
Hungary	88	0
Moldova, Republic of	87	0
New Zealand	87	0
Scotland	87	0
International average	86	
Cyprus	85	0
Slovenia	81	
Norway	80	
Armenia	79	▼
Philippines	79	
Iran, Islamic Republic of	72	▼
Morocco	64	
Tunisia	50	▼

Country average vs. International average:	
Higher	
Not different	0
Lower	•

Item Number: M011024

Correct Response: B

**Overall Percent Correct** 

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing Facts and Procedures

## Which number is equal

Г

	Higher Not different Lower	0	
	Country averag International ave	Country average vs. International average:	
	Tunisia	27	
	Philippines	28	
	Morocco	29	
	Iran, Islamic Republic of	34	
	Italy	51	
	Slovenia	53	
	Cyprus	54	
	Scotland	64	С
	International average	65	
	United States	65	С
	Norway	65	0
	Australia	67	0
	Japan	69	
	Belgium (Flemish)	70	
	Russian Federation	72	
	Armenia	72	
	England	73	
D 17,000	New Zealand	73	
	Lithuapia	73	
© 1700	Netherlands	77	
B 170	Hong Kong, SAR	80	
	Moldova, Republic of	84	
17	Hungary	85	4
which humber is equal to eight tens plus line tens.	Singapore	87	4
Which number is equal to eight tong plug pine tong?	Chinese Taipei	91	

Item Number: M011028

Correct Response: B

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing Facts and Procedures

## 15 times 9

	Chinese Taipei	94
$15 \times 9 =$	Singapore	93
	Hong Kong, SAR	91
	Russian Federation	90
	Moldova, Republic of	88
Answer:	Lithuania	87
	Japan	86
	Latvia	86
	Netherlands	86
	Armenia	85
	Hungary	85
	Belgium (Flemish)	84
	Cyprus	76
	Italy	75
	United States	73
	International average	72
	Tunisia	68
	Slovenia	67
	Iran, Islamic Republic of	61
	Philippines	59
	England	59
	Scotland	54
	Australia	45
	New Zealand	41
	Morocco	36
	Norway	30
	Country average International ave	e vs. erage:
	Higher Not different Lower	▲ 0 ▼

Item Number: M031305

## SCORING

#### **Correct Response**

• 135

**Incorrect Response** 

• Incorrect (including crossed out/erased, stray marks, illegible, or off task)

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## 15 times 9 (continued)

Item Number: M031305

## **Student Responses**

## **Correct Response:**

$$\frac{4}{15 \times 9} = \frac{4}{135}$$
  
Answer: 35

## **Incorrect Response:**

15 × 9 =

Answer: 55

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing Facts and Procedures

## 204 divided by 4

204 ÷ 4 =	Hong Kong, SAR Singapore Chinese Taipei Russian Federation
	Hungary
Answer:	Moldova, Republic of
	Japan
	Latvia
	Lithuania
	Belgium (Flemish)
	Cyprus
	Italy
	Armenia
	Netherlands
	International average
	United States
	Tunisia
	Iran, Islamic Republic
	England
	Scotland
	Slovenia
	Philippines
	Australia
	New Zealand
	Norway
	Morocco
	Country aver International a
	Higher Not different Lower

Item Number: M031306

#### SCORING

#### **Correct Response**

• 51

**Incorrect Response** 

· Incorrect (including crossed out/erased, stray marks, illegible, or off task)

## **Overall Percent Correct**

93

91

90

90

86

85

84

itvia	82	
thuania	82	
elgium (Flemish)	77	
/prus	72	
aly	71	
rmenia	70	
etherlands	65	0
ternational average	63	
nited States	55	▼
inisia	47	
an, Islamic Republic of	46	▼
ngland	46	▼
otland	42	▼
ovenia	41	▼
nilippines	38	▼
ustralia	33	▼
ew Zealand	33	▼
orway	27	▼
orocco	17	▼
Country average International ave	e vs. rage:	
Higher Not different Lower	▲ 0 ▼	

## 204 divided by 4 (continued)

Item Number: M031306

## **Student Responses**

## **Correct Response:**



## **Incorrect Response:**



#### TIMSS 2003 4th-Grade Mathematics Concepts and Mathematics Items

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

## The number Lia should add to 142 to get 369

Lia is practicing addition and subtraction problems. What number should Lia add to 142 to get 369?

Answer: \_\_\_\_\_

**Overall Percent Correct** 

Singapore	88	
Hungary	86	
Russian Federation	85	
Chinese Taipei	83	
Lithuania	83	
Hong Kong, SAR	82	
Japan	81	
Latvia	79	
Belgium (Flemish)	72	
United States	71	
Netherlands	69	
Armenia	64	0
Cyprus	64	0
Moldova, Republic of	64	0
Moldova, Republic of International average	64 62	0
Moldova, Republic of International average England	64 <b>62</b> 59	0
Moldova, Republic of International average England Italy	64 <b>62</b> 59 57	0
Moldova, Republic of International average England Italy Slovenia	64 <b>62</b> 59 57 54	0 0 0 V
Moldova, Republic of International average England Italy Slovenia Australia	64 59 57 54 52	0 0 0 V
Moldova, Republic of International average England Italy Slovenia Australia Scotland	64 59 57 54 52 51	○ ○ ▼ ▼
Moldova, Republic of International average England Italy Slovenia Australia Scotland New Zealand	64 59 57 54 52 51 46	0 0 ♥ ♥ ♥
Moldova, Republic of International average England Italy Slovenia Australia Scotland New Zealand Iran, Islamic Republic of	64 59 57 54 52 51 46 39	0 0 ♥ ♥ ♥
Moldova, Republic of International average England Italy Slovenia Australia Scotland New Zealand Iran, Islamic Republic of Norway	64 59 57 54 52 51 46 39 37	<ul> <li>○</li> <li>○</li> <li>○</li> <li>○</li> <li>✓</li> <li>✓</li></ul>
Moldova, Republic of International average England Italy Slovenia Australia Scotland New Zealand Iran, Islamic Republic of Norway Tunisia	64 59 57 54 52 51 46 39 37 29	<ul> <li>○</li> <li>○</li> <li>○</li> <li>○</li> <li>▼</li> <li>▼</li></ul>
Moldova, Republic of International average England Italy Slovenia Australia Scotland New Zealand Iran, Islamic Republic of Norway Tunisia Philippines	64 59 57 54 52 51 46 39 37 29 28	
Moldova, Republic of International average England Italy Slovenia Australia Scotland New Zealand Iran, Islamic Republic of Norway Tunisia Philippines Morocco	64 59 57 54 52 51 46 39 37 29 28 24	

Country average vs.	
International average:	
Higher	
Not different	0
Lower	•

Item Number: M031130

#### **SCORING**

#### **Correct Response**

• 227

**Incorrect Response** 

· Incorrect (including crossed out/erased, stray marks, illegible, or off task)

The number Lia should add to 142 to get 369 (continued) *Item Number: M031130* 

## **Student Responses**

#### **Correct Response:**

Lia is practicing addition and subtraction problems. What number should Lia add to 142 to get 369?



#### **Incorrect Response:**

Lia is practicing addition and subtraction problems. What number should Lia add to 142 to get 369?



Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

## 1279 plus 243 by mistake

Juanita wanted to use her calculator to add 1,379 and 243. She entered 1,279+ 243 by mistake. Which of these could she do to correct the mistake?

- (A) Add 100
- (B) Add 1
- © Subtract 1
- (D) Subtract 100

Item Number: M031341

## **Overall Percent Correct**

89 88 85 84 83 83 83 83 82 79 77 77 77 76 75 74	
73	0
72	0
70 70 68 68 64 47 45 39 38	0 0 V V V
	89 88 85 84 83 83 83 83 83 83 82 79 77 77 76 75 74 75 74 70 70 68 68 64 47 45 39 38

#### Country average vs. International average: Higher A Not different O Lower V

Correct Response:

Α

#### TIMSS 2003 4th-Grade Mathematics Concepts and Mathematics Items

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Solving Routine Problems

## Total number of boys and girls

In Toshi's class there are twice as many girls as boys. There are 8 boys in the class. What is the total number of boys and girls in the class?

- A 12
- B 16
- © 20
- D 24

Item Number: M011002

## **Overall Percent Correct**

Netherlands82ASingapore81ANew Zealand64AHungary62AJapan62ABelgium (Flemish)62AAustralia60ALithuania60AEngland60ACyprus56AUnited States54ALatvia530Italy510Slovenia500Scotland480Moldova, Republic of470Armenia40TChinese Taipei29TMorocco24TPhilippines22TIran, Islamic Republic of20T			
Singapore81New Zealand64Hungary62Japan62Belgium (Flemish)62Australia60Lithuania60England60Cyprus56United States54Latvia53Russian Federation53Italy51O51Slovenia50Scotland48Moldova, Republic of47Armenia40Chinese Taipei29Morocco24Tunisia24Philippines22Iran, Islamic Republic of20Yon20	Netherlands	82	
New Zealand64Hungary62Japan62Belgium (Flemish)62Australia60Australia60Lithuania60England60Cyprus56United States54Latvia53Russian Federation53Italy51Hong Kong, SAR50Slovenia50Norway49Scotland48Moldova, Republic of47Armenia40Chinese Taipei29Morocco24Tunisia24Philippines22Iran, Islamic Republic of20	Singapore	81	
Hungary62Japan62Belgium (Flemish)62Australia60Australia60Lithuania60England60Cyprus56United States54Latvia53Russian Federation53Italy51Hong Kong, SAR50Slovenia50Norway49Scotland48Moldova, Republic of47Armenia40Chinese Taipei29Morocco24Tunisia24Philippines22Iran, Islamic Republic of20	New Zealand	64	
Japan62Belgium (Flemish)62Australia60Australia60Lithuania60England60Cyprus56United States54Latvia53Russian Federation53Italy51Hong Kong, SAR50Slovenia50Norway49Scotland48Moldova, Republic of47Armenia40Chinese Taipei29Morocco24Tunisia24Philippines22Iran, Islamic Republic of20	Hungary	62	
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United States54Latvia53ORussian Federation53OItaly51OInternational average51OInternational average50OSlovenia50OSlovenia50ONorway49OScotland48OMoldova, Republic of47OArmenia40VChinese Taipei29VMorocco24VTunisia24VPhilippines22VIran, Islamic Republic of20V	Cyprus	56	
Latvia53ORussian Federation53OItaly51OInternational average51VHong Kong, SAR50OSlovenia50ONorway49OScotland48OMoldova, Republic of47OArmenia40VChinese Taipei29VMorocco24VPhilippines22VIran, Islamic Republic ofVV	United States	54	
Russian Federation53OItaly51OInternational average51Hong Kong, SAR50OSlovenia50ONorway49OScotland48OMoldova, Republic of47OArmenia40VChinese Taipei29VMorocco24VTunisia24VPhilippines22VIran, Islamic Republic of20V	Latvia	53	0
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Slovenia50ONorway49OScotland48OMoldova, Republic of47OArmenia40VChinese Taipei29VMorocco24VTunisia24VPhilippines22VIran, Islamic Republic of20V	International average	51	-
Norway49OScotland48OMoldova, Republic of47OArmenia40VChinese Taipei29VMorocco24VTunisia24VPhilippines22VIran, Islamic Republic of20V	International average Hong Kong, SAR	<b>51</b> 50	0
Scotland48OMoldova, Republic of47OArmenia40 $\checkmark$ Chinese Taipei29 $\checkmark$ Morocco24 $\checkmark$ Tunisia24 $\checkmark$ Philippines22 $\checkmark$ Iran, Islamic Republic of20 $\checkmark$	International average Hong Kong, SAR Slovenia	<b>51</b> 50 50	0
Moldova, Republic of47OArmenia40VChinese Taipei29VMorocco24VTunisia24VPhilippines22VIran, Islamic Republic of20V	International average Hong Kong, SAR Slovenia Norway	<b>51</b> 50 50 49	0 0 0
Armenia40Chinese Taipei29Morocco24Tunisia24Philippines22Iran, Islamic Republic of20	International average Hong Kong, SAR Slovenia Norway Scotland	<b>51</b> 50 50 49 48	0 0 0 0
Chinese Taipei29▼Morocco24▼Tunisia24▼Philippines22▼Iran, Islamic Republic of20▼	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of	<b>51</b> 50 50 49 48 47	0 0 0 0
Morocco24Tunisia24Philippines22Iran, Islamic Republic of20	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of Armenia	<b>51</b> 50 49 48 47 40	0 0 0 0 0
Tunisia24▼Philippines22▼Iran, Islamic Republic of20▼	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of Armenia Chinese Taipei	<b>51</b> 50 49 48 47 40 29	0 0 0 0 0 0 0
Philippines22▼Iran, Islamic Republic of20▼	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of Armenia Chinese Taipei Morocco	<b>51</b> 50 49 48 47 40 29 24	0 0 0 0 0 0 0 0
Iran, Islamic Republic of 20 🔻	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of Armenia Chinese Taipei Morocco Tunisia	<b>51</b> 50 49 48 47 40 29 24 24	0 0 0 0 0 0 0 0 0 0
	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of Armenia Chinese Taipei Morocco Tunisia Philippines	<b>51</b> 50 49 48 47 40 29 24 24 22	
	International average Hong Kong, SAR Slovenia Norway Scotland Moldova, Republic of Armenia Chinese Taipei Morocco Tunisia Philippines Iran, Islamic Republic of	<b>51</b> 50 49 48 47 40 29 24 24 22 20	

Country average vs.	
International average:	
Higher	
Not different	0
Lower	•

Correct Response:

D

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Solving Routine Problems

## Total number of pencils

There are 9 boxes of pencils. Each box has 125 pencils. What is the total number of pencils?

- A 1,025
- B 1,100
- © 1,125
- D 1,220
- (E) 1,225

Item Number: M011003

Correct Response:

С

## **Overall Percent Correct**

Singapore Chinese Taipei Russian Federation Hong Kong, SAR Cyprus United States Japan Hungary Lithuania Latvia	91 83 79 77 76 76 74 73 73 72	
Italy Moldova, Republic of Armenia Netherlands Belgium (Flemish)	70 69 66 64 63	<ul> <li></li> <li></li></ul>
International average	63	
England Scotland Slovenia Iran, Islamic Republic of Philippines Australia New Zealand Tunisia Morocco Norway	55 51 50 49 49 48 47 45 37 34	* * * * * *

Country average vs. International average:		
Higher		
Not different	0	
Lower	•	

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Solving Routine Problems

#### How long to wash windows

It takes Chris 4 minutes to wash a window. He wants to know how many minutes it will take him to wash 8 windows at this rate. He should

- (A) multiply  $4 \times 8$
- (B) divide 8 by 4
- © subtract 4 from 8
- (D) add 8 and 4

Item Number: M011011

## **Overall Percent Correct**

Chinese Tainei	94	
Singanore	93	
Netherlands	92	
Hong Kong SAR	91	
lapan	91	
Belgium (Flemish)	89	
Lithuania	88	
United States	88	
England	88	
Cvprus	85	
Hungary	84	
Latvia	83	
Russian Federation	83	
Australia	81	
Italy	79	0
Scotland	79	0
Moldova, Republic of	77	0
International average	77	
Armenia	73	
New Zealand	73	▼
Slovenia	69	▼
Norway	68	
Philippines	56	
Iran, Islamic Republic of	51	▼
Morocco	40	▼
Tunisia	40	▼

# Country average vs.International average:Higher▲Not differentOLower▼

Correct Response:

Α

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Solving Routine Problems

## Estimate number of cabbages

Mark's garden has 84 rows of cabbages. There are 57 cabbages in each row. Which of these gives the BEST way to estimate how many cabbages there are altogether?

- (A)  $100 \times 50 = 5,000$
- (B)  $90 \times 60 = 5,400$
- (C)  $80 \times 60 = 4,800$
- (D)  $80 \times 50 = 4,000$

Item Number: M012117

Correct Response: C

**Overall Percent Correct** 

Singapore Hong Kong, SAR United States Netherlands Belgium (Flemish) Hungary Moldova, Republic of Chinese Taipei Japan Cyprus England International average Australia Lithuania Armenia Russian Federation Slovenia Scotland	84 71 70 68 68 66 62 61 59 55 51 50 48 46 45 45 45 42	
Chinese laipei	61	
Japan	59	
Cyprus	55	
England	51	0
International average	50	
Australia	48	0
Lithuania	46	
Armenia	45	
Russian Federation	45	0
Slovenia	45	
Scotland	42	▼
Latvia	40	▼
New Zealand	36	▼
Philippines	35	
Italy	34	▼
Norway	32	▼
	71	
Tunisia	31	•
Tunisia Iran, Islamic Republic of	31 30	•

Country average vs. International average:		
Higher		
Not different	0	
Lower		