



4



# RELEASED MATHEMATICS ITEMS

This book contains the released Trends in International Mathematics and Science Study (TIMSS) 2011 grade 4 mathematics assessment items. This is not a complete set of all TIMSS 2011 assessment items because some items are kept confidential so that they may be used in subsequent cycles of TIMSS to measure trends.

## How Can This Set of Released Items Be Used?

**In Teacher-designed Assessments.** The items in this book present different ways of measuring students' understanding in various content and cognitive domains. A teacher may use these items to create an assessment according to the needs of the class after reviewing the items and selecting items of interest.

**For Feedback on Student Understanding.** Student responses can be scored according to the scoring information provided in the book. Items that coincide with concepts taught in class allow the teacher to gain feedback on the students' understanding of assessed concepts. For example, a teacher might decide to examine the incorrect or partially correct responses of the class. The teacher might use the items to identify particular difficulties or misconceptions experienced by individual students, which can serve as the basis for some remedial teaching or focused practice.

**To Benchmark Student Performance.** The teacher might also compare the percent of students in the class who responded correctly to an item with the percent of students who responded correctly to the same item in other education systems or in the United States.

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# USER'S GUIDE

## Grade 4

This book contains TIMSS 2011 released items for grade 4. Each item appears on a single page, on which is provided information about the item's classification and about international student performance on the item. The items appear in the content domain order, as shown in the index on the next page.

### Information about item classification

Take a look at the first item on page 1. Across the top are three boxes which identify the item's **content domain** (the subject matter in mathematics that the item assesses), its **main topic** (the specific topic assessed within that subject matter), and its **cognitive domain** (the cognitive or thinking process assessed). For this item, the content domain is number, the main topic is whole numbers, and the cognitive domain is applying.

Below the row of boxes and above a boxed-in area of the page is the **item label**. For this item, it is *How many pages needed altogether*. Below the boxed-in area is the item number, which is more commonly used to identify each item than the item label. Within the boxed-in area is the item as it appeared in student test booklets.

**Correct answers** are shown beneath each item. The correct answer for multiple-choice items is simply a letter code. For example, in the item *M031043* on page 5, the letter code C is the correct answer. The correct answers for write-in or open-ended items are explained in a scoring guide. For example, the *How many pages needed altogether* (page 1) provides an example of a scoring guide, indicating the general nature of correct and

incorrect responses. In some cases, partial credit may be awarded and these items will provide guidelines for fully correct, partially correct, and incorrect responses. Sample student responses are provided for some of the constructed-response items for each scoring category.

### Information about international student performance

In the table along the right-hand side of the page are the **percent correct** statistics for the item. These consist of statistics on the percentage of students in each education system who could answer the question correctly. The lists of education systems are ordered in terms of this percentage. The international average is included as well.

To the right of some of the percent correct statistics are **special symbols** that indicate when an education system scored significantly higher or significantly lower than the international average. Thus, on the item *How many pages needed altogether* as an example, an estimated 57 percent of U.S. students could correctly answer this item, a percentage that was measurably higher than the international average, after taking into account the standard of error associated with the percent correct statistic for the United States and for the international average.



# ITEM INDEX

Grade 4

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Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

**Item label: How many pages needed altogether**

Georgia wants to send letters to 12 of her friends. Half of the letters will need 1 page each and the other half will need 2 pages each. How many pages will be needed altogether?

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

Item Number: M031009

**SCORING****Correct Response**

- 18

**Incorrect Response**

- 24
- 36
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	76
Japan	68
Sweden	64
Portugal	61
Chinese Taipei-CHN	60
Finland	58
England-GBR	55
Northern Ireland-GBR	54
Australia	53
Ireland	52
Russian Federation	52
Singapore	49
<b>United States</b>	<b>47 </b>
Czech Republic	47
New Zealand	47
Belgium (Flemish)-BEL	46
Netherlands	45
Azerbaijan	41
Germany	40
Denmark	39
Norway	38
Romania	37
Lithuania	36
Georgia	36
Malta	35
Serbia	35
Austria	35
International average	34
Italy	34
Kazakhstan	33
Poland	32
Chile	31
Spain	29
Hong Kong-CHN	29
Armenia	26
Slovenia	25
Turkey	20
United Arab Emirates	17
Croatia	17
Slovak Republic	16
Saudi Arabia	14
Bahrain	12
Hungary	11
Qatar	11
Iran, Islamic Rep. of	8
Oman	8
Morocco	8
Tunisia	6
Thailand	6
Kuwait	3
Yemen	3

**Benchmarking education system**

North Carolina-USA	51
Ontario-CAN	49
Quebec-CAN	48
Alberta-CAN	48
Florida-USA	36
Dubai-UAE	22
Abu Dhabi-UAE	14

Percent higher than International average  
 Percent lower than International average

Item label: How many pages needed altogether (continued)

M031009

## Student Responses

Correct Response:

Answer: 18

$$\begin{array}{r} 12 \\ \times 2 \\ \hline 10 \end{array}$$

Incorrect Response:

Answer: 36

$$\begin{array}{r} 12 \\ \times 2 \\ \hline 24 \end{array} \quad \begin{array}{r} 12 \\ + 24 \\ \hline 36 \end{array}$$

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

## Item label: What is the prize winning number

Three thousand tickets for a basketball game are numbered 1 to 3,000. People with ticket numbers ending with 112 receive a prize. Write down all the prize-winning numbers.

Prize-winning numbers: \_\_\_\_\_

Item Number: M031016

### SCORING

#### Correct Response

- 112, 1112, 2112

#### Incorrect Response

- 112, 1112, 2112 with additional incorrect
- One or two correct no incorrect
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

### Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	59
Belgium (Flemish)-BEL	47
Hong Kong-CHN	47
Russian Federation	46
Japan	45
Hungary	42
Netherlands	42
Singapore	40
England-GBR	39
Northern Ireland-GBR	38
Slovak Republic	38
Germany	36
Finland	36
Serbia	36
Portugal	35
Lithuania	34
Denmark	34
Czech Republic	32
Sweden	32
Croatia	32
Spain	32
<b>United States</b>	<b>31 </b>
Kazakhstan	30
Australia	29
Ireland	28
Italy	28
Romania	28
Austria	27
<b>International average</b>	<b>26</b>
Chinese Taipei-CHN	24
Slovenia	22
New Zealand	22
Azerbaijan	22
Armenia	22
Poland	21
Norway	20
Georgia	20
Chile	18
Malta	18
Turkey	16
United Arab Emirates	10
Thailand	9
Qatar	7
Bahrain	6
Saudi Arabia	5
Tunisia	3
Iran, Islamic Rep. of	3
Oman	2
Morocco	2
Kuwait	1
Yemen	#

### Benchmarking education system

Quebec-CAN	47
North Carolina-USA	33
Alberta-CAN	32
Florida-USA	32
Ontario-CAN	25
Dubai-UAE	19
Abu Dhabi-UAE	8

Percent higher than International average

Percent lower than International average

# Rounds to zero

Item label: What is the prize winning number (continued)

M031016

## Student Responses

### Correct Response:

Prize-winning numbers: 112, 112, 112

112  
112  
112  
112

### Incorrect Response:

Prize-winning numbers: 112, 212, 312, 412, 512  
612, 712, 812, 912, 1,012  
2,012

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

**Item label: A train from Redville to Bedford**

A train left Redville at 8:45 a.m. It arrived in Bedford 2 hours and 18 minutes later. What time did it arrive in Bedford?

- A. 11:15 a.m.
- B. 11:13 a.m.
- C. 11:03 a.m.
- D. 10:53 a.m.

Item Number: M031043

<b>Correct Response:</b>	<b>C</b>
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**Overall Percent Correct**

Education system	Percent correct
Chinese Taipei-CHN	85
Korea, Rep. of	82
Singapore	82
Hong Kong-CHN	76
Netherlands	73
Northern Ireland-GBR	73
Japan	69
Czech Republic	69
Lithuania	67
Poland	67
Germany	65
Russian Federation	65
Finland	65
Belgium (Flemish)-BEL	63
England-GBR	63
Sweden	62
Serbia	60
Denmark	60
Slovak Republic	58
Hungary	57
<b>United States</b>	<b>57 </b>
Norway	55
Ireland	54
Slovenia	54
Azerbaijan	52
Austria	52
<b>International average</b>	<b>52</b>
Australia	51
Croatia	49
New Zealand	49
Romania	48
Portugal	47
Kazakhstan	47
Turkey	46
Italy	45
Armenia	43
Malta	41
Thailand	41
Chile	40
Georgia	37
Spain	34
Tunisia	33
Iran, Islamic Rep. of	33
United Arab Emirates	32
Qatar	30
Yemen	29
Saudi Arabia	26
Bahrain	25
Morocco	24
Kuwait	23
Oman	21

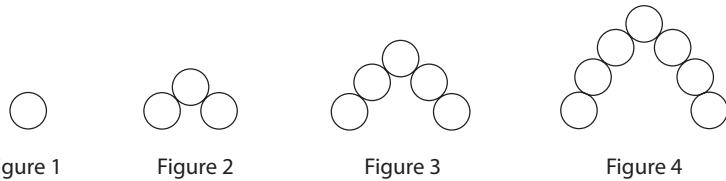
**Benchmarking education system**

North Carolina-USA	66
Florida-USA	54
Quebec-CAN	54
Ontario-CAN	53
Alberta-CAN	51
Dubai-UAE	42
Abu Dhabi-UAE	30

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Applying

Item label: Pattern of circles/figure 5



A sequence of four figures is shown above.

A. Complete the table below for Figure 4.

Figure	Number of Circles
1	1
2	3
3	5
4	

B. If there were a Figure 5, how many circles would it have?

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

Item Number: M031079B

### SCORING

#### Correct Response

Note: Part A not scored

- 9

#### Incorrect Response

- 7

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

### Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	92
Chinese Taipei-CHN	92
Japan	92
Hong Kong-CHN	92
Singapore	90
Finland	85
Belgium (Flemish)-BEL	85
Netherlands	84
Germany	84
Portugal	84
Northern Ireland-GBR	83
Lithuania	82
Serbia	82
Denmark	81
Austria	81
Czech Republic	80
Italy	80
England-GBR	80
Russian Federation	80
Slovenia	79
Croatia	78
Ireland	78
Sweden	78
Australia	77
Slovak Republic	76
<b>United States</b>	<b>75 </b>
Hungary	74
Spain	73
Norway	72
Malta	71
Poland	70
Romania	70
New Zealand	69
International average	68
Kazakhstan	65
Chile	64
Thailand	60
Turkey	59
United Arab Emirates	54
Armenia	53
Bahrain	50
Iran, Islamic Rep. of	47
Azerbaijan	46
Georgia	45
Qatar	45
Saudi Arabia	42
Oman	36
Tunisia	33
Kuwait	22
Morocco	21
Yemen	12

### Benchmarking education system

Quebec-CAN	90
Alberta-CAN	84
Ontario-CAN	83
Florida-USA	82
North Carolina-USA	80
Dubai-UAE	66
Abu Dhabi-UAE	47

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Reasoning

## Item label: Pattern of circles/figure 10



Figure 1

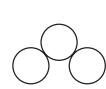


Figure 2

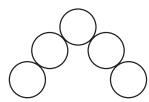


Figure 3

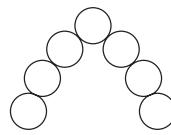


Figure 4

A sequence of four figures is shown above.

- C. If the figures were continued, how many circles would there be in Figure 10? (Do not draw the figures.)

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

Item Number: M031079C

### SCORING

#### Correct Response

- 19

#### Incorrect Response

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

## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	74
Singapore	70
Hong Kong-CHN	67
Chinese Taipei-CHN	65
Japan	59
Serbia	52
Russian Federation	52
Portugal	51
Croatia	50
Denmark	49
Northern Ireland-GBR	49
Italy	48
Czech Republic	48
Slovenia	47
Malta	47
<b>United States</b>	<b>47 </b>
Slovak Republic	47
Kazakhstan	46
Lithuania	44
Hungary	43
England-GBR	42
Ireland	41
Spain	41
Australia	41
Austria	41
Turkey	41
Romania	40
<b>International average</b>	<b>39</b>
Finland	39
Sweden	38
Germany	37
Belgium (Flemish)-BEL	36
Thailand	35
Poland	34
Chile	33
United Arab Emirates	33
New Zealand	33
Norway	30
Azerbaijan	30
Qatar	28
Armenia	27
Bahrain	27
Netherlands	26
Georgia	21
Iran, Islamic Rep. of	20
Saudi Arabia	20
Oman	20
Tunisia	11
Kuwait	10
Morocco	10
Yemen	4

## Benchmarking education system

Quebec-CAN	58
Florida-USA	55
North Carolina-USA	53
Ontario-CAN	50
Alberta-CAN	43
Dubai-UAE	40
Abu Dhabi-UAE	29

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

Item label: 5,631 plus 286

$$5,631 + 286 =$$

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

Item Number: M031128

**SCORING****Correct Response**

- 5,917

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Chinese Taipei-CHN	93
Singapore	93
Portugal	90
Korea, Rep. of	90
Japan	90
Russian Federation	89
Hong Kong-CHN	89
Kazakhstan	87
Serbia	85
Croatia	85
<b>United States</b>	<b>84 </b>
Italy	84
Spain	83
Lithuania	82
Thailand	82
Armenia	82
Slovak Republic	81
Azerbaijan	80
Malta	80
Romania	80
Ireland	78
Turkey	77
Austria	77
Denmark	77
Hungary	77
Iran, Islamic Rep. of	75
<i>Northern Ireland-GBR</i>	75
Georgia	74
Tunisia	73
Netherlands	73
Chile	72
Czech Republic	72
<b>International average</b>	<b>72</b>
Germany	71
Bahrain	70
<i>England-GBR</i>	67
<i>Belgium (Flemish)-BEL</i>	66
Slovenia	64
Norway	58
Finland	58
United Arab Emirates	58
Australia	57
Poland	56
Qatar	56
Sweden	56
Oman	55
Saudi Arabia	48
Morocco	48
Kuwait	34
New Zealand	32
Yemen	26

**Benchmarking education system**

North Carolina-USA	89
Florida-USA	86
Quebec-CAN	86
Dubai-UAE	72
Alberta-CAN	67
Ontario-CAN	61
Abu Dhabi-UAE	52

Percent higher than International average  
 Percent lower than International average

Item label: 5,631 plus 286 (continued)

M031128

## Student Responses

Correct Response:

$$5,631 + 286 =$$

Handwritten addition problem: 5631 + 286 = 5917. The digits are aligned vertically. A vertical line is drawn above the tens column, and a horizontal line is drawn below the ones column.

Answer: 5917

Incorrect Response:

$$5,631 + 286 =$$

Handwritten addition problem: 5631 + 286 = 5325. The digits are aligned vertically. A vertical line is drawn above the tens column, and a horizontal line is drawn below the ones column.

Answer: 5325

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

Item label: Recipe for 3 people

**Ingredients**

Eggs	4
Flour	8 cups
Milk	$\frac{1}{2}$ cup

The above ingredients are used to make a recipe for 6 people. Sam wants to make this recipe for only 3 people.

Complete the table below to show what Sam needs to make the recipe for 3 people. The number of eggs he needs is shown.

**Ingredients**

Eggs	2
Flour	__ cups
Milk	__ cup

Item Number: M031183

**SCORING****Correct Response**

- 4 cups of flour and 1/4 cup of milk

**Partially Correct Response**

- Flour correct, milk incorrect
- Flour correct, milk omitted
- Milk correct, flour incorrect or omitted

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Northern Ireland-GBR	63
England-GBR	55
Ireland	54
Singapore	50
Germany	46
Netherlands	41
New Zealand	39
Belgium (Flemish)-BEL	38
Denmark	37
Australia	37
Hong Kong-CHN	34
<b>United States</b>	<b>33 </b>
Malta	31
Finland	31
Chinese Taipei-CHN	31
Portugal	28
Korea, Rep. of	28
Serbia	27
Lithuania	24
<b>International average</b>	<b>23</b>
Japan	23
Austria	23
Kazakhstan	22
Spain	22
Romania	22
Qatar	21
Bahrain	20
Azerbaijan	20
Russian Federation	20
United Arab Emirates	20
Hungary	18
Saudi Arabia	18
Slovenia	17
Poland	16
Norway	15
Sweden	15
Armenia	15
Chile	15
Italy	14
Georgia	13
Oman	11
Czech Republic	10
Slovak Republic	10
Kuwait	8
Turkey	8
Thailand	5
Tunisia	5
Morocco	4
Croatia	3
Yemen	3
Iran, Islamic Rep. of	3

**Benchmarking education system**

North Carolina-USA	32
Florida-USA	31
Dubai-UAE	29
Quebec-CAN	22
Alberta-CAN	22
Ontario-CAN	22
Abu Dhabi-UAE	15

Percent higher than International average  
 Percent lower than International average

Item label: Recipe for 3 people (continued)

M031183

## Student Responses

### Correct Response:

Ingredients	
Eggs	2
Flour	<u>4</u> cups
Milk	<u>1</u> cup <u>4</u>

### Partially Correct Response:

Ingredients	
Eggs	2
Flour	<u>4</u> cups
Milk	<u>1</u> cup <u>4</u>

### Incorrect Response:

Ingredients	
Eggs	2
Flour	<u>8</u> cups
Milk	<u>25</u> cup

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

## Item label: Distance between towns using map

The scale on a map indicates that 1 centimeter on the map represents 4 kilometers on the land. The distance between two towns on the map is 8 centimeters. How many kilometers apart are the two towns?

- A. 2
- B. 8
- C. 16
- D. 32

Item Number: M031185

Correct Response:	D
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	84
Chinese Taipei-CHN	84
Russian Federation	80
Lithuania	75
Japan	74
Finland	71
Serbia	71
Singapore	69
Netherlands	69
Kazakhstan	69
Czech Republic	67
Azerbaijan	66
Croatia	64
Denmark	63
Slovenia	63
Northern Ireland-GBR	62
Slovak Republic	61
Germany	60
Hungary	59
<b>United States</b>	<b>59 </b>
Portugal	57
Romania	57
Sweden	57
Austria	57
Poland	57
Norway	56
Iran, Islamic Rep. of	55
England-GBR	54
International average	54
Italy	54
Belgium (Flemish)-BEL	53
Ireland	50
Turkey	48
Georgia	47
Australia	46
Spain	46
Armenia	45
New Zealand	42
Bahrain	40
Chile	39
Thailand	39
Saudi Arabia	39
United Arab Emirates	37
Qatar	32
Malta	32
Morocco	31
Oman	31
Tunisia	31
Yemen	29
Kuwait	23
Hong Kong-CHN	—

## Benchmarking education system

North Carolina-USA	62
Florida-USA	62
Quebec-CAN	57
Ontario-CAN	50
Alberta-CAN	43
Dubai-UAE	42
Abu Dhabi-UAE	33

Percent higher than International average

Percent lower than International average

— Not available

Content Domain	Main Topic	Cognitive Domain
NUMBER	Number Sentences with Whole Numbers	Applying

Item label: Kim gave Pete 3 more pencils

E stands for the number of pencils Pete had. Kim gave Pete 3 more pencils. How many pencils does Pete have now?

- A.  $3 \div E$
- B.  $E + 3$
- C.  $E - 3$
- D.  $3 \times E$

Item Number: M031187

Correct Response:	B
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## Overall Percent Correct

Education system	Percent correct
Russian Federation	91
Netherlands	90
Portugal	88
Belgium (Flemish)-BEL	85
Czech Republic	84
Italy	84
Singapore	83
<b>United States</b>	<b>83</b>
Serbia	83
Poland	82
Austria	82
Germany	82
Hungary	82
Kazakhstan	80
Finland	79
Northern Ireland-GBR	79
Slovenia	79
Croatia	79
Lithuania	79
Australia	79
Azerbaijan	79
Slovak Republic	78
Romania	78
Ireland	77
Hong Kong-CHN	77
Turkey	75
Chile	75
England-GBR	75
Korea, Rep. of	74
New Zealand	74
Denmark	74
Spain	74
Georgia	73
Sweden	73
Japan	73
<b>International average</b>	<b>73</b>
Chinese Taipei-CHN	72
Norway	70
Armenia	66
Iran, Islamic Rep. of	63
Bahrain	63
Qatar	62
Thailand	62
Saudi Arabia	60
Malta	58
United Arab Emirates	56
Oman	51
Kuwait	47
Tunisia	42
Morocco	37
Yemen	33

## Benchmarking education system

North Carolina-USA	84
Florida-USA	81
Quebec-CAN	81
Ontario-CAN	77
Alberta-CAN	76
Dubai-UAE	65
Abu Dhabi-UAE	53

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing

Item label: Select a fraction larger than 1/2

Which of these fractions is larger than  $\frac{1}{2}$  ?

A.  $\frac{3}{5}$

B.  $\frac{3}{6}$

C.  $\frac{3}{8}$

D.  $\frac{3}{10}$

Item Number: M031210

Correct Response:	A
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## Overall Percent Correct

Education system	Percent correct
Hong Kong-CHN	74
Finland	69
Chinese Taipei-CHN	67
Singapore	67
Northern Ireland-GBR	63
<b>United States</b>	<b>62 </b>
Ireland	62
Russian Federation	62
Korea, Rep. of	60
Japan	60
Belgium (Flemish)-BEL	58
Lithuania	56
Kazakhstan	55
Australia	54
New Zealand	53
Armenia	52
Serbia	50
England-GBR	50
Georgia	49
Netherlands	49
Denmark	48
Norway	48
Hungary	48
International average	46
Azerbaijan	45
Turkey	44
Saudi Arabia	43
Romania	43
Poland	43
Slovenia	43
Malta	42
Italy	42
Slovak Republic	41
United Arab Emirates	41
Oman	39
Sweden	38
Qatar	37
Czech Republic	36
Chile	36
Thailand	36
Austria	35
Bahrain	34
Iran, Islamic Rep. of	33
Germany	33
Spain	33
Portugal	32
Kuwait	30
Morocco	23
Yemen	21
Tunisia	20
Croatia	—

## Benchmarking education system

North Carolina-USA	71
Florida-USA	56
Alberta-CAN	52
Quebec-CAN	49
Ontario-CAN	48
Abu Dhabi-UAE	41
Dubai-UAE	39

Percent higher than International average

Percent lower than International average

— Not applicable

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

Item label: 600 books to be packed into boxes

Six hundred books have to be packed into boxes that hold 15 books each. Which of the following could be used to find the number of boxes needed?

- A. add 15 to 600
- B. subtract 15 from 600
- C. multiply 600 by 15
- D. divide 600 by 15

Item Number: M031218

Correct Response:	D
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## Overall Percent Correct

Education system	Percent correct
Chinese Taipei-CHN	90
Korea, Rep. of	89
Hong Kong-CHN	84
Singapore	80
Russian Federation	77
Netherlands	76
Lithuania	75
Japan	74
Portugal	70
Croatia	69
Kazakhstan	69
Finland	67
Hungary	66
Austria	64
Northern Ireland-GBR	64
Italy	63
<b>United States</b>	<b>63 </b>
Belgium (Flemish)-BEL	62
Turkey	61
Poland	61
Serbia	61
Slovak Republic	60
Slovenia	58
Azerbaijan	57
Spain	57
England-GBR	57
Czech Republic	56
Armenia	56
<b>International average</b>	<b>55</b>
Ireland	54
Germany	54
Romania	52
Georgia	51
Australia	51
Denmark	45
Malta	44
Thailand	43
Iran, Islamic Rep. of	42
Norway	42
Chile	39
Saudi Arabia	37
New Zealand	37
Qatar	35
United Arab Emirates	35
Bahrain	31
Sweden	31
Tunisia	31
Oman	30
Yemen	27
Kuwait	25
Morocco	22

## Benchmarking education system

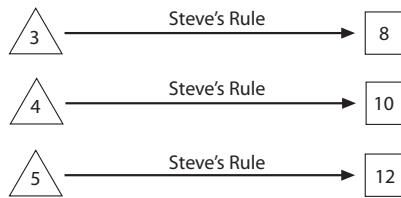
North Carolina-USA	69
Florida-USA	63
Quebec-CAN	51
Dubai-UAE	47
Alberta-CAN	43
Ontario-CAN	42
Abu Dhabi-UAE	27

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Applying

Item label: Steve's rule to get number in box



Steve used a rule to get the number in the  from the number in the  $\triangle$ . What was the rule?

- A. Multiply by 1 then add 5.
- B. Multiply by 2 then add 2.
- C. Multiply by 3 then subtract 1.
- D. Multiply by 4 then subtract 4.

Item Number: M031251

Correct Response:	<b>B</b>
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**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	86
Chinese Taipei-CHN	79
Hong Kong-CHN	76
Singapore	73
Japan	71
<b>United States</b>	<b>63 </b>
Russian Federation	63
Hungary	62
Northern Ireland-GBR	62
Turkey	55
Slovak Republic	55
Portugal	54
Italy	53
England-GBR	52
Belgium (Flemish)-BEL	50
Czech Republic	50
Lithuania	50
Georgia	48
Saudi Arabia	48
Kazakhstan	48
Romania	47
<b>International average</b>	<b>47</b>
Serbia	47
Ireland	45
Australia	45
Spain	45
Croatia	44
Qatar	44
Finland	43
Austria	43
Poland	43
Bahrain	43
United Arab Emirates	42
Denmark	42
Netherlands	40
Slovenia	40
New Zealand	39
Azerbaijan	39
Iran, Islamic Rep. of	39
Malta	37
Germany	36
Chile	36
Armenia	33
Sweden	33
Oman	33
Norway	31
Tunisia	30
Kuwait	30
Thailand	30
Yemen	28
Morocco	26

**Benchmarking education system**

North Carolina-USA	70
Florida-USA	66
Dubai-UAE	48
Alberta-CAN	43
Quebec-CAN	42
Ontario-CAN	42
Abu Dhabi-UAE	40

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Applying

## Item label: If the pattern 3,6,9,12 continued

If the pattern 3, 6, 9, 12 was continued, which of these numbers would be one of the numbers in the pattern?

- A. 26
- B. 27
- C. 28
- D. 29

Item Number: M031252

Correct Response:	B
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## Overall Percent Correct

Education system	Percent correct
Singapore	93
Korea, Rep. of	89
Northern Ireland-GBR	84
<b>United States</b>	<b>83 </b>
Czech Republic	82
Ireland	81
Chinese Taipei-CHN	81
Denmark	80
Hong Kong-CHN	80
England-GBR	80
Finland	80
Japan	79
Slovenia	79
Germany	78
Portugal	78
Norway	77
Italy	75
Australia	74
Slovak Republic	72
Malta	71
Lithuania	70
Turkey	68
New Zealand	68
Sweden	68
Serbia	68
Belgium (Flemish)-BEL	67
Austria	66
Croatia	65
Russian Federation	64
<b>International average</b>	<b>62</b>
Spain	62
Netherlands	62
Hungary	60
Azerbaijan	57
Kazakhstan	56
Chile	55
Poland	53
Romania	52
Georgia	52
United Arab Emirates	48
Qatar	46
Bahrain	42
Armenia	41
Iran, Islamic Rep. of	34
Saudi Arabia	34
Oman	34
Kuwait	29
Thailand	28
Tunisia	27
Morocco	24
Yemen	20

## Benchmarking education system

North Carolina-USA	90
Florida-USA	89
Alberta-CAN	76
Ontario-CAN	74
Quebec-CAN	73
Dubai-UAE	59
Abu Dhabi-UAE	44

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

## Item label: Total number of people on a ship

There are 218 passengers and 191 crew members on a ship.  
How many people are on the ship altogether?

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

Item Number: M031313

### SCORING

#### Correct Response

- 409

#### Incorrect Response

- 309
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

### Overall Percent Correct

Education system	Percent correct
Singapore	93
Korea, Rep. of	93
Japan	91
Chinese Taipei-CHN	89
Portugal	89
Croatia	89
Serbia	87
Hong Kong-CHN	86
Russian Federation	86
<b>United States</b>	<b>84 </b>
Hungary	84
Slovak Republic	83
Italy	83
Spain	83
Lithuania	82
Ireland	82
Slovenia	81
Belgium (Flemish)-BEL	81
Turkey	81
Netherlands	81
Malta	81
Kazakhstan	80
Northern Ireland-GBR	80
Czech Republic	79
Austria	79
Germany	79
England-GBR	78
Romania	77
Chile	77
Denmark	77
Thailand	76
Sweden	75
Georgia	75
Poland	75
<b>International average</b>	<b>73</b>
Iran, Islamic Rep. of	70
Armenia	70
Australia	69
Azerbaijan	68
Finland	68
Norway	67
Bahrain	64
United Arab Emirates	54
New Zealand	52
Tunisia	48
Qatar	48
Oman	41
Saudi Arabia	39
Morocco	35
Kuwait	24
Yemen	15

### Benchmarking education system

North Carolina-USA	88
Quebec-CAN	88
Florida-USA	87
Alberta-CAN	76
Ontario-CAN	74
Dubai-UAE	70
Abu Dhabi-UAE	47

Percent higher than International average  
 Percent lower than International average

Item label: Total number of people on a ship(continued)

M031313

## Student Responses

Correct Response:

Answer: 409 people

$$\begin{array}{r} & 1 \\ & \overline{)218} \\ + & 191 \\ \hline & 409 \end{array}$$

Incorrect Response:

Answer: 309

Content Domain	Main Topic	Cognitive Domain
NUMBER	Number Sentences with Whole Numbers	Knowing

Item label: 4 times box equals 28

$$4 \times \square = 28$$

What number goes in the box to make this number sentence true?

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

Item Number: M031316

### SCORING

#### Correct Response

- 7

#### Incorrect Response

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

### Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	99
Chinese Taipei-CHN	98
Japan	98
Hong Kong-CHN	97
Croatia	97
Singapore	96
Russian Federation	95
Belgium (Flemish)-BEL	94
Austria	94
Kazakhstan	94
Czech Republic	94
Serbia	94
Lithuania	93
Slovak Republic	93
Netherlands	93
Germany	92
Spain	92
Slovenia	92
Italy	92
Hungary	91
Azerbaijan	90
Northern Ireland-GBR	88
Portugal	87
Romania	87
<b>United States</b>	<b>87 </b>
Iran, Islamic Rep. of	87
Ireland	86
Finland	85
Georgia	85
Poland	85
Armenia	85
International average	83
England-GBR	82
Denmark	80
Malta	79
Thailand	79
Norway	77
Australia	77
Turkey	76
Sweden	75
United Arab Emirates	74
Tunisia	71
New Zealand	70
Bahrain	68
Chile	66
Qatar	64
Saudi Arabia	60
Oman	55
Morocco	51
Kuwait	47
Yemen	39

### Benchmarking education system

Florida-USA	92
North Carolina-USA	92
Quebec-CAN	83
Dubai-UAE	80
Ontario-CAN	77
Alberta-CAN	74
Abu Dhabi-UAE	70

Percent higher than International average  
 Percent lower than International average

Item label: 4 times box equals 28(continued)

M031316

## Student Responses

Correct Response:

Answer: 7

$$\begin{array}{r} 4 \\ \times \boxed{7} \\ \hline 28 \end{array}$$

Incorrect Response:

Answer: 6

Content Domain	Main Topic	Cognitive Domain
NUMBER	Number Sentences with Whole Numbers	Knowing

Item label:  $3 + 8 = \square + 6$ 

$$3 + 8 = \square + 6$$

What number goes in the box to make this number sentence true?

- A. 17
- B. 11
- C. 7
- D. 5

Item Number: M031317

Correct Response:	D
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## Overall Percent Correct

Education system	Percent correct
Hong Kong-CHN	88
Singapore	85
Russian Federation	80
Kazakhstan	79
Korea, Rep. of	73
Japan	68
Chinese Taipei-CHN	67
Lithuania	66
Azerbaijan	65
Serbia	63
Romania	56
Northern Ireland-GBR	55
Ireland	54
Sweden	51
Hungary	50
Belgium (Flemish)-BEL	49
Armenia	49
<b>United States</b>	<b>47 </b>
Georgia	45
Slovak Republic	44
Portugal	40
International average	39
Finland	37
Slovenia	36
Norway	35
Croatia	34
Spain	34
Australia	33
Netherlands	32
Iran, Islamic Rep. of	31
England-GBR	29
Poland	28
Turkey	27
Denmark	27
Germany	24
Tunisia	23
Malta	21
Thailand	21
Saudi Arabia	21
United Arab Emirates	20
Czech Republic	20
Austria	18
Italy	18
Qatar	17
New Zealand	17
Oman	16
Morocco	16
Bahrain	15
Yemen	12
Kuwait	11
Chile	11

## Benchmarking education system

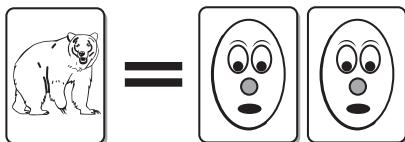
North Carolina-USA	63
Florida-USA	45
Quebec-CAN	26
Ontario-CAN	26
Dubai-UAE	21
Abu Dhabi-UAE	20
Alberta-CAN	18

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

## Item label: Trading Cards\_Cartoon cards

The town fair had a booth where people could trade cards.



1 animal card is worth 2 cartoon cards.



2 animal cards are worth 3 sports cards.

Some children went to the booth to trade cards.

### Trading Animal Cards

- A. Becky had 5 animal cards to trade for cartoon cards. How many cartoon cards would she get?

Answer: \_\_\_\_\_ cartoon cards

Item Number: M031346A

### SCORING

#### Correct Response

- 10

#### Incorrect Response

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

### Overall Percent Correct

Education system	Percent correct
Hong Kong-CHN	88
Singapore	86
Chinese Taipei-CHN	84
Russian Federation	82
Denmark	82
Lithuania	82
Finland	81
Japan	79
Portugal	78
Sweden	77
Netherlands	77
Germany	77
Korea, Rep. of	75
Czech Republic	75
Austria	74
England-GBR	74
Ireland	73
Northern Ireland-GBR	72
Slovak Republic	72
Thailand	72
<b>United States</b>	<b>72 </b>
Poland	71
Belgium (Flemish)-BEL	69
Slovenia	68
Serbia	68
Australia	66
Croatia	66
Norway	66
Hungary	65
Italy	65
Spain	63
Romania	63
New Zealand	62
<b>International average</b>	<b>62</b>
Georgia	59
Malta	56
Kazakhstan	56
Chile	53
Azerbaijan	53
Armenia	50
Turkey	42
United Arab Emirates	41
Iran, Islamic Rep. of	39
Bahrain	38
Qatar	32
Tunisia	31
Saudi Arabia	29
Oman	24
Morocco	24
Kuwait	14
Yemen	11

### Benchmarking education system

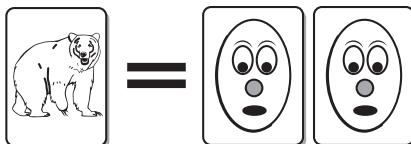
Quebec-CAN	77
North Carolina-USA	72
Ontario-CAN	72
Alberta-CAN	68
Florida-USA	64
Dubai-UAE	52
Abu Dhabi-UAE	35

Percent higher than International average  
 Percent lower than International average

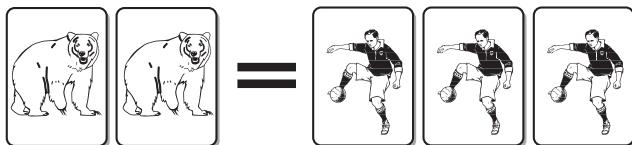
Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

## Item label: Trading Cards\_Sports cards

The town fair had a booth where people could trade cards.



1 animal card is worth 2 cartoon cards.



2 animal cards are worth 3 sports cards.

Some children went to the booth to trade cards.

### Trading Animal Cards

- B. Jim had 8 animal cards to trade for sports cards. How many sports cards would he get?

Answer: \_\_\_\_\_ sports cards

Item Number: M031346B

### SCORING

#### Correct Response

- 12

#### Incorrect Response

- 16
- 24
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

### Overall Percent Correct

Education system	Percent correct
Singapore	71
Hong Kong-CHN	66
Chinese Taipei-CHN	61
Japan	55
Korea, Rep. of	54
Russian Federation	51
Netherlands	48
Denmark	46
Lithuania	45
Germany	44
Finland	43
Belgium (Flemish)-BEL	41
Portugal	40
Sweden	40
Northern Ireland-GBR	40
England-GBR	38
Thailand	36
Ireland	35
Serbia	35
Azerbaijan	34
<b>United States</b>	<b>34</b>
Czech Republic	33
Slovak Republic	33
Kazakhstan	32
Australia	32
Romania	31
International average	31
Slovenia	31
Austria	30
Poland	27
New Zealand	27
Italy	27
Chile	27
Norway	27
Hungary	26
Turkey	22
Croatia	21
Georgia	21
Spain	20
Armenia	19
Malta	18
Bahrain	18
United Arab Emirates	15
Qatar	14
Tunisia	12
Morocco	11
Saudi Arabia	10
Iran, Islamic Rep. of	10
Oman	8
Kuwait	4
Yemen	2

#### Benchmarking education system

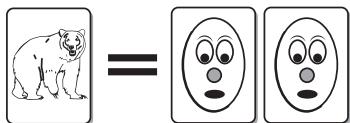
Quebec-CAN	42
North Carolina-USA	39
Ontario-CAN	33
Florida-USA	33
Alberta-CAN	31
Dubai-UAE	23
Abu Dhabi-UAE	10

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

**Item label: Trading Cards\_Max number of cards**

The town fair had a booth where people could trade cards.



1 animal card is worth 2 cartoon cards.



2 animal cards are worth 3 sports cards.

Some children went to the booth to trade cards.

**Trading Animal Cards**

- C. Katrina had 6 animal cards. She wanted to trade them for as many cards as possible.

How many cartoon cards would she get? \_\_\_\_\_

How many sports cards would she get? \_\_\_\_\_

Should she trade for cartoon cards or trade for sport cards?

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

*Item Number: M031346C*

**SCORING****Correct Response**

- Numbers of cartoon cards (12) AND sports cards (9) correct AND choice (cartoon cards) correct

**Partially Correct Response**

- Number of cartoon cards only correct
- Number of sports cards only correct
- Numbers of cartoon cards and sports cards correct but choice not shown or incorrect

**Incorrect Response**

- Choice of cartoon cards or sports cards with no numbers shown
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Hong Kong-CHN	66
Chinese Taipei-CHN	61
Singapore	55
Korea, Rep. of	52
Japan	51
Finland	41
Netherlands	40
Denmark	38
Germany	35
Sweden	34
Russian Federation	33
Belgium (Flemish)-BEL	30
England-GBR	30
Northern Ireland-GBR	30
Czech Republic	27
Serbia	26
<b>United States</b>	<b>25</b>
Lithuania	24
Poland	24
Ireland	24
<b>International average</b>	<b>24</b>
Azerbaijan	23
Australia	23
Austria	22
Slovenia	22
Norway	22
Slovak Republic	21
Hungary	21
Thailand	21
Portugal	21
Romania	20
Kazakhstan	20
New Zealand	20
Italy	18
Chile	18
Croatia	16
Georgia	16
Turkey	15
Armenia	14
Spain	13
United Arab Emirates	11
Malta	11
Bahrain	10
Qatar	9
Iran, Islamic Rep. of	5
Saudi Arabia	5
Tunisia	5
Oman	3
Kuwait	3
Morocco	3
Yemen	1

**Benchmarking education system**

Quebec-CAN	37
North Carolina-USA	29
Ontario-CAN	27
Florida-USA	24
Alberta-CAN	22
Dubai-UAE	19
Abu Dhabi-UAE	9

Percent higher than International average  
 Percent lower than International average

**Item label: Trading Cards\_Max number of cards (continued)**

M031346C

## **Student Responses**

### **Correct Response:**

C. Katrina had 6 animal cards. She wanted to trade them for as many cards as possible.

How many cartoon cards would she get? 12

How many sports cards would she get? 9

Should she trade for cartoon cards or trade for sport cards?

Answer: cartoon card

### **Partially Correct Response:**

C. Katrina had 6 animal cards. She wanted to trade them for as many cards as possible.

How many cartoon cards would she get? 12

How many sports cards would she get? 24

Should she trade for cartoon cards or trade for sport cards?

Answer: Sports card.

### **Incorrect Response:**

C. Katrina had 6 animal cards. She wanted to trade them for as many cards as possible.

How many cartoon cards would she get? \_\_\_\_\_

How many sports cards would she get? \_\_\_\_\_

Should she trade for cartoon cards or trade for sport cards?

Answer: cartoon cards

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

Item label: Trading Cards\_Trading sports cards

**Overall Percent Correct****Trading Cards (Continued)****Trading Sports Cards**

Steve had 15 sports cards to trade for animal cards. How many animal cards would he get?

Answer: \_\_\_\_\_ animal cards

Education system	Percent correct
Singapore	61
Hong Kong-CHN	50
Chinese Taipei-CHN	44
Netherlands	41
Korea, Rep. of	41
Japan	40
Denmark	39
Russian Federation	36
Finland	34
Lithuania	34
Portugal	33
England-GBR	32
Belgium (Flemish)-BEL	32
Serbia	29
Germany	29
Northern Ireland-GBR	28
Ireland	27
Sweden	27
Azerbaijan	27
Slovak Republic	26
Thailand	25
Australia	25
International average	25
Norway	24
Czech Republic	24
Poland	23
Romania	23
<b>United States</b>	<b>23</b>
Italy	22
New Zealand	22
Kazakhstan	22
Georgia	21
Armenia	21
Slovenia	21
Hungary	20
Turkey	18
Austria	18
Chile	17
Bahrain	17
Qatar	16
United Arab Emirates	15
Malta	15
Spain	14
Saudi Arabia	12
Croatia	12
Iran, Islamic Rep. of	12
Morocco	9
Kuwait	8
Tunisia	8
Oman	8
Yemen	3

Item Number: M031379

**SCORING****Correct Response**

- 10

**Incorrect Response**

- 5
- 30
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Benchmarking education system**

Quebec-CAN	40
North Carolina-USA	33
Ontario-CAN	28
Alberta-CAN	26
Florida-USA	23
Dubai-UAE	19
Abu Dhabi-UAE	13

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

Item label: Trading Card\_Trading cartoon cards

**Trading Cartoon Cards**

Brad had 8 cartoon cards to trade for sports cards. How many sports cards would he get?

Answer: \_\_\_\_\_ sports cards

Item Number: M031380

**SCORING****Correct Response**

- 6

**Incorrect Response**

- 4
- 12
- 24
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Singapore	48
Hong Kong-CHN	42
Chinese Taipei-CHN	40
Korea, Rep. of	36
Russian Federation	32
Japan	32
Finland	31
Denmark	30
Lithuania	27
Netherlands	25
Northern Ireland-GBR	23
Portugal	23
Czech Republic	21
Germany	20
Belgium (Flemish)-BEL	20
Norway	20
Romania	20
Poland	19
Sweden	19
England-GBR	19
Slovak Republic	19
Austria	19
<b>United States</b>	<b>19</b>
Serbia	19
Kazakhstan	18
International average	18
Slovenia	18
Australia	17
Hungary	17
Ireland	17
Croatia	15
Thailand	13
Azerbaijan	13
New Zealand	13
Italy	12
Georgia	11
Turkey	11
Chile	10
Bahrain	9
Armenia	9
United Arab Emirates	9
Spain	9
Qatar	8
Saudi Arabia	7
Malta	6
Morocco	6
Iran, Islamic Rep. of	6
Tunisia	6
Kuwait	5
Oman	4
Yemen	2

**Benchmarking education system**

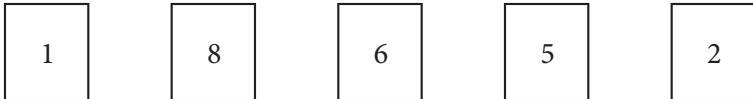
Quebec-CAN	21
North Carolina-USA	19
Ontario-CAN	18
Florida-USA	17
Alberta-CAN	15
Dubai-UAE	13
Abu Dhabi-UAE	7

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

## Item label: Smallest 3 digit number

Anna has these cards with numbers on them.



What is the smallest three-digit number she can show with the cards?

She may use each card only once.

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

Item Number: M041003

### SCORING

#### Correct Response

- 125

#### Incorrect Response

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

### Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	88
Hong Kong-CHN	84
Serbia	73
Japan	73
England-GBR	72
Russian Federation	72
Northern Ireland-GBR	71
Singapore	71
Hungary	71
Poland	70
Chinese Taipei-CHN	67
Croatia	66
Romania	66
Portugal	62
Slovak Republic	60
<b>United States</b>	<b>60 </b>
Kazakhstan	59
Finland	58
Ireland	57
Austria	56
Australia	56
Turkey	55
Czech Republic	55
Germany	54
Georgia	52
New Zealand	51
Lithuania	50
<b>International average</b>	<b>48</b>
Azerbaijan	46
Slovenia	45
Iran, Islamic Rep. of	45
Malta	45
Denmark	42
Armenia	42
Belgium (Flemish)-BEL	41
Sweden	40
Norway	38
Italy	34
United Arab Emirates	33
Chile	32
Tunisia	27
Spain	24
Netherlands	24
Bahrain	23
Qatar	21
Oman	21
Saudi Arabia	18
Morocco	18
Thailand	14
Kuwait	5
Yemen	3

### Benchmarking education system

North Carolina-USA	67
Alberta-CAN	64
Ontario-CAN	60
Quebec-CAN	56
Florida-USA	55
Dubai-UAE	48
Abu Dhabi-UAE	25

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

## Item label: Place value of 8

In which number does the 8 have the value of 800?

- A. 1,468
- B. 2,587
- C. 3,809
- D. 8,634

Item Number: M041010

Correct Response:	C
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	96
Singapore	96
<i>Chinese Taipei-CHN</i>	90
Russian Federation	90
<b>United States</b>	<b>87 </b>
Austria	87
Sweden	87
Netherlands	87
<i>Belgium (Flemish)-BEL</i>	87
<i>Northern Ireland-GBR</i>	84
Japan	84
Chile	82
Portugal	82
Thailand	81
Slovak Republic	80
Malta	79
Romania	78
Poland	77
Georgia	76
Australia	75
Ireland	75
<i>Hong Kong-CHN</i>	75
Spain	74
Italy	74
Kazakhstan	72
<b>International average</b>	<b>72</b>
Denmark	71
Lithuania	70
Germany	70
Azerbaijan	70
Finland	69
Serbia	69
New Zealand	69
<i>England-GBR</i>	68
Czech Republic	68
Bahrain	67
Croatia	66
Hungary	66
Saudi Arabia	64
Oman	63
Turkey	60
Armenia	59
United Arab Emirates	58
Norway	58
Tunisia	56
<i>Iran, Islamic Rep. of</i>	55
Qatar	55
Slovenia	54
Yemen	44
Kuwait	39
Morocco	35

## Benchmarking education system

North Carolina-USA	94
Florida-USA	91
Quebec-CAN	86
Alberta-CAN	70
<i>Dubai-UAE</i>	69
<i>Ontario-CAN</i>	66
<i>Abu Dhabi-UAE</i>	53

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

Item label: Number 100 more than 5432

Which number is 100 more than 5,432?

- A. 6,432
- B. 5,532
- C. 5,442
- D. 5,433

Item Number: M041011

Correct Response:	B
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**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	97
Singapore	95
Chinese Taipei-CHN	94
Japan	88
Netherlands	85
Portugal	84
Belgium (Flemish)-BEL	84
Hong Kong-CHN	83
Russian Federation	82
<b>United States</b>	<b>80 </b>
Czech Republic	80
Kazakhstan	78
Northern Ireland-GBR	78
Slovak Republic	78
Sweden	77
Lithuania	76
Serbia	76
Austria	75
Croatia	74
Finland	73
England-GBR	73
Hungary	73
Australia	73
Germany	73
Slovenia	72
Romania	67
International average	66
New Zealand	66
Turkey	65
Azerbaijan	64
Armenia	64
Malta	64
Poland	63
Italy	62
Thailand	62
Norway	62
Georgia	59
Ireland	59
Denmark	57
Spain	57
Chile	50
Tunisia	47
United Arab Emirates	47
Qatar	46
Oman	45
Saudi Arabia	45
Iran, Islamic Rep. of	42
Bahrain	40
Kuwait	35
Morocco	27
Yemen	27

**Benchmarking education system**

North Carolina-USA	86
Florida-USA	81
Quebec-CAN	73
Alberta-CAN	68
Ontario-CAN	64
Dubai-UAE	57
Abu Dhabi-UAE	43

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

Item label: Number closest to 9 multiply by 22

Which gives an answer closest to  $9 \times 22$ ?

- A.  $5 \times 20$
- B.  $5 \times 25$
- C.  $10 \times 20$
- D.  $10 \times 25$

Item Number: M041041

Correct Response:	C
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**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	87
Netherlands	83
Hong Kong-CHN	82
Chinese Taipei-CHN	81
Singapore	81
Japan	79
Belgium (Flemish)-BEL	78
Germany	72
Serbia	71
England-GBR	70
<b>United States</b>	<b>68 </b>
Norway	67
Northern Ireland-GBR	67
Sweden	67
Denmark	65
Australia	64
Hungary	64
Turkey	64
Finland	63
Portugal	63
Ireland	62
Russian Federation	61
Romania	61
Georgia	61
New Zealand	60
<b>International average</b>	<b>60</b>
Slovak Republic	59
Azerbaijan	59
Kazakhstan	58
Czech Republic	58
Slovenia	57
Lithuania	57
Bahrain	56
Italy	56
Armenia	55
Austria	55
Croatia	55
Poland	55
Chile	52
Malta	51
United Arab Emirates	50
Saudi Arabia	49
Qatar	48
Spain	48
Thailand	46
Oman	39
Iran, Islamic Rep. of	39
Kuwait	38
Morocco	37
Tunisia	34
Yemen	31

**Benchmarking education system**

Florida-USA	76
Alberta-CAN	69
North Carolina-USA	68
Quebec-CAN	65
Ontario-CAN	63
Dubai-UAE	54
Abu Dhabi-UAE	47

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Applying

Item label: Shade 1/2 of the larger triangle

Shade  $\frac{1}{2}$  of the large triangle.

Item Number: M041064

**SCORING****Correct Response**

- Any 2 small triangles shaded
- Half of the triangle shaded in some other way

**Incorrect Response**

- 1 triangle shaded
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Northern Ireland-GBR	91
Hong Kong-CHN	90
Singapore	87
Ireland	86
Netherlands	85
Belgium (Flemish)-BEL	83
England-GBR	83
Slovenia	81
Lithuania	81
Finland	80
New Zealand	79
Chinese Taipei-CHN	78
<b>United States</b>	<b>75 </b>
Australia	74
Denmark	72
Hungary	72
Malta	70
Kazakhstan	69
Japan	68
Korea, Rep. of	67
Serbia	64
Russian Federation	61
Portugal	60
Slovak Republic	60
<b>International average</b>	<b>59</b>
Romania	59
Austria	58
Germany	56
Czech Republic	54
Norway	53
Italy	53
Armenia	53
Bahrain	51
Sweden	50
Azerbaijan	50
Georgia	49
Qatar	47
United Arab Emirates	45
Poland	44
Spain	43
Thailand	43
Turkey	43
Saudi Arabia	41
Oman	41
Chile	39
Iran, Islamic Rep. of	38
Kuwait	33
Yemen	26
Morocco	25
Croatia	23
Tunisia	14

**Benchmarking education system**

Quebec-CAN	85
North Carolina-USA	81
Florida-USA	77
Ontario-CAN	69
Alberta-CAN	58
Dubai-UAE	52
Abu Dhabi-UAE	41

Percent higher than International average  
 Percent lower than International average

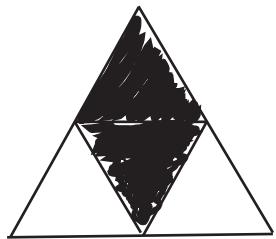
Item label: Shade 1/2 of the larger triangle (continued)

M041064

## Student Responses

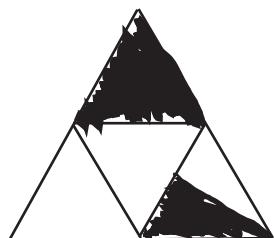
### Correct Response:

Shade  $\frac{1}{2}$  of the large triangle.



### Incorrect Response:

Shade  $\frac{1}{2}$  of the large triangle.



Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Applying

Item label: How many cans must Sean buy

Paint comes in 5 liter cans. Sean needs 37 liters of paint. How many cans must he buy?

- A. 5
- B. 6
- C. 7
- D. 8

Item Number: M041098

Correct Response:	D
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	83
Chinese Taipei-CHN	77
Hong Kong-CHN	76
Netherlands	74
Japan	69
Northern Ireland-GBR	69
Singapore	66
England-GBR	65
Denmark	63
Sweden	59
Finland	59
Belgium (Flemish)-BEL	58
Australia	56
Germany	56
Ireland	55
<b>United States</b>	<b>53 </b>
Lithuania	49
Czech Republic	48
Portugal	47
Malta	46
<b>International average</b>	<b>44</b>
Romania	44
Serbia	43
New Zealand	42
Slovak Republic	41
Hungary	40
Chile	40
Russian Federation	40
Slovenia	40
Poland	39
Austria	37
Norway	37
Spain	36
Italy	35
Armenia	34
Bahrain	34
United Arab Emirates	33
Georgia	33
Azerbaijan	32
Saudi Arabia	31
Croatia	29
Kazakhstan	29
Qatar	28
Oman	26
Kuwait	26
Tunisia	25
Iran, Islamic Rep. of	25
Thailand	25
Morocco	23
Turkey	21
Yemen	19

## Benchmarking education system

North Carolina-USA	61
Ontario-CAN	54
Alberta-CAN	54
Quebec-CAN	52
Dubai-UAE	42
Florida-USA	41
Abu Dhabi-UAE	29

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing

## Item label: Number between 5 and 6

Write a number that is larger than 5 and is smaller than 6.

Answer \_\_\_\_\_

Item Number: M041104

### SCORING

#### Correct Response

- Any decimal number between 5 and 6
- Any number between 5 and 6 given as a fraction, including answers in words

#### Incorrect Response

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

### Overall Percent Correct

Education system	Percent correct
Belgium (Flemish)-BEL	90
Netherlands	88
England-GBR	83
Denmark	81
Northern Ireland-GBR	80
Singapore	79
Finland	76
Hong Kong-CHN	74
Korea, Rep. of	70
Portugal	69
Germany	67
Japan	66
Ireland	66
Sweden	65
Australia	63
Chinese Taipei-CHN	59
<b>United States</b>	<b>57 </b>
Norway	55
New Zealand	55
Hungary	52
Lithuania	51
Malta	49
Russian Federation	49
Kazakhstan	49
<b>International average</b>	<b>48</b>
Czech Republic	47
Italy	46
Armenia	45
Slovak Republic	45
Serbia	44
Croatia	44
Romania	40
Slovenia	40
Spain	39
Austria	37
Azerbaijan	34
Georgia	34
United Arab Emirates	33
Qatar	30
Turkey	29
Bahrain	28
Tunisia	28
Poland	27
Iran, Islamic Rep. of	27
Chile	27
Saudi Arabia	22
Thailand	21
Morocco	19
Oman	16
Kuwait	13
Yemen	5

### Benchmarking education system

Florida-USA	59
North Carolina-USA	56
Quebec-CAN	54
Ontario-CAN	51
Alberta-CAN	50
Dubai-UAE	41
Abu Dhabi-UAE	32

Percent higher than International average  
 Percent lower than International average

Item label: Number between 5 and 6 (continued)

M041104

## Student Responses

Correct Response:

Answer 5.3

Incorrect Response:

Answer 6

Content Domain	Main Topic	Cognitive Domain
NUMBER	Number Sentences with Whole Numbers	Applying

## Item label: Number sentence for a situation

Joan had 12 apples. She ate some apples, and there were 9 left.  
Which number sentence describes what happened?

- A.  $12 + 9 = \square$
- B.  $9 = 12 + \square$
- C.  $12 - \square = 9$
- D.  $9 - \square = 12$

Item Number: M041107

Correct Response:	C
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	98
Chinese Taipei-CHN	96
Japan	94
Russian Federation	92
Finland	92
<b>United States</b>	<b>92 </b>
Netherlands	91
Singapore	91
Hong Kong-CHN	91
Portugal	90
Austria	90
Belgium (Flemish)-BEL	89
Slovak Republic	89
Germany	89
Slovenia	88
Lithuania	87
Serbia	86
Czech Republic	86
Hungary	86
Poland	85
England-GBR	84
Croatia	84
Australia	84
Norway	84
Sweden	83
Azerbaijan	83
Kazakhstan	82
Northern Ireland-GBR	82
Italy	81
Romania	80
Spain	79
<b>International average</b>	<b>78</b>
Chile	76
New Zealand	76
Denmark	76
Armenia	76
Turkey	75
Georgia	74
Ireland	74
Bahrain	68
Iran, Islamic Rep. of	68
United Arab Emirates	67
Malta	67
Thailand	66
Saudi Arabia	64
Qatar	55
Oman	55
Tunisia	51
Kuwait	46
Morocco	40
Yemen	33

## Benchmarking education system

North Carolina-USA	94
Florida-USA	93
Quebec-CAN	86
Ontario-CAN	85
Alberta-CAN	85
Dubai-UAE	72
Abu Dhabi-UAE	65

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Applying

**Item label: Draw figure 5**

Bill is arranging squares in the following way:



Figure 1

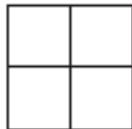


Figure 2

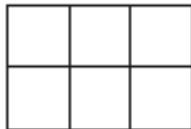


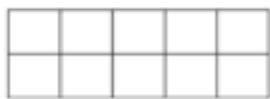
Figure 3

A. Draw Figure 5.

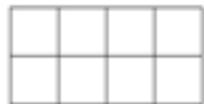
Item Number: M041115A

**SCORING****Correct Response**

- Draws Figure 5 correctly

**Incorrect Response**

- Indicates 8, or draws Figure 4



- Other Incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	90
Japan	84
Singapore	84
Hong Kong-CHN	79
Chinese Taipei-CHN	79
Northern Ireland-GBR	72
Germany	72
Russian Federation	71
Netherlands	71
Belgium (Flemish)-BEL	71
Portugal	71
Italy	68
Finland	68
Croatia	68
Denmark	67
Sweden	67
Ireland	67
Australia	66
Serbia	66
Slovak Republic	65
Spain	65
Norway	64
Lithuania	64
Poland	64
Czech Republic	64
<b>United States</b>	<b>63 </b>
Kazakhstan	63
Austria	63
England-GBR	63
Slovenia	60
New Zealand	59
Chile	58
<b>International average</b>	<b>58</b>
Malta	58
Hungary	57
Romania	57
United Arab Emirates	49
Thailand	47
Armenia	46
Turkey	44
Georgia	43
Bahrain	43
Qatar	42
Azerbaijan	39
Iran, Islamic Rep. of	37
Saudi Arabia	35
Oman	35
Tunisia	24
Kuwait	24
Morocco	21
Yemen	12

**Benchmarking education system**

Quebec-CAN	73
Alberta-CAN	70
Ontario-CAN	70
Florida-USA	66
North Carolina-USA	65
Dubai-UAE	57
Abu Dhabi-UAE	46

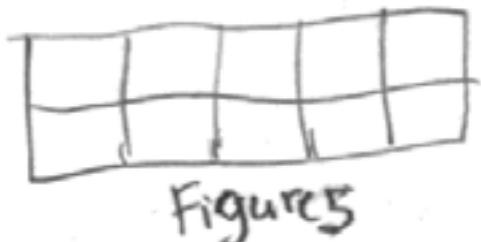
Percent higher than International average  
 Percent lower than International average

Item label: Draw figure 5 (continued)

M041115A

## Student Responses

Correct Response:



Incorrect Response:



Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Reasoning

## Item label: Number of squares for figure 16

Bill is arranging squares in the following way:



Figure 1

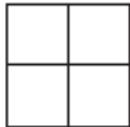


Figure 2

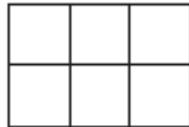


Figure 3

B. How many squares would Bill need to make Figure 16?

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

Item Number: M041115B

### SCORING

#### Correct Response

- 32/ twice 16/ or equivalent

#### Incorrect Response

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

### Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	78
Singapore	77
Chinese Taipei-CHN	76
Hong Kong-CHN	74
Japan	71
Russian Federation	60
<b>United States</b>	<b>59 </b>
Germany	58
Northern Ireland-GBR	58
England-GBR	55
Portugal	55
Serbia	55
Belgium (Flemish)-BEL	54
Netherlands	54
Sweden	53
Ireland	52
Australia	52
Denmark	52
Czech Republic	51
Malta	51
Italy	51
Austria	51
Lithuania	51
Kazakhstan	50
Slovak Republic	49
Norway	48
Croatia	48
Spain	47
Slovenia	47
<b>International average</b>	<b>45</b>
Finland	45
Poland	45
Romania	43
New Zealand	43
Hungary	43
Chile	38
Turkey	38
Azerbaijan	36
United Arab Emirates	31
Georgia	30
Armenia	30
Qatar	28
Thailand	27
Bahrain	26
Iran, Islamic Rep. of	25
Saudi Arabia	23
Oman	19
Tunisia	11
Morocco	11
Kuwait	10
Yemen	5

### Benchmarking education system

North Carolina-USA	64
Florida-USA	62
Quebec-CAN	60
Ontario-CAN	55
Alberta-CAN	50
Dubai-UAE	41
Abu Dhabi-UAE	27

Percent higher than International average  
 Percent lower than International average

Item label: Number of squares for figure 16 (continued)

M041115B

## Student Responses

Correct Response:

Answer: 32

Incorrect Response:

Answer: 12

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

Item label: Numbers which are factor of 12

Circle each number which is a factor of 12.

1	2	3	4	5	6	7	8	9	10	11	12
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Item Number: M041122

**SCORING****Correct Response**

- 1, 2, 3, 4, 6, 12 marked and no others

**Partially Correct Response**

- Marks 4 or 5 out of 6 correct numbers and no incorrect numbers.

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Hong Kong-CHN	88
Singapore	79
Kazakhstan	61
Belgium (Flemish)-BEL	55
Hungary	51
Northern Ireland-GBR	51
Serbia	48
<b>United States</b>	<b>46 </b>
Korea, Rep. of	44
Russian Federation	44
England-GBR	42
Germany	40
Denmark	37
Lithuania	36
Azerbaijan	35
Poland	35
Armenia	33
Slovenia	31
Slovak Republic	29
Australia	29
Croatia	28
Malta	28
<b>International average</b>	<b>27</b>
Netherlands	27
Italy	27
Czech Republic	24
United Arab Emirates	24
Romania	24
Kuwait	21
Qatar	19
Portugal	19
Finland	18
Georgia	16
Oman	16
Chinese Taipei-CHN	16
New Zealand	15
Turkey	15
Ireland	14
Bahrain	12
Austria	12
Thailand	10
Saudi Arabia	10
Japan	8
Iran, Islamic Rep. of	7
Sweden	6
Chile	6
Spain	6
Norway	5
Tunisia	4
Yemen	2
Morocco	1

**Benchmarking education system**

Florida-USA	66
North Carolina-USA	47
Quebec-CAN	30
Dubai-UAE	29
Abu Dhabi-UAE	21
Alberta-CAN	11
Ontario-CAN	8

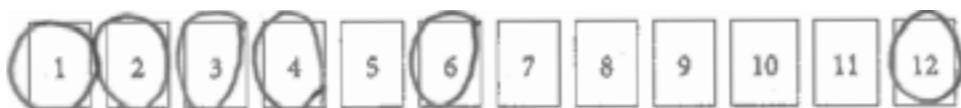
Percent higher than International average  
 Percent lower than International average

Item label: Numbers which are factor of 12 (continued)

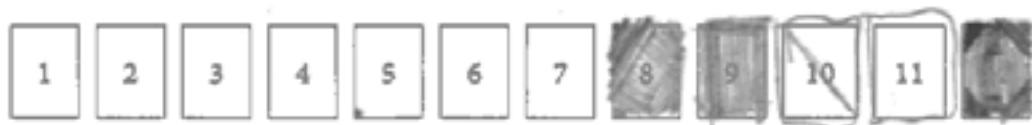
M041122

## Student Responses

Correct Response:



Incorrect Response:



Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing

## Item label: Fraction of the cake eaten

Tom ate  $\frac{1}{2}$  of a cake, and Jane ate  $\frac{1}{4}$  of the cake. How much of the cake did they eat altogether?

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

Item Number: M041299

### SCORING

#### Correct Response

- 3/4 or equivalent

#### Incorrect Response

- 2/6
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

### Overall Percent Correct

Education system	Percent correct
Singapore	84
Northern Ireland-GBR	68
Chinese Taipei-CHN	54
Ireland	53
Hong Kong-CHN	53
England-GBR	51
Finland	46
Germany	41
Australia	37
Korea, Rep. of	36
<b>United States</b>	<b>35 </b>
New Zealand	33
Denmark	32
Belgium (Flemish)-BEL	30
Netherlands	28
Japan	28
Austria	28
Malta	24
<b>International average</b>	<b>23</b>
Serbia	22
Azerbaijan	22
Romania	21
Iran, Islamic Rep. of	20
Hungary	19
United Arab Emirates	17
Czech Republic	16
Sweden	16
Kazakhstan	16
Bahrain	15
Qatar	15
Slovak Republic	15
Spain	14
Lithuania	14
Slovenia	14
Russian Federation	14
Saudi Arabia	14
Norway	13
Oman	12
Kuwait	11
Portugal	11
Italy	11
Armenia	11
Turkey	9
Tunisia	8
Chile	8
Georgia	7
Poland	6
Thailand	5
Morocco	5
Croatia	5
Yemen	3

### Benchmarking education system

North Carolina-USA	40
Florida-USA	32
Ontario-CAN	28
Quebec-CAN	27
Dubai-UAE	24
Alberta-CAN	19
Abu Dhabi-UAE	14

Percent higher than International average  
 Percent lower than International average

Item label: Fraction of the cake eaten (continued)

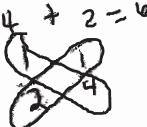
M041299

## Student Responses

Correct Response:

$$\frac{3}{4}$$
$$\frac{1}{2} + \frac{1}{4}$$
$$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$$

Incorrect Response:

$$\frac{2}{6}$$
$$\frac{1}{4} + 2 = 6$$

$$\frac{1}{2} + \frac{1}{4} = \frac{2}{6}$$

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing

## Item label: Equivalent fractions

Which sentence means Jack ate  $\frac{2}{4}$  of a pizza?

- A. Jack ate  $\frac{1}{5}$  of the pizza
- B. Jack ate  $\frac{1}{4}$  of the pizza
- C. Jack ate  $\frac{1}{3}$  of the pizza
- D. Jack ate  $\frac{1}{2}$  of the pizza

Item Number: M041320

Correct Response:	D
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## Overall Percent Correct

Education system	Percent correct
Singapore	89
Hong Kong-CHN	88
Chinese Taipei-CHN	82
Belgium (Flemish)-BEL	77
Northern Ireland-GBR	77
<b>United States</b>	<b>74 </b>
Ireland	74
Netherlands	72
Finland	71
Malta	69
England-GBR	68
Korea, Rep. of	63
Australia	62
Japan	60
Denmark	58
New Zealand	57
Lithuania	54
Serbia	51
Hungary	47
<b>International average</b>	<b>46</b>
Romania	46
Azerbaijan	45
Norway	44
Russian Federation	43
Italy	42
Slovenia	41
Kazakhstan	41
Germany	40
Portugal	40
Sweden	39
United Arab Emirates	38
Turkey	38
Austria	38
Spain	37
Armenia	37
Chile	36
Slovak Republic	32
Czech Republic	31
Georgia	31
Iran, Islamic Rep. of	30
Qatar	30
Bahrain	29
Saudi Arabia	29
Poland	28
Oman	26
Kuwait	25
Croatia	24
Thailand	22
Morocco	19
Yemen	17
Tunisia	15

## Benchmarking education system

Florida-USA	82
North Carolina-USA	82
Quebec-CAN	66
Ontario-CAN	53
Alberta-CAN	52
Dubai-UAE	48
Abu Dhabi-UAE	35

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

**Item label: Soccer tournament**

In a soccer tournament, teams get:

3 points for a win

1 point for a tie

0 points for a loss

Zedland has 11 points.

What is the **smallest** number of games Zedland could have played?

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

Item Number: M051001

**SCORING****Correct Response**

- 5 OR 3 wins and 2 ties

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Hong Kong-CHN	59
Japan	56
Korea, Rep. of	52
Singapore	52
Chinese Taipei-CHN	48
England-GBR	47
Northern Ireland-GBR	45
Serbia	45
Czech Republic	41
Denmark	40
Portugal	40
Ireland	39
Lithuania	37
Sweden	36
Netherlands	36
Finland	35
<b>United States</b>	<b>34 </b>
Slovak Republic	34
Australia	31
Germany	29
Russian Federation	28
<b>International average</b>	<b>27</b>
Azerbaijan	26
New Zealand	26
Romania	26
Turkey	26
Hungary	26
Belgium (Flemish)-BEL	25
Kazakhstan	25
Croatia	25
Armenia	25
Italy	23
Poland	22
Spain	21
Malta	21
Slovenia	21
Thailand	20
Norway	19
Austria	17
Chile	16
Georgia	14
Saudi Arabia	13
Morocco	13
United Arab Emirates	12
Bahrain	11
Iran, Islamic Rep. of	9
Qatar	8
Oman	5
Tunisia	4
Yemen	3
Kuwait	2

**Benchmarking education system**

North Carolina-USA	39
Ontario-CAN	36
Florida-USA	35
Alberta-CAN	35
Quebec-CAN	26
Dubai-UAE	14
Abu Dhabi-UAE	11

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Reasoning

Item label: Number of hours to Brandon on bike

Mary left Apton and rode at the same speed for 2 hours.  
She reached this sign.

Mary continues to ride at the same speed to Brandon.  
How many hours will it take her to ride from the sign to Brandon?

A.  $1\frac{1}{2}$  hours  
 B. 2 hours  
 C. 3 hours  
 D.  $3\frac{1}{2}$  hours

Item Number: M051007

Correct Response:	C
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## Overall Percent Correct

Education system	Percent correct
Kazakhstan	55
Russian Federation	54
Singapore	50
Romania	50
Lithuania	47
Denmark	45
Portugal	45
Slovak Republic	45
Hong Kong-CHN	45
Serbia	44
Chinese Taipei-CHN	44
Czech Republic	43
Azerbaijan	42
Netherlands	42
Germany	41
Armenia	41
Korea, Rep. of	41
Hungary	41
Georgia	40
Croatia	40
Northern Ireland-GBR	40
Japan	40
Poland	39
England-GBR	39
Slovenia	38
International average	38
Finland	37
Norway	37
Belgium (Flemish)-BEL	37
Iran, Islamic Rep. of	36
Turkey	36
Ireland	35
Italy	35
Australia	34
Sweden	34
Thailand	34
United States	33
Tunisia	32
New Zealand	32
Yemen	32
Austria	32
Spain	31
Bahrain	30
Qatar	29
Malta	29
Saudi Arabia	27
United Arab Emirates	27
Chile	27
Oman	24
Kuwait	24
Morocco	22

## Benchmarking education system

Quebec-CAN	39
Ontario-CAN	36
North Carolina-USA	36
Alberta-CAN	34
Florida-USA	31
Dubai-UAE	26
Abu Dhabi-UAE	25

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Knowing

Item label: Find the inequivalent fraction

Which fraction is **not** equal to the others?

- A.  $\frac{1}{2}$
- B.  $\frac{4}{8}$
- C.  $\frac{2}{4}$
- D.  $\frac{2}{8}$

Item Number: M051091

Correct Response:	D
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## Overall Percent Correct

Education system	Percent correct
Hong Kong-CHN	82
Singapore	81
Chinese Taipei-CHN	81
Northern Ireland-GBR	73
England-GBR	69
Finland	68
Korea, Rep. of	68
Ireland	67
Belgium (Flemish)-BEL	66
<b>United States</b>	<b>65 </b>
Malta	65
Netherlands	64
Japan	56
Australia	56
Denmark	54
Hungary	51
Romania	51
New Zealand	45
Azerbaijan	44
Serbia	44
<b>International average</b>	<b>44</b>
Austria	43
Turkey	42
Croatia	39
Slovak Republic	38
Portugal	38
Italy	36
United Arab Emirates	36
Lithuania	36
Norway	36
Kazakhstan	35
Germany	35
Russian Federation	35
Qatar	34
Armenia	32
Sweden	31
Bahrain	31
Georgia	31
Slovenia	31
Spain	30
Czech Republic	30
Saudi Arabia	28
Poland	26
Iran, Islamic Rep. of	26
Chile	25
Oman	25
Tunisia	25
Thailand	25
Morocco	23
Kuwait	16
Yemen	15

## Benchmarking education system

North Carolina-USA	75
Florida-USA	69
Quebec-CAN	62
Ontario-CAN	50
Alberta-CAN	47
Dubai-UAE	46
Abu Dhabi-UAE	34

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Whole Numbers	Knowing

Item label: Multiply 23 and 19

$$23 \times 19 =$$

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

Item Number: M051203

**SCORING****Correct Response**

- 437

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Chinese Taipei-CHN	90
Korea, Rep. of	83
Singapore	79
Portugal	79
Japan	78
Hong Kong-CHN	77
Russian Federation	74
Kazakhstan	70
Armenia	69
Serbia	68
Azerbaijan	63
Lithuania	61
Turkey	59
<b>United States</b>	<b>59 </b>
Italy	58
Austria	58
Spain	55
Croatia	54
Romania	51
Tunisia	50
Iran, Islamic Rep. of	45
Georgia	44
Slovak Republic	43
Northern Ireland-GBR	43
Thailand	42
<b>International average</b>	<b>41</b>
Hungary	40
Ireland	40
England-GBR	37
Germany	32
Czech Republic	28
United Arab Emirates	28
Belgium (Flemish)-BEL	26
Malta	25
Netherlands	25
Morocco	25
Bahrain	23
Chile	23
Denmark	20
Qatar	19
Oman	18
Slovenia	16
Saudi Arabia	15
Australia	11
Norway	9
New Zealand	8
Poland	6
Sweden	5
Yemen	5
Finland	5
Kuwait	3

**Benchmarking education system**

Florida-USA	64
North Carolina-USA	61
Dubai-UAE	38
Quebec-CAN	23
Abu Dhabi-UAE	22
Ontario-CAN	12
Alberta-CAN	9

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Fractions and Decimals	Applying

## Item label: How far did Duncan travel

Duncan first traveled 4.8 km in a car and then he traveled 1.5 km in a bus.

How far did Duncan travel?

- A. 6.3 km
- B. 5.8 km
- C. 5.13 km
- D. 4.95 km

Item Number: M051305

Correct Response:	A
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	97
Japan	95
Singapore	92
Chinese Taipei-CHN	92
Finland	86
Belgium (Flemish)-BEL	86
Portugal	84
Germany	76
Ireland	75
Northern Ireland-GBR	74
Lithuania	74
England-GBR	74
<b>United States</b>	<b>74 </b>
Hong Kong-CHN	74
Netherlands	73
Denmark	73
Austria	72
Italy	69
Malta	67
Russian Federation	67
Sweden	65
Chile	64
Kazakhstan	63
Azerbaijan	62
Australia	62
Hungary	61
<b>International average</b>	<b>60</b>
Slovak Republic	60
Poland	59
Czech Republic	59
Norway	59
Spain	58
Romania	57
Turkey	56
Slovenia	54
Serbia	54
Croatia	54
New Zealand	48
Georgia	48
Bahrain	44
Thailand	44
Qatar	42
Armenia	41
United Arab Emirates	41
Saudi Arabia	30
Morocco	30
Oman	29
Iran, Islamic Rep. of	29
Tunisia	28
Yemen	19
Kuwait	19

## Benchmarking education system

North Carolina-USA	80
Florida-USA	72
Quebec-CAN	69
Alberta-CAN	61
Ontario-CAN	57
Dubai-UAE	55
Abu Dhabi-UAE	34

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
NUMBER	Patterns and Relationships	Applying

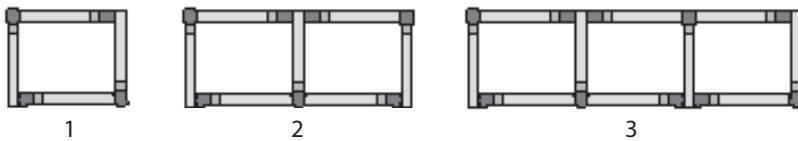
**Item label: Number of matches for figure 4**

Cooney has to form figures 1 to 4 with matches.

Figures 1, 2, and 3 are shown below.

He needs four matches to form figure 1, seven matches to form figure 2, and ten matches to form figure 3.

He uses the same rule each time to make the next figure in the pattern.



How many matches will he need to form figure 4?

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

Item Number: M051601

**SCORING****Correct Response**

- 13

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	93
Japan	84
Singapore	82
Hong Kong-CHN	77
Chinese Taipei-CHN	73
Belgium (Flemish)-BEL	72
Finland	72
Netherlands	72
Portugal	71
Germany	69
Russian Federation	69
Denmark	68
Sweden	67
Serbia	66
Northern Ireland-GBR	66
Slovenia	66
Slovak Republic	64
Czech Republic	64
England-GBR	63
Kazakhstan	62
Lithuania	61
Austria	61
Norway	58
<b>United States</b>	<b>58 </b>
Italy	58
Australia	58
Ireland	56
Croatia	56
Hungary	55
New Zealand	54
<b>International average</b>	<b>54</b>
Spain	50
Georgia	50
Thailand	50
Romania	49
Azerbaijan	49
Poland	49
Chile	47
Armenia	47
Malta	43
Bahrain	39
Iran, Islamic Rep. of	35
United Arab Emirates	35
Qatar	31
Saudi Arabia	30
Turkey	29
Oman	22
Tunisia	18
Morocco	17
Kuwait	15
Yemen	7

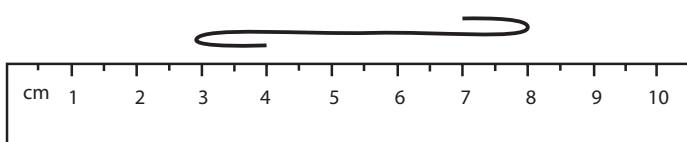
**Benchmarking education system**

Quebec-CAN	66
Florida-USA	60
Alberta-CAN	59
North Carolina-USA	58
Ontario-CAN	58
Dubai-UAE	44
Abu Dhabi-UAE	30

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Applying

Item label: Length of string pulled straight



If the string in the diagram above is pulled straight, which of these is closest to its length?

- A. 5 cm
- B. 7 cm
- C. 8 cm
- D. 9 cm

Item Number: M031004

Correct Response:	B
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### Overall Percent Correct

Education system	Percent correct
Russian Federation	53
Japan	52
Belgium (Flemish)-BEL	48
Chinese Taipei-CHN	48
Singapore	44
Sweden	44
Netherlands	43
Kazakhstan	43
Germany	42
Korea, Rep. of	41
Hong Kong-CHN	41
Azerbaijan	39
Slovenia	38
Finland	38
Denmark	36
Lithuania	36
Austria	36
Portugal	34
Slovak Republic	33
Serbia	33
Poland	30
Romania	29
Italy	29
International average	29
Czech Republic	29
Hungary	28
Northern Ireland-GBR	26
Croatia	26
Australia	26
Norway	26
Armenia	22
Thailand	22
Turkey	21
Tunisia	20
Georgia	20
United States	20
Spain	20
England-GBR	19
Iran, Islamic Rep. of	18
Malta	18
Morocco	18
Yemen	17
Qatar	16
New Zealand	16
Ireland	16
Chile	15
Saudi Arabia	15
United Arab Emirates	14
Oman	13
Kuwait	13
Bahrain	10

### Benchmarking education system

Quebec-CAN	24
Florida-USA	23
Ontario-CAN	21
North Carolina-USA	20
Dubai-UAE	18
Alberta-CAN	17
Abu Dhabi-UAE	14

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

Item label: Position of shape after a 1/2 turn



Which of the following shows the position of the shape above after a half turn or  $180^\circ$  rotation?

A. 

B. 

C. 

D. 

Item Number: M031071

<b>Correct Response:</b>	<b>B</b>
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**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	80 
Singapore	70 
Japan	69 
Finland	67 
Hong Kong-CHN	64 
England-GBR	64 
Northern Ireland-GBR	63 
Netherlands	59 
Chinese Taipei-CHN	58 
<b>United States</b>	<b>52 </b>
Russian Federation	51 
Portugal	49 
Slovak Republic	48 
Denmark	48 
Australia	47
Norway	47
New Zealand	46
Italy	46
Sweden	46
Azerbaijan	45
Czech Republic	45
Germany	44
Turkey	44
Serbia	43
<b>International average</b>	<b>43</b>
Spain	42
Kazakhstan	42
Hungary	42
Ireland	42
Belgium (Flemish)-BEL	40
Austria	40
Lithuania	39
Croatia	38 
Chile	38 
Saudi Arabia	36 
Thailand	35 
Qatar	35 
Malta	35 
Romania	34 
Poland	34 
Slovenia	34 
United Arab Emirates	32 
Bahrain	32 
Georgia	29 
Iran, Islamic Rep. of	27 
Kuwait	24 
Morocco	22 
Oman	22 
Armenia	21 
Tunisia	16 
Yemen	12 

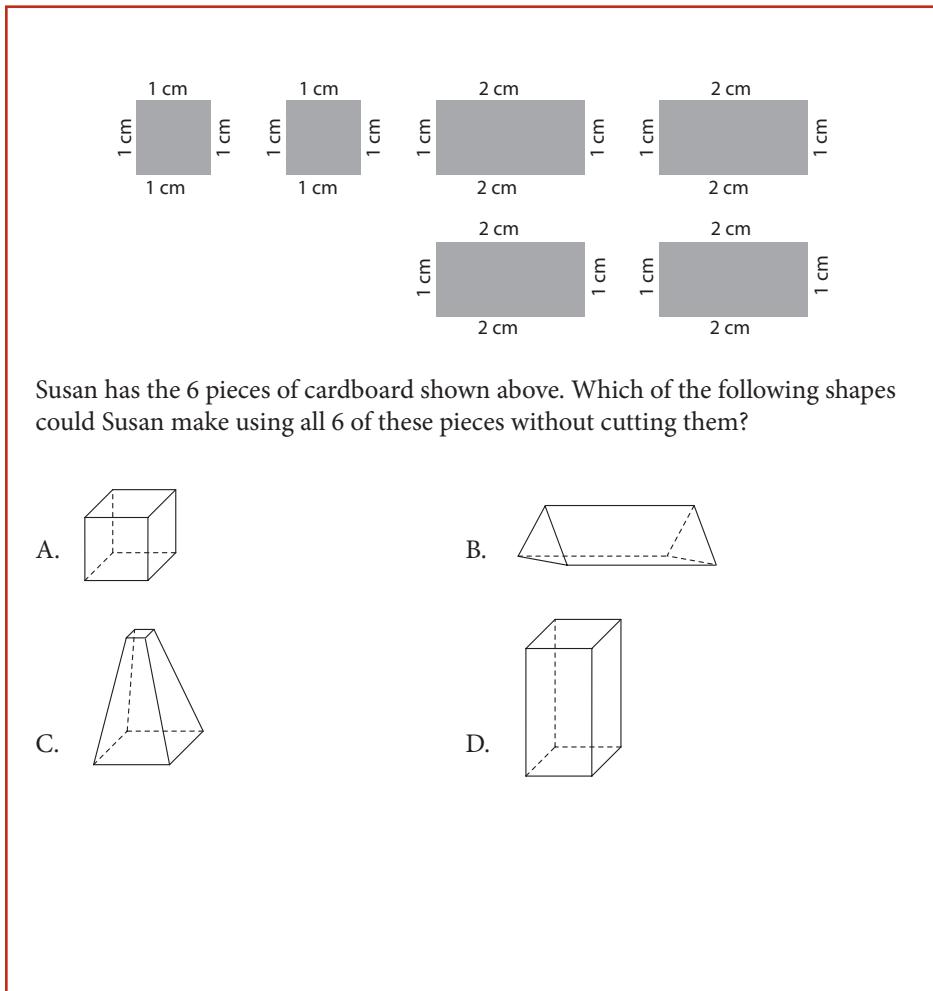
**Benchmarking education system**

Florida-USA	75 
North Carolina-USA	59 
Ontario-CAN	47 
Quebec-CAN	47
Alberta-CAN	37 
Dubai-UAE	36 
Abu Dhabi-UAE	28 

 Percent higher than International average Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

Item label: Pieces of cardboard to make shape



Item Number: M031083

Correct Response:	D
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**Overall Percent Correct**

Education system	Percent correct
Portugal	93
Hong Kong-CHN	92
Japan	90
Singapore	88
Korea, Rep. of	85
Finland	84
Russian Federation	84
Chinese Taipei-CHN	84
<b>United States</b>	<b>83 </b>
Ireland	82
Australia	81
Chile	81
Czech Republic	80
Denmark	79
Serbia	79
Slovak Republic	78
England-GBR	78
Sweden	78
Northern Ireland-GBR	78
Austria	75
Belgium (Flemish)-BEL	74
Hungary	74
Lithuania	73
Turkey	72
Netherlands	72
Slovenia	71
New Zealand	71
Germany	71
Italy	71
Spain	70
Norway	70
Croatia	69
International average	69
Kazakhstan	67
Malta	64
Romania	63
Poland	63
Azerbaijan	61
Bahrain	60
Thailand	57
Georgia	56
Saudi Arabia	54
Iran, Islamic Rep. of	53
Armenia	53
United Arab Emirates	53
Qatar	43
Oman	40
Morocco	37
Tunisia	37
Kuwait	32
Yemen	26

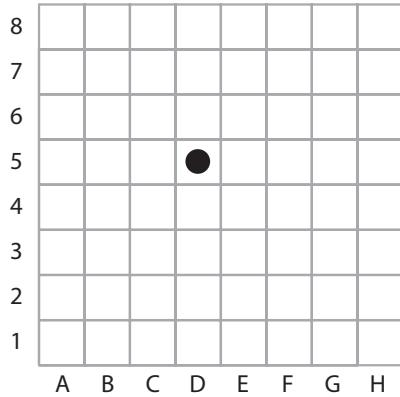
**Benchmarking education system**

Florida-USA	86
Quebec-CAN	81
Ontario-CAN	81
North Carolina-USA	79
Alberta-CAN	73
Dubai-UAE	64
Abu Dhabi-UAE	46

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Applying

Item label: Jamie is playing a board game



Jamie is playing a board game. His counter is on square D5. Which of these moves would put his counter on square G7?

- A. 2 squares to the right and 3 squares up
- B. 2 squares to the left and 3 squares up
- C. 3 squares to the right and 2 squares up
- D. 3 squares to the left and 2 squares up

Item Number: M031088

Correct Response:	C
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### Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	92 ▲
<i>Chinese Taipei-CHN</i>	90 ▲
Japan	86 ▲
Finland	85 ▲
Netherlands	85 ▲
Singapore	85 ▲
Slovenia	83 ▲
Germany	82 ▲
<i>England-GBR</i>	81 ▲
<i>Hong Kong-CHN</i>	81 ▲
Australia	80 ▲
<b>United States</b>	<b>80 ▲</b>
Czech Republic	79 ▲
<i>Northern Ireland-GBR</i>	79 ▲
<i>Belgium (Flemish)-BEL</i>	79 ▲
Portugal	79 ▲
Russian Federation	78 ▲
Denmark	78 ▲
Sweden	77 ▲
Ireland	77 ▲
Lithuania	76 ▲
Hungary	76 ▲
Austria	76 ▲
Italy	75 ▲
Spain	75 ▲
Croatia	75 ▲
Norway	74 ▲
Slovak Republic	73 ▲
New Zealand	73 ▲
Serbia	71
Poland	70
Romania	69
International average	68
Malta	67
Chile	64 ▼
Turkey	61 ▼
Kazakhstan	58 ▼
Thailand	57 ▼
United Arab Emirates	56 ▼
Armenia	56 ▼
Georgia	51 ▼
Bahrain	50 ▼
Azerbaijan	49 ▼
Qatar	48 ▼
Saudi Arabia	47 ▼
Iran, Islamic Rep. of	46 ▼
Oman	39 ▼
Kuwait	36 ▼
Morocco	36 ▼
Yemen	35 ▼
Tunisia	35 ▼

### Benchmarking education system

North Carolina-USA	83 ▲
Quebec-CAN	80 ▲
Alberta-CAN	79 ▲
Ontario-CAN	79 ▲
<i>Florida-USA</i>	74 ▲
<i>Dubai-UAE</i>	63 ▼
<i>Abu Dhabi-UAE</i>	54 ▼

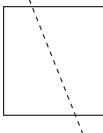
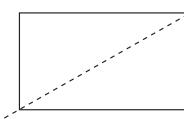
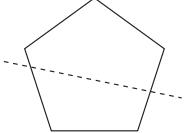
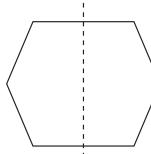
▲ Percent higher than International average

▼ Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

Item label: Which dotted line is of symmetry

In which of the following figures is the dotted line a line of symmetry?

- A. 
- B. 
- C. 
- D. 

Item Number: M031093

Correct Response:	D
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**Overall Percent Correct**

Education system	Percent correct
Singapore	91 
Hong Kong-CHN	81 
<b>United States</b>	<b>80 </b>
Australia	76 
Korea, Rep. of	75 
Northern Ireland-GBR	74 
England-GBR	71 
Malta	70 
Ireland	66 
Turkey	65 
Denmark	65 
Saudi Arabia	65 
Germany	64 
Iran, Islamic Rep. of	64 
Portugal	63 
Italy	63 
Czech Republic	63 
Hungary	61 
Lithuania	61 
Kazakhstan	59
Russian Federation	58
Kuwait	58
Bahrain	57
International average	54
Oman	54
United Arab Emirates	54
Chile	53
New Zealand	53
Thailand	53
Norway	52
Azerbaijan	52
Romania	50
Qatar	50
Slovenia	49 
Austria	49 
Belgium (Flemish)-BEL	49 
Finland	49 
Spain	48 
Georgia	44 
Serbia	43 
Chinese Taipei-CHN	43 
Poland	40 
Slovak Republic	40 
Armenia	39 
Morocco	37 
Sweden	32 
Netherlands	30 
Croatia	30 
Japan	30 
Yemen	27 
Tunisia	22 

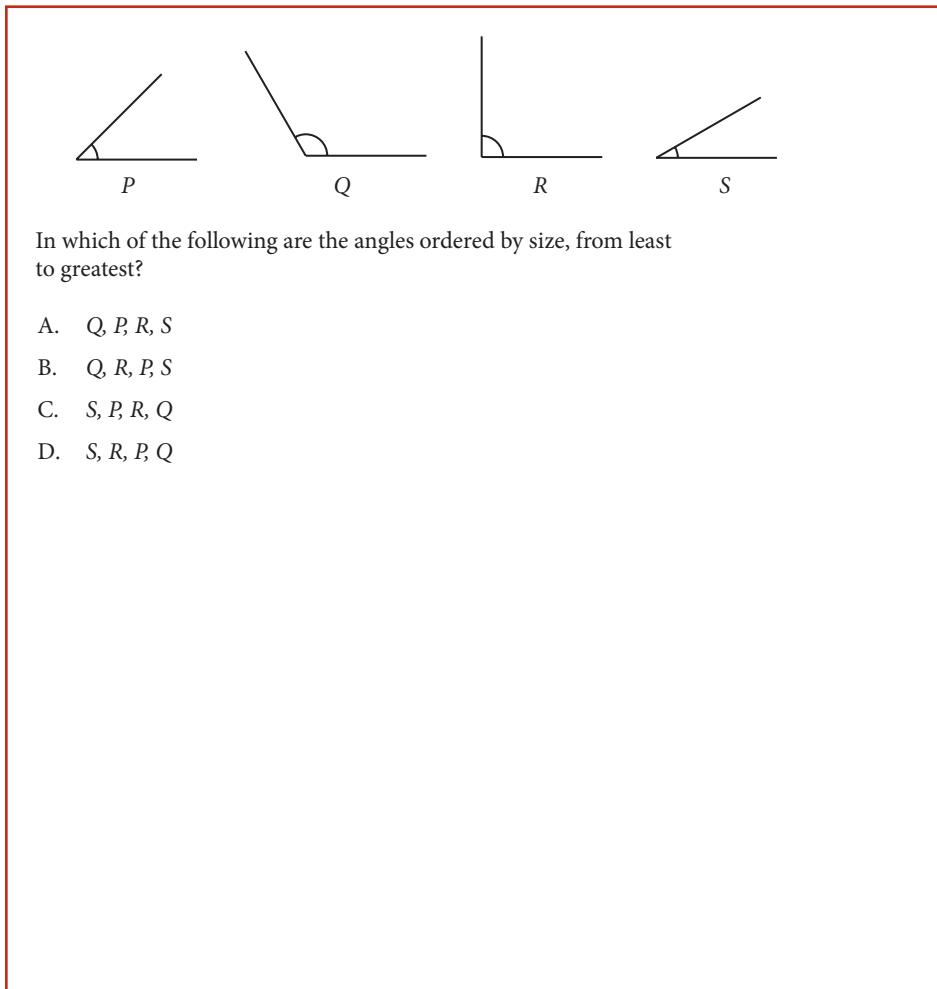
**Benchmarking education system**

Florida-USA	87 
North Carolina-USA	86 
Ontario-CAN	76 
Alberta-CAN	62 
Quebec-CAN	62 
Abu Dhabi-UAE	54
Dubai-UAE	52

 Percent higher than International average Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Knowing

Item label: The angles ordered by size



Item Number: M031109

Correct Response:	C
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**Overall Percent Correct**

Education system	Percent correct
Japan	94
Singapore	90
Hong Kong-CHN	84
Korea, Rep. of	82
Netherlands	81
Belgium (Flemish)-BEL	80
<b>United States</b>	<b>78 </b>
Turkey	74
Northern Ireland-GBR	73
Hungary	72
Russian Federation	71
Portugal	70
Chinese Taipei-CHN	70
Thailand	69
Ireland	69
Chile	68
Spain	68
Australia	68
Lithuania	68
Finland	67
Croatia	67
England-GBR	66
Slovenia	66
Germany	66
Malta	65
Bahrain	65
Italy	64
Poland	64
Romania	63
<b>International average</b>	<b>63</b>
Slovak Republic	63
Austria	61
Kazakhstan	60
Czech Republic	60
Georgia	59
Sweden	58
Serbia	58
Azerbaijan	57
Saudi Arabia	57
Denmark	56
Qatar	54
New Zealand	54
Norway	54
United Arab Emirates	53
Oman	50
Armenia	50
Kuwait	46
Yemen	37
Tunisia	35
Iran, Islamic Rep. of	27
Morocco	26

**Benchmarking education system**

Florida-USA	86
North Carolina-USA	75
Quebec-CAN	68
Ontario-CAN	66
Alberta-CAN	63
Dubai-UAE	61
Abu Dhabi-UAE	52

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

Item label: Rotate the shape  $\frac{1}{4}$  clockwise

A pattern rule says "Rotate the shape   $\frac{1}{4}$  turn clockwise each time."

What will the pattern look like?

A. 

B. 

C. 

D. 

Item Number: M031159

Correct Response:	A
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**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	93 
Chinese Taipei-CHN	89 
Hong Kong-CHN	87 
Singapore	86 
Belgium (Flemish)-BEL	84 
Netherlands	81 
Northern Ireland-GBR	80 
Ireland	79 
Japan	78 
<b>United States</b>	<b>78</b> 
England-GBR	76 
Hungary	76 
Australia	76 
Finland	75 
Germany	74 
Czech Republic	74 
Italy	74 
Portugal	74 
Lithuania	72 
Slovak Republic	71 
Austria	71 
Russian Federation	70 
Spain	70 
New Zealand	69 
Denmark	66
Romania	66
Kazakhstan	65
Slovenia	64
Poland	64
Turkey	64
Croatia	64
<b>International average</b>	<b>64</b>
Serbia	63
Malta	61
Sweden	61
Chile	57 
Norway	56 
Bahrain	54 
Saudi Arabia	53 
Qatar	51 
Azerbaijan	51 
Thailand	50 
United Arab Emirates	50 
Armenia	46 
Oman	42 
Iran, Islamic Rep. of	37 
Georgia	37 
Kuwait	36 
Morocco	28 
Tunisia	22 
Yemen	22 

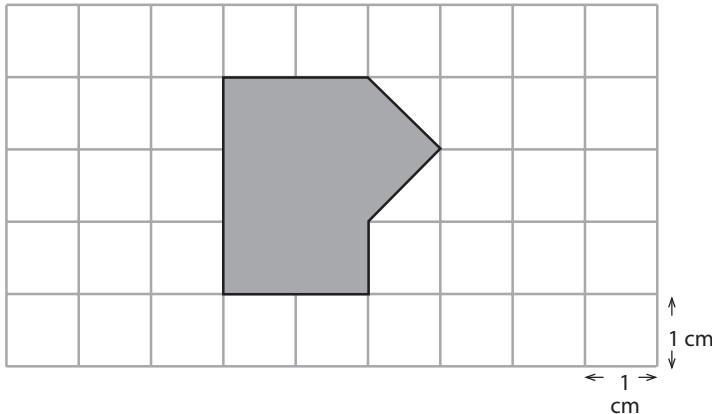
**Benchmarking education system**

Florida-USA	82 
North Carolina-USA	81 
Alberta-CAN	74 
Ontario-CAN	74 
Quebec-CAN	66
Dubai-UAE	62
Abu Dhabi-UAE	45 

 Percent higher than International average Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Applying

Item label: Shaded area in square centimeters



The squares in the grid above are 1 cm by 1 cm.  
What is the shaded area in square centimeters?

Answer: \_\_\_\_\_ square centimeters

Item Number: M031297

**SCORING****Correct Response**

- 7

**Incorrect Response**

- 6
- 8
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Japan	70
Hong Kong-CHN	67
Chinese Taipei-CHN	63
Northern Ireland-GBR	52
Korea, Rep. of	48
Denmark	46
Russian Federation	44
Australia	43
Netherlands	43
Portugal	40
Singapore	39
<b>United States</b>	<b>38 </b>
Belgium (Flemish)-BEL	37
Thailand	37
Lithuania	37
Germany	35
Azerbaijan	35
Ireland	34
Hungary	33
England-GBR	32
Sweden	31
Austria	30
International average	30
Czech Republic	29
Slovak Republic	29
Serbia	28
Italy	27
Armenia	26
Finland	26
Croatia	26
Kazakhstan	26
Norway	25
Iran, Islamic Rep. of	25
New Zealand	23
Malta	23
Romania	23
Slovenia	22
Saudi Arabia	21
Bahrain	21
Poland	17
Turkey	17
Georgia	17
United Arab Emirates	17
Oman	16
Qatar	15
Chile	13
Morocco	11
Spain	11
Tunisia	9
Yemen	7
Kuwait	5

**Benchmarking education system**

Florida-USA	57
Quebec-CAN	41
Ontario-CAN	37
North Carolina-USA	34
Alberta-CAN	31
Dubai-UAE	27
Abu Dhabi-UAE	14

Percent higher than International average  
 Percent lower than International average

Item label: Shaded area in square centimeters (continued)

M031297

## Student Responses

### Correct Response:

Answer: 7 square centimeters

### Incorrect Response:

Answer: 6 square centimeters

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Applying

**Item label: Angle between 90 and 180 degrees**

In the space below, draw an angle that is greater than 90 degrees but less than 180 degrees.

Item Number: M031325

**SCORING****Correct Response**

- Obtuse angle drawn (labeled or unlabeled)

**Incorrect Response**

- Angle less than 90 degrees
- Straight line
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	88
Singapore	80
<i>Chinese Taipei-CHN</i>	74
Japan	72
<i>Hong Kong-CHN</i>	62
Italy	56
<i>Northern Ireland-GBR</i>	56
<b>United States</b>	<b>53 </b>
Portugal	53
<i>England-GBR</i>	50
Turkey	49
Spain	44
Australia	43
Denmark	42
Ireland	41
Kazakhstan	39
Russian Federation	38
Oman	32
<i>Belgium (Flemish)-BEL</i>	32
Azerbaijan	32
<b>International average</b>	<b>31</b>
Romania	31
Chile	30
Armenia	29
Iran, Islamic Rep. of	29
Serbia	24
Hungary	22
Finland	22
Norway	22
Lithuania	21
Slovak Republic	20
United Arab Emirates	20
Croatia	20
Georgia	18
Thailand	17
Saudi Arabia	17
New Zealand	17
Bahrain	17
Malta	17
Sweden	17
Qatar	16
Germany	13
Austria	12
Czech Republic	11
Poland	9
Yemen	8
Slovenia	8
Netherlands	8
Tunisia	8
Morocco	6
Kuwait	5

**Benchmarking education system**

Florida-USA	59
North Carolina-USA	49
Ontario-CAN	44
Quebec-CAN	32
Dubai-UAE	24
Abu Dhabi-UAE	18
Alberta-CAN	11

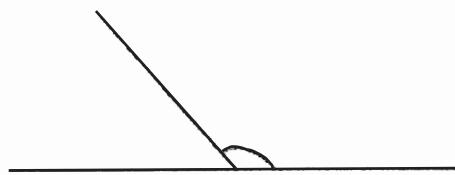
Percent higher than International average  
 Percent lower than International average

Item label: Angle between 90 and 180 degrees (continued)

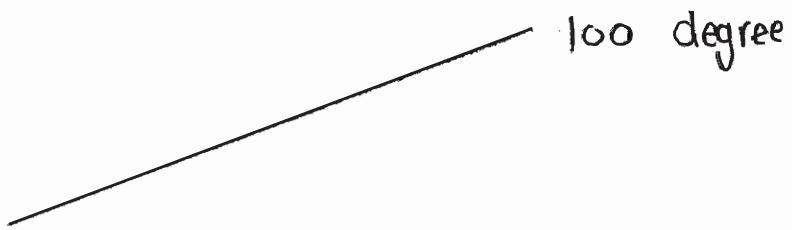
M031325

## Student Responses

Correct Response:



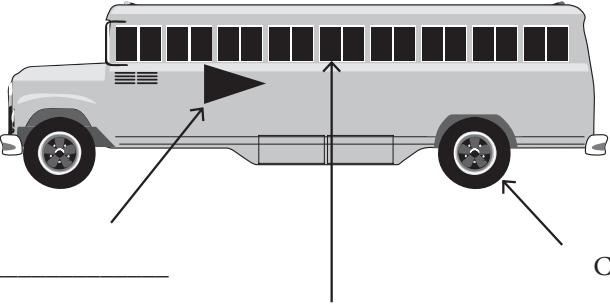
Incorrect Response:



Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

Item label: Identify shapes in the picture

Write the names of shapes A, B, and C in the spaces provided.



A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

Item Number: M041143

**SCORING****Correct Response**

- A: Triangle
- B: Rectangle or oblong or more general correct terms such as parallelogram, quadrilateral or tetragon
- C: Circle (allow cylinder for circle)

**Partially Correct Response**

- 2 shapes correctly named

**Incorrect Response**

- 1 shape correctly named
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Singapore	79
Russian Federation	76
Serbia	76
Ireland	72
Slovenia	71
Korea, Rep. of	70
England-GBR	70
Poland	70
Hong Kong-CHN	69
Northern Ireland-GBR	68
Japan	66
Australia	65
Slovak Republic	64
Belgium (Flemish)-BEL	64
<b>United States</b>	<b>63 </b>
Kazakhstan	62
Thailand	62
Georgia	61
Italy	60
Croatia	60
Hungary	59
Romania	57
Portugal	57
Norway	55
Denmark	55
New Zealand	54
Chinese Taipei-CHN	54
Malta	53
Sweden	53
<b>International average</b>	<b>53</b>
Czech Republic	53
Germany	51
Iran, Islamic Rep. of	48
Bahrain	48
Lithuania	48
Netherlands	48
Azerbaijan	47
United Arab Emirates	46
Chile	44
Turkey	44
Austria	40
Oman	38
Tunisia	38
Qatar	37
Armenia	32
Saudi Arabia	32
Spain	29
Kuwait	26
Finland	25
Morocco	23
Yemen	6

**Benchmarking education system**

Florida-USA	69
North Carolina-USA	68
Ontario-CAN	68
Quebec-CAN	63
Alberta-CAN	61
Dubai-UAE	51
Abu Dhabi-UAE	39

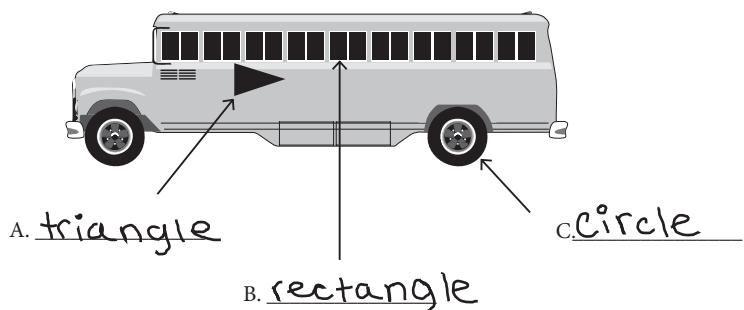
Percent higher than International average  
 Percent lower than International average

Item label: Identify shapes in the picture (continued)

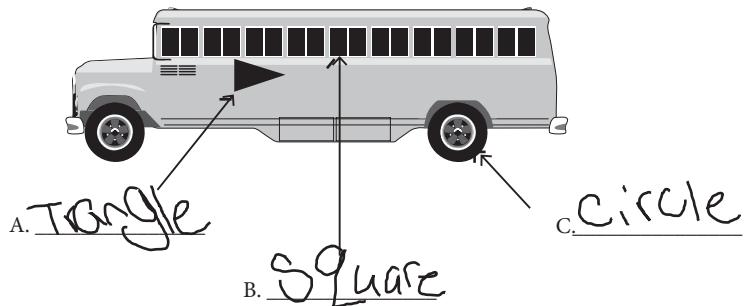
M041143

## Student Responses

Correct Response:



Partially Correct Response:

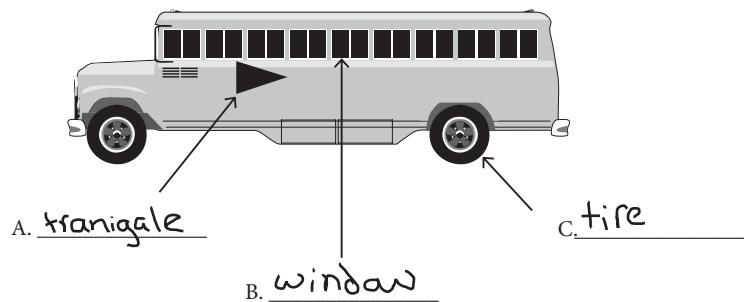


Item label: Identify shapes in the picture (continued)

M041143

## Student Responses

Incorrect Response:



Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

**Item label: Statement about 3-D figures**

Figure A	Figure B

Here are some statements about Figure A and Figure B. Put an X to show whether each statement is true or false.

Statement	True	False
A and B both have a square face.	X	
A and B both have the same number of faces.		
All the angles in A are right angles.		
B has more edges than A.		
Some of the edges in B are curved.		

Item Number: M041148

**SCORING****Correct Response**

- Puts the X's in the correct column as shown below.

True   False

**Partially Correct Response**

- Any three correct

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Portugal	70
Austria	67
Northern Ireland-GBR	58
England-GBR	58
Hong Kong-CHN	57
Chinese Taipei-CHN	53
Japan	53
<b>United States</b>	<b>50 </b>
Denmark	47
Australia	45
Ireland	45
Germany	44
Korea, Rep. of	44
Italy	44
Hungary	42
Belgium (Flemish)-BEL	42
Poland	42
Chile	41
Singapore	41
Malta	40
Slovenia	39
Croatia	35
Lithuania	34
Finland	33
<b>International average</b>	<b>32</b>
New Zealand	32
Romania	32
Serbia	28
Qatar	27
Kazakhstan	27
Spain	26
United Arab Emirates	26
Norway	26
Oman	26
Russian Federation	22
Sweden	20
Netherlands	20
Kuwait	20
Slovak Republic	19
Czech Republic	18
Armenia	16
Iran, Islamic Rep. of	15
Georgia	15
Bahrain	13
Tunisia	11
Saudi Arabia	11
Azerbaijan	6
Thailand	6
Turkey	4
Yemen	1
Morocco	—

**Benchmarking education system**

Quebec-CAN	57
Ontario-CAN	46
North Carolina-USA	46
Florida-USA	44
Dubai-UAE	29
Alberta-CAN	29
Abu Dhabi-UAE	22

Percent higher than International average  
 Percent lower than International average

— Not applicable

**Item label: Statement about 3-D figures (continued)**

M041148

**Student Responses****Correct Response:**

Statement	True	False
A and B both have a square face.	X	
A and B both have the same number of faces.		X
All the angles in A are right angles.	X	
B has more edges than A.		X
Some of the edges in B are curved.		X

**Incorrect Response:**

Statement	True	False
A and B both have a square face.	X	
A and B both have the same number of faces.	X	
All the angles in A are right angles.		X
B has more edges than A.	X	
Some of the edges in B are curved.		X

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Applying

Item label: How far does Ruth walk

The school playground is a square. The playground is 100 meters long. Ruth walks all the way around the edge of the playground. How far does she walk?

- A. 100 meters
- B. 200 meters
- C. 400 meters
- D. 10,000 meters

Item Number: M041155

Correct Response:	C
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**Overall Percent Correct**

Education system	Percent correct
Chinese Taipei-CHN	88
Hong Kong-CHN	82
Finland	70
Korea, Rep. of	70
Russian Federation	69
Japan	68
Turkey	68
Netherlands	65
Lithuania	62
Singapore	61
Slovak Republic	61
Czech Republic	60
Belgium (Flemish)-BEL	58
Malta	58
Sweden	57
Northern Ireland-GBR	57
Croatia	56
Austria	56
Azerbaijan	55
Germany	54
Thailand	54
Denmark	54
Kazakhstan	53
Poland	53
England-GBR	53
Australia	52
Romania	51
Portugal	51
Slovenia	50
Hungary	50
International average	50
Ireland	49
Iran, Islamic Rep. of	46
New Zealand	44
Italy	44
<b>United States</b>	<b>43 </b>
Georgia	42
Armenia	41
Norway	41
Spain	38
Tunisia	38
Serbia	36
Chile	36
Saudi Arabia	35
United Arab Emirates	29
Bahrain	24
Oman	23
Qatar	22
Kuwait	21
Yemen	17
Morocco	15

**Benchmarking education system**

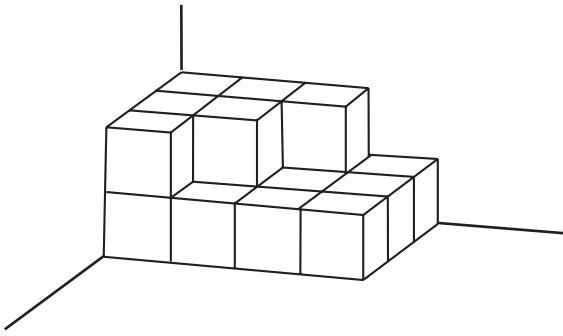
Quebec-CAN	51
Ontario-CAN	49
North Carolina-USA	47
Alberta-CAN	43
Florida-USA	37
Dubai-UAE	35
Abu Dhabi-UAE	28

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Applying

Item label: Number of boxes in the stack



Ann stacks these boxes in the corner of the room. All the boxes are the same size.  
How many boxes does she use?

- A. 25
- B. 19
- C. 18
- D. 13

Item Number: M041158

Correct Response:	C
-------------------	---

**Overall Percent Correct**

Education system	Percent correct
Chinese Taipei-CHN	95
Belgium (Flemish)-BEL	90
Netherlands	90
Korea, Rep. of	85
Germany	85
Japan	84
Portugal	84
Finland	81
Hong Kong-CHN	80
Lithuania	78
Singapore	78
Denmark	77
Czech Republic	74
Sweden	74
Norway	74
Australia	74
Austria	74
Northern Ireland-GBR	72
Slovenia	70
Hungary	70
Serbia	70
<b>United States</b>	<b>69 </b>
Russian Federation	68
England-GBR	67
Ireland	66
Slovak Republic	66
New Zealand	63
Poland	63
International average	63
Croatia	62
Chile	59
Romania	57
Kazakhstan	57
Malta	57
Spain	55
Thailand	53
Italy	52
Georgia	51
Bahrain	50
Armenia	47
Azerbaijan	46
Turkey	45
Iran, Islamic Rep. of	44
Saudi Arabia	43
United Arab Emirates	41
Qatar	38
Oman	33
Tunisia	32
Morocco	31
Kuwait	31
Yemen	31

**Benchmarking education system**

Quebec-CAN	77
Alberta-CAN	72
Ontario-CAN	70
Florida-USA	68
North Carolina-USA	68
Abu Dhabi-UAE	45
Dubai-UAE	43

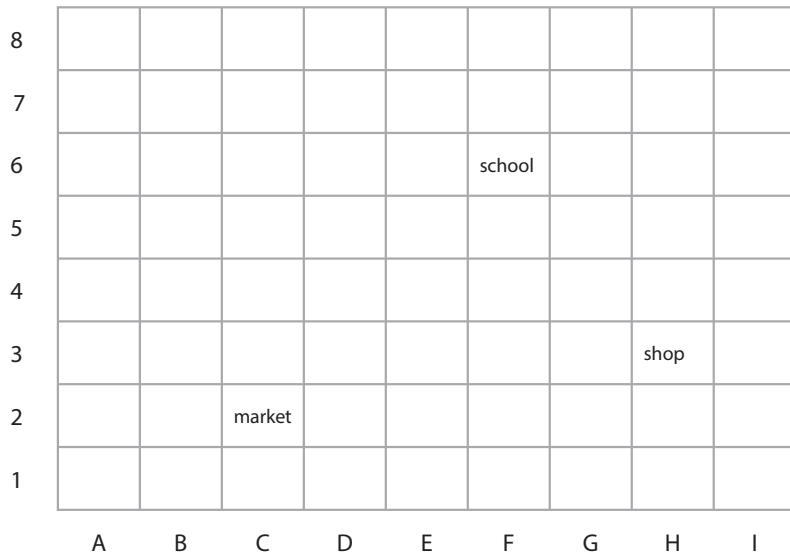
Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Knowing

**Item label: Position of the shop**

This is a map of Lucy's town. The market is at the position C2.



A. What is the position of the shop?

The shop is at \_\_\_\_\_

Item Number: M041160A

**SCORING****Correct Response**

- H3 / (H, 3) / 3H / (3, H) or equivalent

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Netherlands	95
Slovenia	95
Korea, Rep. of	94
Hong Kong-CHN	94
Belgium (Flemish)-BEL	94
Finland	93
Lithuania	93
Portugal	93
Germany	93
Japan	92
Czech Republic	91
Denmark	90
Northern Ireland-GBR	90
Italy	89
Australia	89
Austria	89
England-GBR	88
Slovak Republic	88
Russian Federation	88
Sweden	87
Norway	87
Singapore	87
Croatia	87
<b>United States</b>	<b>87 </b>
Hungary	86
Spain	85
Serbia	83
Poland	83
Malta	83
Ireland	83
New Zealand	82
Chinese Taipei-CHN	79
<b>International average</b>	<b>76</b>
Romania	76
Chile	76
Kazakhstan	71
Bahrain	70
Turkey	67
United Arab Emirates	64
Iran, Islamic Rep. of	61
Saudi Arabia	58
Thailand	56
Armenia	56
Azerbaijan	55
Qatar	51
Georgia	48
Oman	44
Kuwait	43
Tunisia	36
Morocco	30
Yemen	10

**Benchmarking education system**

Quebec-CAN	93
Ontario-CAN	89
Alberta-CAN	88
Florida-USA	86
North Carolina-USA	85
Dubai-UAE	75
Abu Dhabi-UAE	57

Percent higher than International average  
 Percent lower than International average

Item label: Position of the shop (continued)

M041160A

## Student Responses

### Correct Response:

The shop is at # 3

### Incorrect Response:

The shop is at market

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Applying

**Item label: Mark Lucy's house**

This is a map of Lucy's town. The market is at the position C2.



B. Lucy's house is at D5. Put an X on the map to show where Lucy's house is.

Item Number: M041160B

**SCORING****Correct Response**

- Cross or other mark anywhere in square D5

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	97
Netherlands	97
Portugal	97
Japan	96
<i>Belgium (Flemish)-BEL</i>	96
Hong Kong-CHN	96
Finland	96
Singapore	95
Germany	95
Australia	94
<i>England-GBR</i>	94
<i>Chinese Taipei-CHN</i>	93
Slovenia	93
<b>United States</b>	<b>92 </b>
<i>Northern Ireland-GBR</i>	91
Croatia	91
Lithuania	91
Sweden	91
Denmark	91
Italy	91
Czech Republic	90
Norway	90
Ireland	89
Russian Federation	89
Slovak Republic	89
Austria	89
New Zealand	89
Hungary	88
Malta	87
Spain	86
Poland	85
Serbia	85
<b>International average</b>	<b>78</b>
Chile	78
Romania	75
Turkey	75
Kazakhstan	72
Bahrain	66
Iran, Islamic Rep. of	65
United Arab Emirates	64
Thailand	58
Saudi Arabia	58
Armenia	54
Qatar	52
Azerbaijan	50
Georgia	50
Oman	46
Kuwait	39
Tunisia	35
Morocco	25
Yemen	9

**Benchmarking education system**

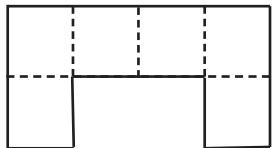
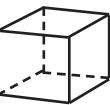
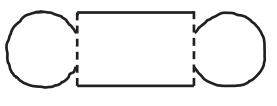
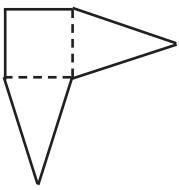
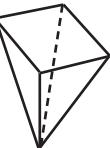
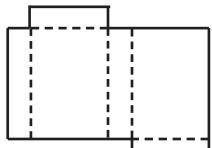
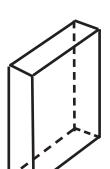
Quebec-CAN	96
Alberta-CAN	95
Ontario-CAN	93
North Carolina-USA	88
Florida-USA	88
Dubai-UAE	76
Abu Dhabi-UAE	58

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Reasoning

**Item label: Relating net with its 3-D figure**

Ariana found the following patterns to make containers. Which pattern actually makes the container shown beside it?

- A.  
- B.  
- C.  
- D.  

Item Number: M041265

<b>Correct Response:</b>	<b>D</b>
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**Overall Percent Correct**

Education system	Percent correct
Japan	80 
Korea, Rep. of	75 
Hong Kong-CHN	59 
Chinese Taipei-CHN	56 
Finland	53 
Russian Federation	51 
Czech Republic	50 
Netherlands	50 
Germany	47 
Serbia	47 
Slovenia	47 
Austria	47 
Singapore	47 
Azerbaijan	45 
Hungary	44 
Portugal	44 
England-GBR	44 
Lithuania	42 
New Zealand	41
Kazakhstan	40
Australia	39
Italy	39
Slovak Republic	39
Northern Ireland-GBR	39
Romania	38
Poland	37
<b>International average</b>	<b>37</b>
Norway	36
Croatia	36
Thailand	35
<b>United States</b>	<b>34 </b>
Belgium (Flemish)-BEL	33
Chile	33 
Denmark	31 
Ireland	30
Sweden	30 
Spain	28 
Malta	28 
United Arab Emirates	23 
Armenia	23 
Turkey	23 
Qatar	22 
Saudi Arabia	22 
Iran, Islamic Rep. of	21 
Bahrain	19 
Kuwait	17 
Oman	16 
Morocco	14 
Georgia	14 
Yemen	11 
Tunisia	9 

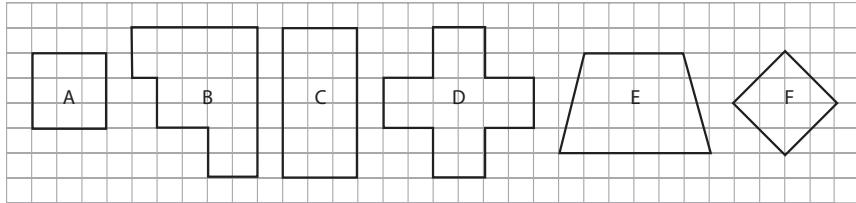
**Benchmarking education system**

Ontario-CAN	47 
Alberta-CAN	42 
Quebec-CAN	36
Florida-USA	33
Dubai-UAE	28 
North Carolina-USA	24 
Abu Dhabi-UAE	19 

 Percent higher than International average Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Reasoning

Item label: Identify the shapes



Sean used the table to sort these shapes.

Put the letter of each shape in the space where it belongs.

Shape A has been done for you.

	Has 4 Sides	Does Not Have 4 Sides
All sides are the same length	A	
All sides are NOT the same length		

Item Number: M041284

### SCORING

#### Correct Response

- 5 correct

(A) F	D
C	E

#### Partially Correct Response

- 3 or 4 correct

#### Incorrect Response

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

### Overall Percent Correct

Education system	Percent correct
Northern Ireland-GBR	45
Slovenia	41
England-GBR	38
Hungary	34
Hong Kong-CHN	33
Japan	32
Korea, Rep. of	28
Belgium (Flemish)-BEL	26
Chinese Taipei-CHN	26
Italy	22
Finland	22
Germany	22
Portugal	20
Denmark	20
Russian Federation	20
Netherlands	18
Lithuania	16
Austria	15
Serbia	15
Norway	15
International average	15
Czech Republic	14
Morocco	13
Slovak Republic	13
<b>United States</b>	<b>13</b>
Spain	12
Australia	12
Singapore	12
Malta	11
Croatia	11
Sweden	10
Poland	10
Kazakhstan	10
Romania	9
Ireland	9
New Zealand	8
United Arab Emirates	7
Turkey	7
Qatar	6
Azerbaijan	6
Armenia	6
Saudi Arabia	5
Chile	5
Iran, Islamic Rep. of	5
Bahrain	4
Georgia	4
Tunisia	2
Kuwait	2
Thailand	1
Oman	1
Yemen	#

#### Benchmarking education system

Quebec-CAN	27
Ontario-CAN	23
Alberta-CAN	21
North Carolina-USA	16
Dubai-UAE	13
Florida-USA	8
Abu Dhabi-UAE	6

Percent higher than International average

Percent lower than International average

# Rounds to zero

Item label: Identify the shapes (continued)

M041284

## Student Responses

### Correct Response:

	Has 4 Sides	Does Not Have 4 Sides
All sides are the same length	A F	D
All sides are NOT the same length	E C	B

### Partially Correct Response:

	Has 4 Sides	Does Not Have 4 Sides
All sides are the same length	A	D
All sides are NOT the same length	E	B

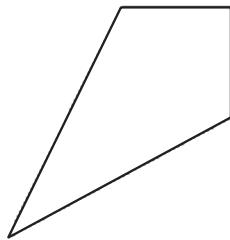
### Incorrect Response:

	Has 4 Sides	Does Not Have 4 Sides
All sides are the same length	E A C F	B D
All sides are NOT the same length	B C E	A D F

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Applying

Item label: Draw the line of symmetry

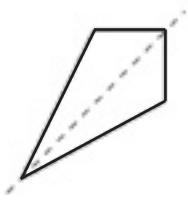
Draw the line of symmetry on this shape.



Item Number: M041327

**SCORING****Correct Response**

- Line drawn correctly as shown

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Hong Kong-CHN	93 ▲
Singapore	92 ▲
Northern Ireland-GBR	86 ▲
England-GBR	82 ▲
Malta	80 ▲
<b>United States</b>	<b>80 ▲</b>
Australia	75 ▲
Ireland	74 ▲
Portugal	67 ▲
Kazakhstan	67 ▲
Russian Federation	61 ▲
Iran, Islamic Rep. of	61 ▲
Lithuania	58 ▲
New Zealand	58 ▲
Korea, Rep. of	57 ▲
Italy	57 ▲
Norway	56 ▲
Bahrain	56 ▲
Germany	55 ▲
Slovenia	53 ▲
Hungary	48
Azerbaijan	47
<b>International average</b>	<b>47</b>
United Arab Emirates	46
Qatar	44
Czech Republic	42
Romania	42
<i>Belgium (Flemish)-BEL</i>	41 ▽
Turkey	41 ▽
Chile	39 ▽
Austria	39 ▽
Oman	38 ▽
Finland	38 ▽
Spain	37 ▽
Slovak Republic	37 ▽
Kuwait	36 ▽
Denmark	36 ▽
Thailand	35 ▽
Georgia	33 ▽
Saudi Arabia	32 ▽
Serbia	32 ▽
Japan	31 ▽
Armenia	28 ▽
Morocco	27 ▽
Sweden	25 ▽
<i>Chinese Taipei-CHN</i>	22 ▽
Netherlands	21 ▽
Poland	16 ▽
Croatia	16 ▽
Tunisia	9 ▽
Yemen	6 ▽

**Benchmarking education system**

Florida-USA	87 ▲
North Carolina-USA	82 ▲
Ontario-CAN	82 ▲
Alberta-CAN	71 ▲
Dubai-UAE	51 ▲
Quebec-CAN	49
Abu Dhabi-UAE	42

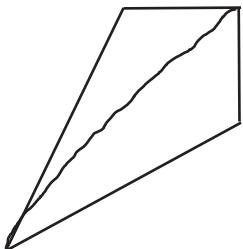
▲ Percent higher than International average  
▼ Percent lower than International average

Item label: Draw the line of symmetry (continued)

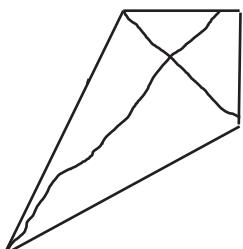
M041327

## Student Responses

Correct Response:

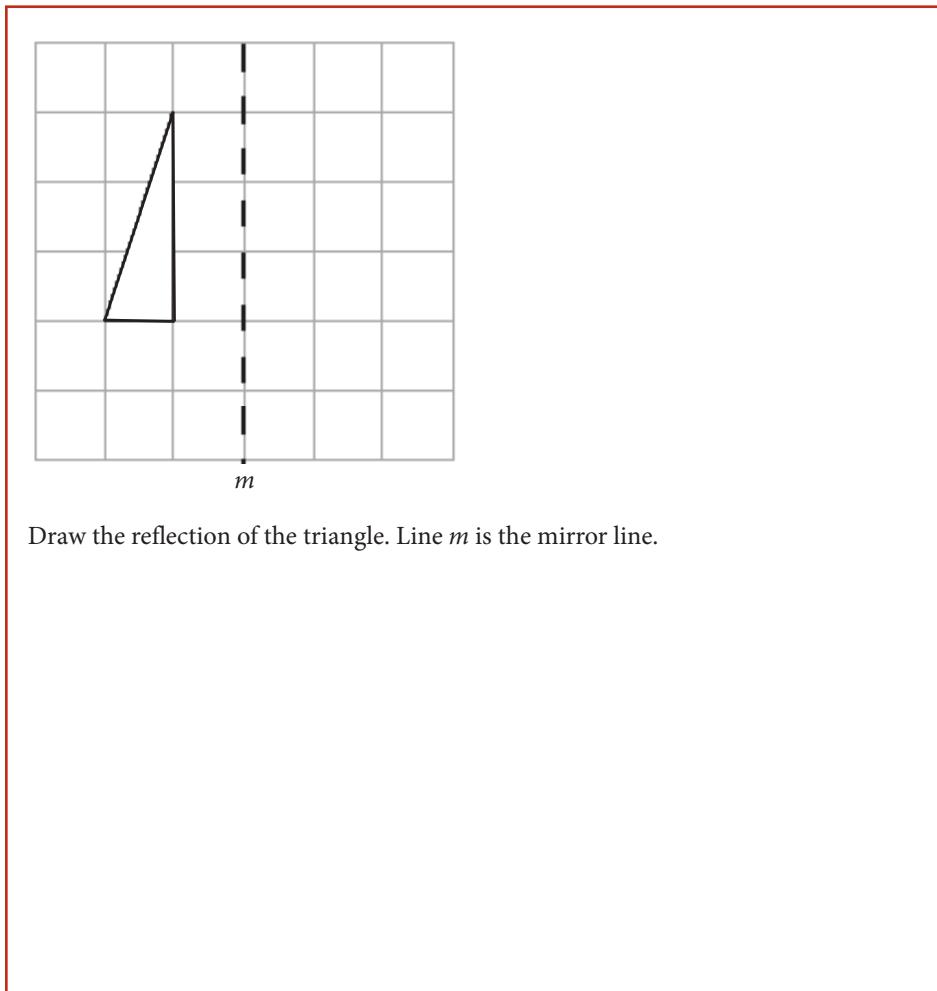


Incorrect Response:



Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Applying

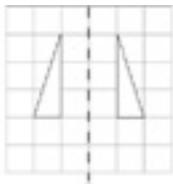
Item label: Draw reflection of the triangle



Item Number: M041328

**SCORING****Correct Response**

- Correct figure drawn (each vertex should be within 2 mm of the correct position)

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	92
Denmark	90
Singapore	89
Japan	87
<i>Hong Kong-CHN</i>	83
Germany	83
<i>Belgium (Flemish)-BEL</i>	80
Slovenia	78
Norway	75
Finland	74
Netherlands	73
Portugal	72
Austria	72
Hungary	71
Lithuania	70
<i>England-GBR</i>	70
Malta	69
Italy	69
<i>Northern Ireland-GBR</i>	68
Czech Republic	68
Australia	66
New Zealand	60
Ireland	59
<b>United States</b>	<b>56 </b>
International average	53
Spain	53
<i>Chinese Taipei-CHN</i>	51
Russian Federation	50
Kazakhstan	49
Sweden	48
Chile	45
Poland	42
Qatar	41
Romania	40
Slovak Republic	40
Serbia	39
Bahrain	38
Croatia	33
Morocco	32
United Arab Emirates	32
Thailand	30
Turkey	29
Azerbaijan	29
Iran, Islamic Rep. of	29
Saudi Arabia	28
Armenia	26
Oman	20
Georgia	19
Kuwait	16
Tunisia	11
Yemen	2

**Benchmarking education system**

Quebec-CAN	76
Ontario-CAN	70
Florida-USA	67
North Carolina-USA	59
Alberta-CAN	54
Dubai-UAE	43
Abu Dhabi-UAE	28

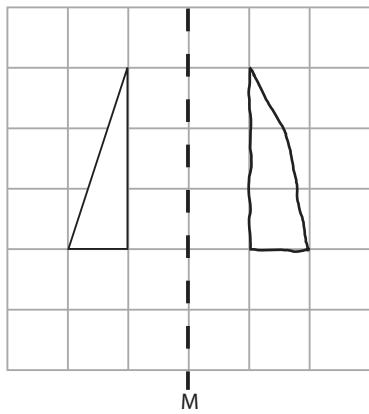
Percent higher than International average  
 Percent lower than International average

Item label: Draw reflection of the triangle (continued)

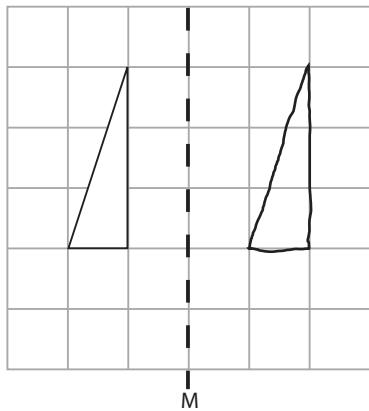
M041328

## Student Responses

**Correct Response:**



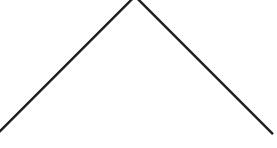
**Incorrect Response:**



Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Knowing

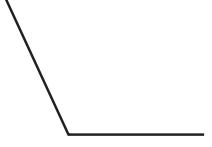
Item label: Which one is a right angle

One of these angles is a right angle. Which one?

A. 

B. 

C. 

D. 

Item Number: M041329

Correct Response:	A
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**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	97 
Hong Kong-CHN	96 
Belgium (Flemish)-BEL	93 
Singapore	91 
Chinese Taipei-CHN	91 
Japan	90 
Croatia	80 
Denmark	76 
Northern Ireland-GBR	76 
Austria	75 
Russian Federation	74 
Portugal	74 
Ireland	72 
Slovenia	72 
Finland	71 
Malta	71 
Spain	71 
Hungary	70 
Serbia	70 
England-GBR	69 
<b>United States</b>	<b>68 </b>
Italy	68 
Thailand	66
Germany	66
Poland	64
International average	64
Azerbaijan	63
Norway	63
Iran, Islamic Rep. of	63
Sweden	62
Romania	61
Kazakhstan	60
Australia	60 
Czech Republic	59 
Slovak Republic	58 
Netherlands	58 
Lithuania	56 
Morocco	55 
Armenia	54 
Chile	53 
Turkey	53 
Qatar	51 
Oman	50 
Tunisia	50 
United Arab Emirates	49 
Georgia	45 
Saudi Arabia	42 
New Zealand	38 
Bahrain	35 
Kuwait	35 
Yemen	28 

**Benchmarking education system**

Florida-USA	77 
Quebec-CAN	75 
North Carolina-USA	65
Ontario-CAN	65
Dubai-UAE	50 
Abu Dhabi-UAE	47 
Alberta-CAN	44 

 Percent higher than International average Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Applying

**Item label: Complete Jay's shape**

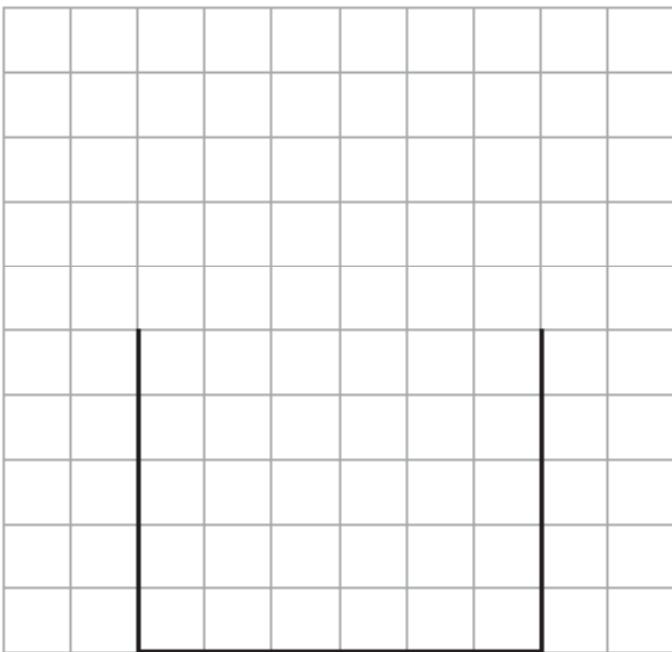
Jay has to draw a shape.

It must have 5 sides.

It must have one line of symmetry.

Jay has started to draw the shape.

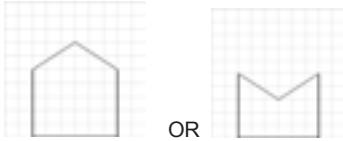
Complete Jay's shape.



*Item Number: M051015*

**SCORING****Correct Response**

- Correct shape drawn which has 5 sides and 1 line of symmetry. The new vertex must be within  $\pm 2$  mm of the line of symmetry (accept the new vertex anywhere on the line of symmetry, provided there are 5 sides).



OR

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Hong Kong-CHN	84
Korea, Rep. of	67
England-GBR	61
Singapore	61
Russian Federation	61
Denmark	57
Kazakhstan	55
Slovenia	55
Northern Ireland-GBR	53
Portugal	53
Belgium (Flemish)-BEL	52
Lithuania	52
<b>United States</b>	<b>51 </b>
Italy	50
Australia	50
Slovak Republic	47
Ireland	47
Georgia	46
Sweden	45
Finland	45
Azerbaijan	45
Chinese Taipei-CHN	44
Germany	44
Malta	44
Czech Republic	43
Romania	42
Hungary	42
<b>International average</b>	<b>42</b>
New Zealand	42
Armenia	41
Spain	41
Iran, Islamic Rep. of	40
Japan	39
Poland	39
Norway	38
Chile	38
Thailand	37
Bahrain	31
Serbia	31
Oman	31
Croatia	29
United Arab Emirates	29
Netherlands	29
Saudi Arabia	29
Austria	26
Qatar	26
Turkey	26
Morocco	23
Tunisia	19
Kuwait	17
Yemen	5

**Benchmarking education system**

Quebec-CAN	59
Ontario-CAN	52
Florida-USA	50
North Carolina-USA	50
Alberta-CAN	37
Dubai-UAE	36
Abu Dhabi-UAE	26

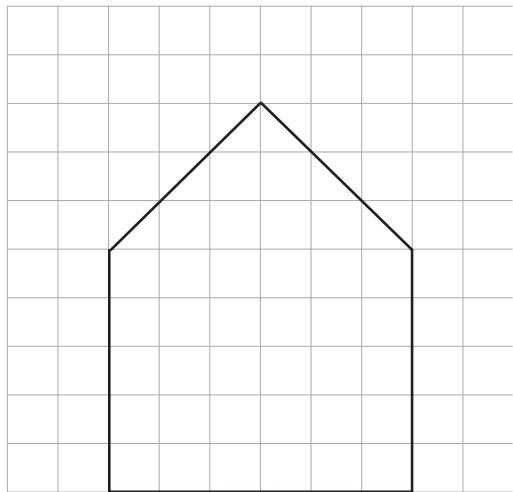
Percent higher than International average  
 Percent lower than International average

Item label: Complete Jay's shape (continued)

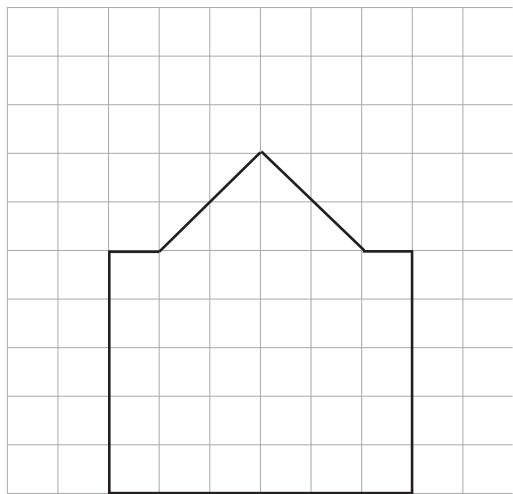
M051015

## Student Responses

Correct Response:



Incorrect Response:



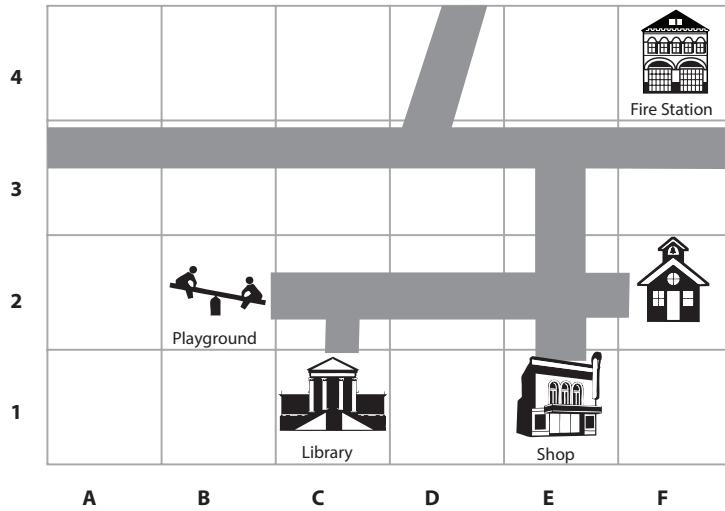
Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Knowing

Item label: Complete the table

A. Complete the table to show where the places are.

The first one has been done for you.

Places	Grid Square
Playground	B2
School	
Corner of Maple and Oak Streets	



Item Number: M051064A

**SCORING****Correct Response**

- Both the places are correct: School (F2) AND Maple/Oak Streets (E3). Do not accept 2F or 3E

**Incorrect Response**

- School correct only (F2)
- Maple/Oak correct only (E3)
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Finland	78
Korea, Rep. of	77
Belgium (Flemish)-BEL	75
Denmark	73
Sweden	68
Russian Federation	68
Hong Kong-CHN	68
Japan	68
England-GBR	67
Croatia	65
Chinese Taipei-CHN	65
Australia	65
Northern Ireland-GBR	65
Slovenia	65
Norway	64
Netherlands	63
<b>United States</b>	<b>63 </b>
Hungary	63
Portugal	63
Lithuania	63
Spain	62
Singapore	60
Poland	59
Czech Republic	59
Germany	58
New Zealand	56
Slovak Republic	55
Italy	54
Kazakhstan	50
<b>International average</b>	<b>50</b>
Austria	48
Serbia	47
Malta	44
Ireland	43
Romania	43
Chile	40
United Arab Emirates	33
Turkey	32
Armenia	32
Bahrain	32
Azerbaijan	31
Saudi Arabia	30
Qatar	28
Iran, Islamic Rep. of	24
Oman	23
Georgia	23
Thailand	23
Morocco	20
Kuwait	16
Tunisia	14
Yemen	3

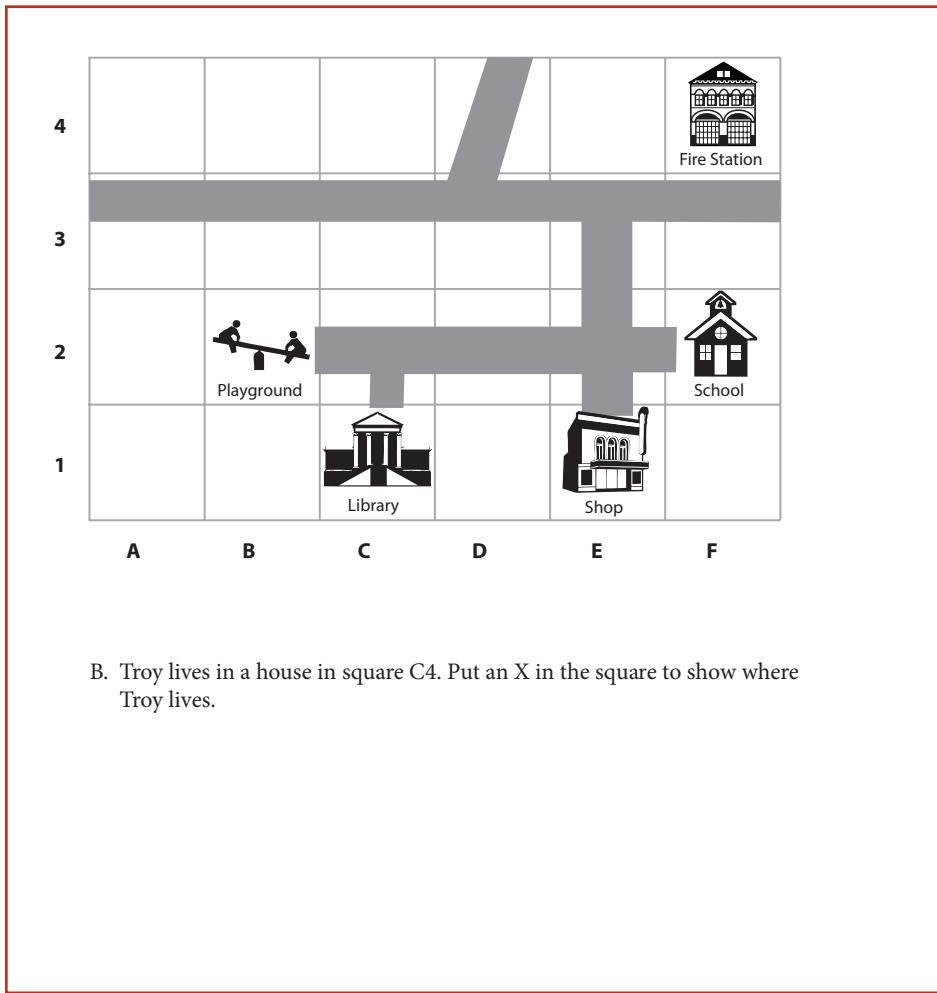
**Benchmarking education system**

North Carolina-USA	64
Ontario-CAN	63
Florida-USA	62
Quebec-CAN	59
Alberta-CAN	56
Dubai-UAE	33
Abu Dhabi-UAE	32

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Points, Lines, and Angles	Applying

Item label: Put an X where Troy lives



Item Number: M051064B

**SCORING****Correct Response**

- An "X" in square C4

**Incorrect Response**

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

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	92 ▲
Finland	90 ▲
Netherlands	87 ▲
Hong Kong-CHN	87 ▲
Japan	85 ▲
Belgium (Flemish)-BEL	85 ▲
Portugal	84 ▲
Slovenia	84 ▲
Singapore	84 ▲
Australia	83 ▲
Lithuania	83 ▲
England-GBR	81 ▲
Northern Ireland-GBR	81 ▲
Norway	80 ▲
Sweden	80 ▲
Hungary	80 ▲
Croatia	79 ▲
Germany	79 ▲
Ireland	78 ▲
<b>United States</b>	<b>78 ▲</b>
Denmark	78 ▲
Italy	78 ▲
Czech Republic	77 ▲
Chinese Taipei-CHN	77 ▲
Spain	75 ▲
Slovak Republic	73 ▲
Malta	73 ▲
New Zealand	72 ▲
Serbia	72 ▲
Poland	71 ▲
Russian Federation	70 ▲
Austria	67
Kazakhstan	65
International average	64
Romania	60
Armenia	57 ▽
Chile	53 ▽
Turkey	52 ▽
Bahrain	45 ▽
United Arab Emirates	43 ▽
Qatar	37 ▽
Azerbaijan	35 ▽
Thailand	34 ▽
Georgia	33 ▽
Iran, Islamic Rep. of	32 ▽
Saudi Arabia	30 ▽
Oman	23 ▽
Tunisia	23 ▽
Kuwait	18 ▽
Morocco	14 ▽
Yemen	3 ▽

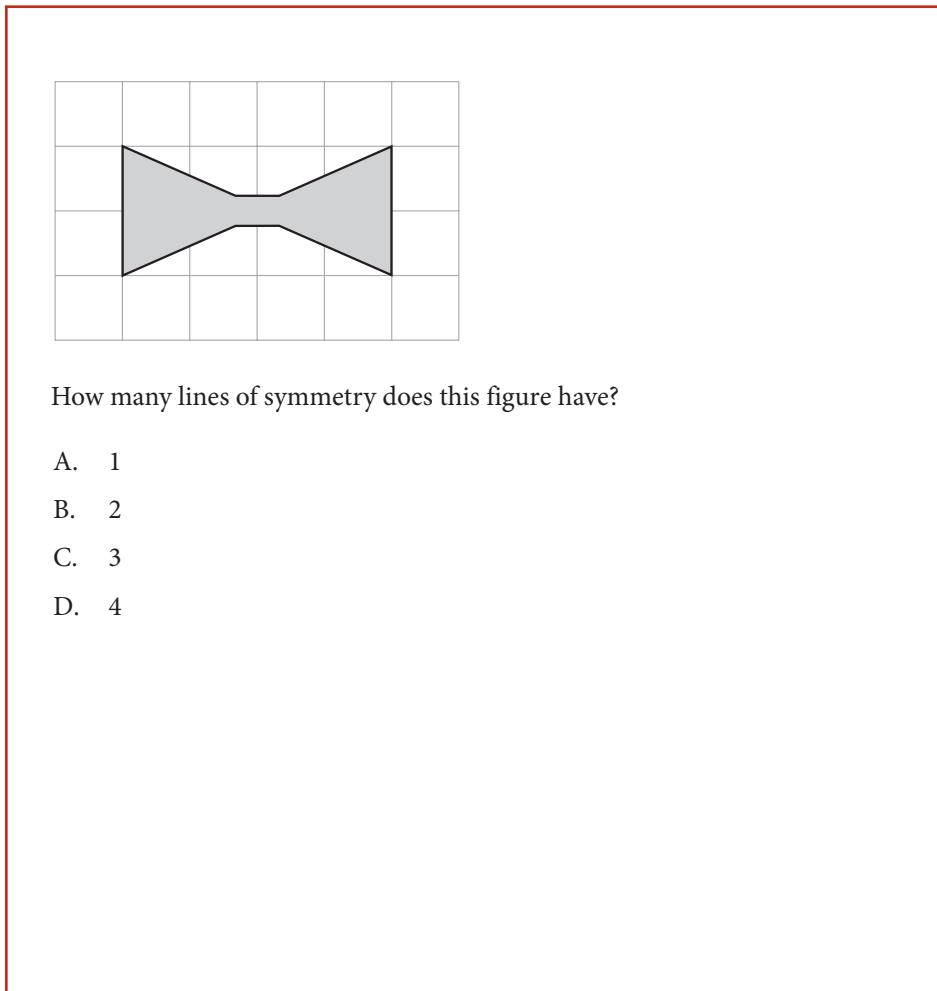
**Benchmarking education system**

North Carolina-USA	84 ▲
Florida-USA	79 ▲
Quebec-CAN	78 ▲
Ontario-CAN	78 ▲
Alberta-CAN	74 ▲
Dubai-UAE	54 ▽
Abu Dhabi-UAE	40 ▽

▲ Percent higher than International average  
▼ Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
<b>GEOMETRIC SHAPES AND MEASURES</b>	Two- and Three-dimensional Shapes	Knowing

Item label: Lines of symmetry complex figure



Item Number: M051123

Correct Response:	B
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**Overall Percent Correct**

Education system	Percent correct
Hong Kong-CHN	81
Singapore	80
England-GBR	73
Northern Ireland-GBR	69
<b>United States</b>	<b>66 </b>
Malta	63
Slovenia	58
Ireland	57
Belgium (Flemish)-BEL	54
Turkey	54
Lithuania	51
Hungary	50
Australia	50
Iran, Islamic Rep. of	49
Japan	48
Korea, Rep. of	48
Russian Federation	46
Romania	46
Germany	46
Denmark	45
Portugal	45
Italy	44
Chile	44
<b>International average</b>	<b>43</b>
Czech Republic	43
Chinese Taipei-CHN	42
Saudi Arabia	41
Azerbaijan	41
Bahrain	41
Norway	40
Morocco	40
Thailand	39
United Arab Emirates	37
Austria	37
New Zealand	36
Kazakhstan	34
Georgia	34
Qatar	34
Finland	33
Slovak Republic	32
Oman	32
Kuwait	31
Netherlands	30
Poland	30
Spain	29
Armenia	29
Serbia	27
Sweden	23
Croatia	23
Tunisia	22
Yemen	17

**Benchmarking education system**

Florida-USA	79
North Carolina-USA	69
Ontario-CAN	66
Alberta-CAN	43
Quebec-CAN	40
Dubai-UAE	39
Abu Dhabi-UAE	37

Percent higher than International average  
 Percent lower than International average

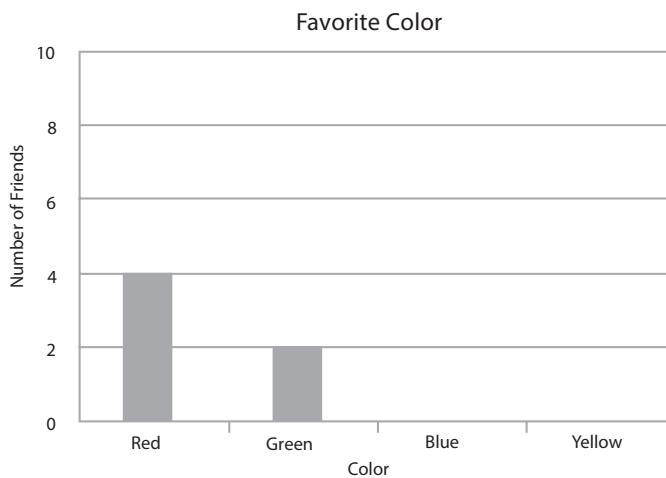
Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Organizing and Representing	Applying

**Item label: Favorite colors of Darin's friends**

Darin asked his friends to name their favorite color. He collected the information in the table shown below.

Favorite Color	Number of Friends
Red	4
Green	2
Blue	6
Yellow	7

Then Darin started to draw a graph to show the information. Complete Darin's graph.



Item Number: M031133

**SCORING****Correct Response**

- Both bars drawn correctly: blue to 6, yellow to 7 ( $\pm 0.5$ )

**Incorrect Response**

- One or both bars attempted but not correct
- One bar correct
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Overall Percent Correct**

Education system	Percent correct
Korea, Rep. of	97
Singapore	95
Hong Kong-CHN	95
Japan	93
Northern Ireland-GBR	92
Netherlands	91
England-GBR	89
Finland	88
Germany	88
Lithuania	87
Ireland	87
Chinese Taipei-CHN	87
Belgium (Flemish)-BEL	86
Australia	84
Portugal	84
Denmark	84
Sweden	83
Malta	83
Hungary	83
Russian Federation	81
New Zealand	81
Austria	80
Slovenia	80
Thailand	78
<b>United States</b>	<b>78 </b>
Spain	78
Slovak Republic	77
Czech Republic	77
Italy	77
Bahrain	75
Croatia	74
Norway	74
International average	73
Turkey	73
Kazakhstan	73
Poland	73
Qatar	70
Chile	69
United Arab Emirates	68
Serbia	67
Romania	62
Saudi Arabia	60
Oman	57
Georgia	56
Kuwait	55
Iran, Islamic Rep. of	54
Azerbaijan	47
Armenia	41
Tunisia	24
Morocco	23
Yemen	13

**Benchmarking education system**

Quebec-CAN	89
Ontario-CAN	87
North Carolina-USA	82
Alberta-CAN	81
Florida-USA	80
Dubai-UAE	75
Abu Dhabi-UAE	62

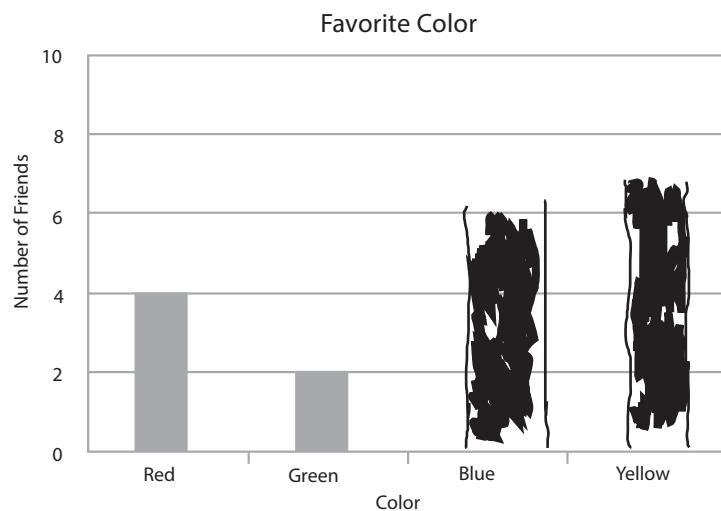
Percent higher than International average  
 Percent lower than International average

Item label: Favorite colors of Darin's friends (continued)

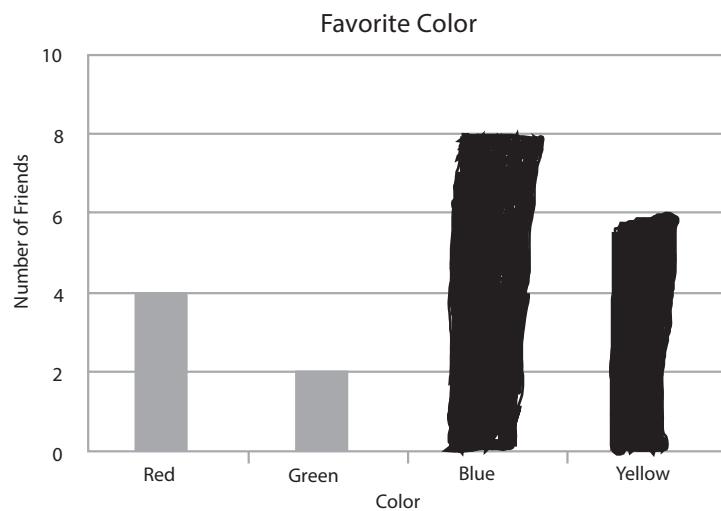
M031133

## Student Responses

### Correct Response:

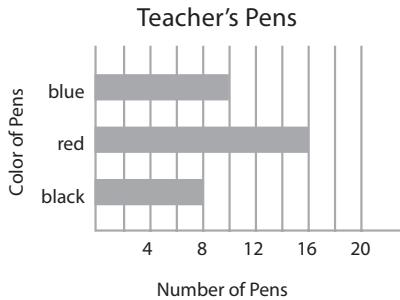


### Incorrect Response:



Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Reading and Interpreting	Applying

Item label: Teacher's pens on the graph



The graph shows the number of blue, red, and black pens the teacher has in his desk. How many more red pens are there than black pens?

- A. 2 more
- B. 4 more
- C. 6 more
- D. 8 more

Item Number: M031155

Correct Response:	D
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**Overall Percent Correct**

Education system	Percent correct
Singapore	87
Chinese Taipei-CHN	85
Hong Kong-CHN	83
Korea, Rep. of	83
Netherlands	78
<b>United States</b>	<b>73 </b>
Northern Ireland-GBR	71
Portugal	71
Finland	70
Japan	69
Germany	69
England-GBR	68
Sweden	65
Belgium (Flemish)-BEL	65
Hungary	61
Russian Federation	60
Spain	60
Turkey	59
Denmark	59
Poland	57
Lithuania	57
Australia	57
Ireland	56
Czech Republic	56
Slovenia	55
<b>International average</b>	<b>55</b>
Serbia	53
Norway	53
Croatia	52
Austria	52
Chile	52
Malta	51
New Zealand	51
Italy	49
United Arab Emirates	46
Romania	46
Kazakhstan	46
Slovak Republic	45
Saudi Arabia	45
Thailand	44
Georgia	40
Qatar	40
Bahrain	38
Oman	37
Armenia	37
Iran, Islamic Rep. of	37
Azerbaijan	33
Morocco	31
Kuwait	31
Yemen	28
Tunisia	19

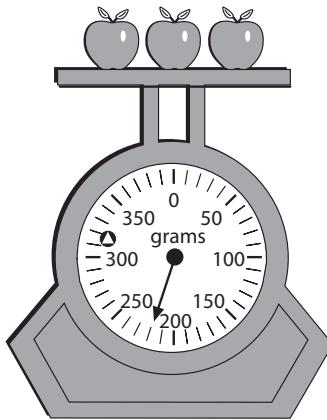
**Benchmarking education system**

North Carolina-USA	79
Florida-USA	72
Ontario-CAN	67
Alberta-CAN	62
Quebec-CAN	62
Dubai-UAE	51
Abu Dhabi-UAE	45

Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Reading and Interpreting	Knowing

Item label: How much the apples weigh in grams



How much do the apples weigh in grams?

- A. 200
- B. 202
- C. 210
- D. 220

Item Number: M031294

Correct Response:	D
-------------------	---

## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	90
Singapore	90
Hong Kong-CHN	89
Japan	88
Chinese Taipei-CHN	87
Netherlands	84
Lithuania	78
England-GBR	77
Northern Ireland-GBR	75
Germany	75
Belgium (Flemish)-BEL	74
Hungary	72
Finland	71
Austria	68
Denmark	66
<b>United States</b>	<b>66</b>
Czech Republic	66
Portugal	65
Slovenia	63
Australia	63
Sweden	62
Serbia	61
Russian Federation	60
Slovak Republic	60
Norway	59
Poland	57
International average	56
Croatia	53
Ireland	52
Romania	52
Azerbaijan	51
Kazakhstan	50
Malta	50
Italy	48
Spain	47
Chile	47
Turkey	44
Armenia	41
New Zealand	40
Georgia	39
Qatar	37
Thailand	36
United Arab Emirates	35
Bahrain	34
Iran, Islamic Rep. of	33
Saudi Arabia	26
Kuwait	21
Oman	21
Morocco	19
Tunisia	18
Yemen	18

## Benchmarking education system

North Carolina-USA	68
Florida-USA	65
Quebec-CAN	60
Alberta-CAN	50
Dubai-UAE	48
Ontario-CAN	45
Abu Dhabi-UAE	30

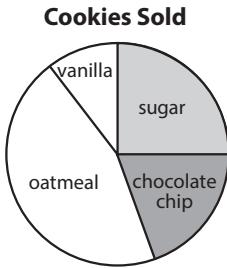
Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Reading and Interpreting	Knowing

## Item label: Type of cookie bakery sells most

This chart shows the types of cookies sold by the local bakery.



Which type of cookie did the bakery sell the most of?

- A. oatmeal
- B. vanilla
- C. chocolate chip
- D. sugar

Item Number: M041175

Correct Response:	A
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	98
Portugal	96
Hong Kong-CHN	96
Japan	95
Chinese Taipei-CHN	95
Netherlands	93
Russian Federation	92
Singapore	91
Finland	91
Denmark	90
Northern Ireland-GBR	90
<b>United States</b>	<b>89 </b>
Australia	89
Germany	89
England-GBR	88
Ireland	88
Austria	87
Italy	87
Lithuania	86
Sweden	86
Norway	85
Croatia	84
Czech Republic	84
Slovenia	84
Belgium (Flemish)-BEL	82
Hungary	82
Poland	81
Slovak Republic	81
New Zealand	78
Spain	78
<b>International average</b>	<b>77</b>
Kazakhstan	74
Turkey	73
Chile	72
Bahrain	70
Malta	70
Serbia	70
Romania	69
Iran, Islamic Rep. of	67
Saudi Arabia	66
Qatar	66
United Arab Emirates	65
Georgia	60
Thailand	59
Kuwait	58
Oman	57
Azerbaijan	56
Armenia	56
Tunisia	35
Yemen	34
Morocco	28

## Benchmarking education system

Florida-USA	91
Ontario-CAN	91
Alberta-CAN	87
North Carolina-USA	87
Quebec-CAN	83
Dubai-UAE	73
Abu Dhabi-UAE	58

Percent higher than International average

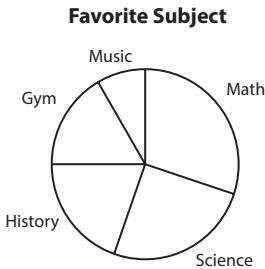
Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Organizing and Representing	Reasoning

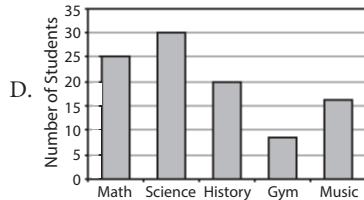
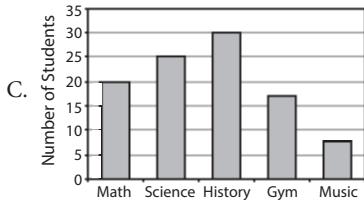
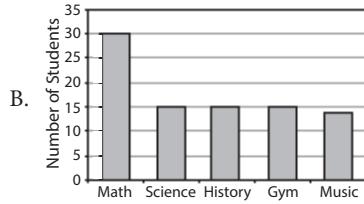
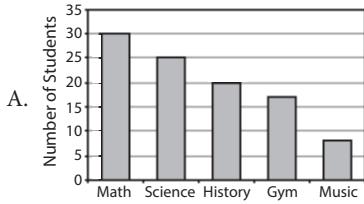
## Item label: Comparing pie chart with bar chart

Mr. Johnson asked the students in his school about their favorite subject.

This pie chart shows how many students liked each of 5 subjects.



Which graph shows the same information as the pie chart?



Item Number: M041184

Correct Response:	A
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	95
Japan	92
Singapore	89
Hong Kong-CHN	88
Chinese Taipei-CHN	87
Russian Federation	86
Finland	84
<b>United States</b>	<b>83 </b>
Germany	83
Portugal	82
Slovenia	82
Denmark	81
Australia	81
Italy	81
Netherlands	80
Austria	79
Northern Ireland-GBR	78
Slovak Republic	78
Lithuania	77
Belgium (Flemish)-BEL	76
England-GBR	76
Hungary	76
Kazakhstan	76
Chile	75
Turkey	75
Spain	75
Ireland	75
New Zealand	73
Poland	72
Czech Republic	72
Norway	72
Sweden	71
<b>International average</b>	<b>71</b>
Romania	71
Bahrain	69
Malta	69
Serbia	69
Croatia	66
Thailand	65
United Arab Emirates	63
Qatar	61
Saudi Arabia	61
Georgia	61
Iran, Islamic Rep. of	55
Oman	52
Azerbaijan	52
Kuwait	46
Armenia	39
Morocco	33
Tunisia	32
Yemen	22

## Benchmarking education system

Alberta-CAN	83
North Carolina-USA	82
Florida-USA	81
Ontario-CAN	80
Quebec-CAN	77
Dubai-UAE	70
Abu Dhabi-UAE	59

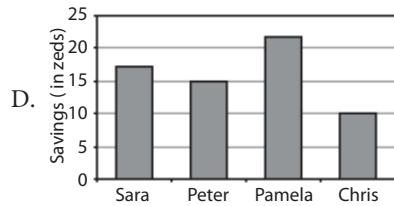
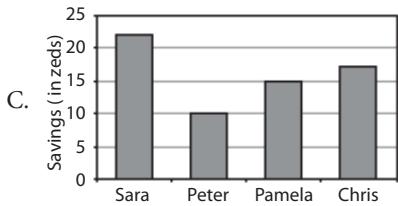
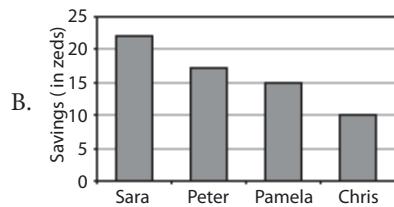
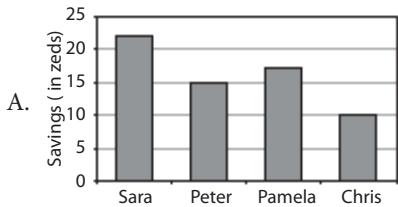
Percent higher than International average  
 Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Organizing and Representing	Reasoning

## Item label: Representing data on the bar graph

John was given the following table by his teacher and was asked to identify the graph that correctly displays the data. Which graph below should he choose?

Name	Savings
Sara	22 zeds
Peter	15 zeds
Pamela	17 zeds
Chris	10 zeds



Item Number: M041199

Correct Response:	A
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## Overall Percent Correct

Education system	Percent correct
Korea, Rep. of	97 ▲
Hong Kong-CHN	95 ▲
Chinese Taipei-CHN	92 ▲
Singapore	91 ▲
Netherlands	91 ▲
<b>United States</b>	<b>91 ▲</b>
Japan	90 ▲
Russian Federation	89 ▲
Lithuania	86 ▲
Finland	86 ▲
Portugal	86 ▲
Northern Ireland-GBR	83 ▲
Belgium (Flemish)-BEL	83 ▲
Germany	82 ▲
England-GBR	82 ▲
Slovenia	81 ▲
Australia	81 ▲
Italy	80 ▲
Sweden	80 ▲
Slovak Republic	80 ▲
Czech Republic	79 ▲
Hungary	78 ▲
Poland	78 ▲
Turkey	76 ▲
Ireland	76 ▲
Austria	76
Croatia	76
Kazakhstan	76
Chile	75
Spain	75
Norway	74
Malta	73
Serbia	73
New Zealand	73
Denmark	72
<b>International average</b>	<b>72</b>
Bahrain	69
Romania	67 ▼
United Arab Emirates	66 ▼
Thailand	62 ▼
Saudi Arabia	58 ▼
Qatar	58 ▼
Georgia	55 ▼
Oman	52 ▼
Kuwait	52 ▼
Iran, Islamic Rep. of	51 ▼
Azerbaijan	48 ▼
Armenia	46 ▼
Tunisia	25 ▼
Morocco	25 ▼
Yemen	23 ▼

## Benchmarking education system

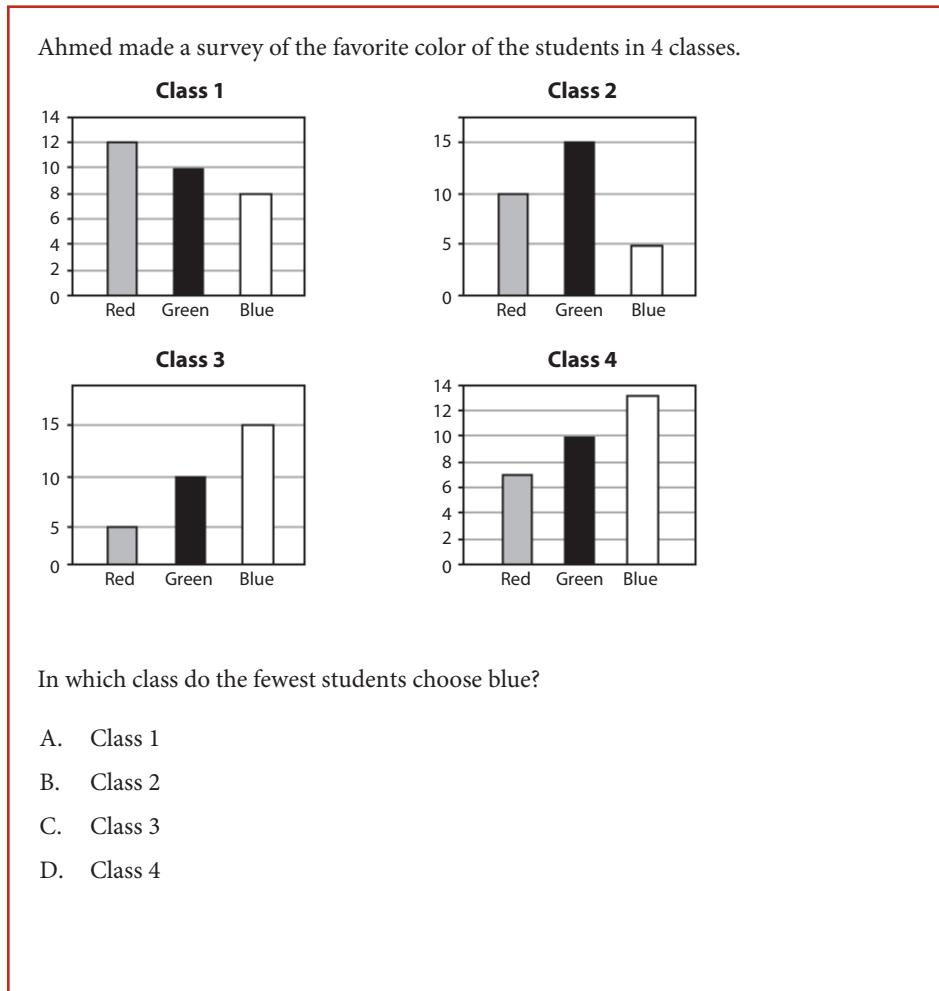
Florida-USA	91 ▲
North Carolina-USA	90 ▲
Quebec-CAN	86 ▲
Alberta-CAN	85 ▲
Ontario-CAN	85 ▲
Dubai-UAE	74
Abu Dhabi-UAE	61 ▼

▲ Percent higher than International average

▼ Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Reading and Interpreting	Knowing

Item label: Class with fewest choose blue



Item Number: M041335

Correct Response:	B
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## Overall Percent Correct

Education system	Percent correct
Germany	94
Austria	93
Portugal	92
Korea, Rep. of	92
Japan	91
Finland	91
Hong Kong-CHN	91
Singapore	91
Lithuania	89
Sweden	89
<b>United States</b>	<b>89 </b>
Russian Federation	88
Slovenia	88
Chinese Taipei-CHN	88
Croatia	86
Slovak Republic	85
Serbia	85
Northern Ireland-GBR	85
Czech Republic	85
Hungary	84
Spain	84
Netherlands	84
England-GBR	83
Poland	83
Ireland	82
Italy	82
Belgium (Flemish)-BEL	80
Turkey	79
Thailand	77
<b>International average</b>	<b>76</b>
Chile	76
Denmark	76
Norway	76
Malta	75
Kazakhstan	75
Romania	73
Iran, Islamic Rep. of	69
Australia	69
Bahrain	69
United Arab Emirates	67
Saudi Arabia	65
New Zealand	62
Georgia	62
Azerbaijan	57
Qatar	55
Oman	52
Armenia	51
Kuwait	49
Tunisia	49
Morocco	39
Yemen	24

## Benchmarking education system

North Carolina-USA	91
Florida-USA	89
Quebec-CAN	87
Ontario-CAN	84
Alberta-CAN	84
Dubai-UAE	73
Abu Dhabi-UAE	63

Percent higher than International average

Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Reading and Interpreting	Knowing

Item label: Vanilla as favorite ice cream

**Overall Percent Correct**

Favorite Ice Cream Flavors	
Flavor	Number of Children
Vanilla	
Chocolate	
Strawberry	
Lemon	

 stands for  
4 children

How many children chose vanilla as their favorite flavor?

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

Education system	Percent correct
Singapore	93 
Netherlands	89 
Portugal	87 
<b>United States</b>	<b>86 </b>
Hong Kong-CHN	84 
Korea, Rep. of	84 
Chinese Taipei-CHN	79 
England-GBR	78 
Japan	78 
Northern Ireland-GBR	75 
Czech Republic	74 
Finland	71 
Belgium (Flemish)-BEL	70 
Russian Federation	69 
Germany	68 
Slovenia	64 
Austria	63 
Australia	61 
Ireland	60 
Denmark	60 
Thailand	59 
Malta	58 
Lithuania	57 
Slovak Republic	55 
Poland	54 
New Zealand	54 
<b>International average</b>	<b>54</b>
Italy	53 
Sweden	52 
Norway	47 
Azerbaijan	47 
Serbia	47 
Turkey	47 
Hungary	46 
United Arab Emirates	44 
Georgia	43 
Spain	41 
Romania	41 
Bahrain	39 
Kuwait	35 
Croatia	35 
Qatar	34 
Saudi Arabia	34 
Chile	34 
Armenia	30 
Kazakhstan	29 
Oman	20 
Iran, Islamic Rep. of	19 
Tunisia	16 
Morocco	10 
Yemen	5 

Item Number: M051109

**SCORING****Correct Response**

- 12

**Incorrect Response**

- 3
- Other incorrect (including crossed out, erased, stray marks, illegible, or off task)

**Benchmarking education system**

North Carolina-USA	93 
Florida-USA	88 
Ontario-CAN	81 
Alberta-CAN	70 
Quebec-CAN	67 
Dubai-UAE	54 
Abu Dhabi-UAE	39 

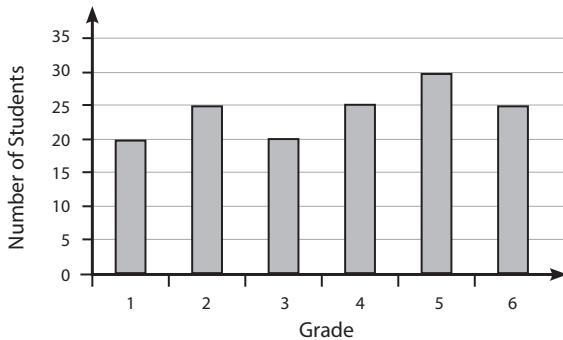
 Percent higher than International average Percent lower than International average

Content Domain	Main Topic	Cognitive Domain
DATA DISPLAY	Reading and Interpreting	Reasoning

## Item label: More students in the Pine School

The graph shows the number of students at each grade in the Pine School.

Pine School



In the Pine School there is room in each grade for 30 students.  
How many more students could be in the school?

- A. 20
- B. 25
- C. 30
- D. 35

Item Number: M051117

Correct Response:

D

## Overall Percent Correct

Education system	Percent correct
Chinese Taipei-CHN	79 ▲
Hong Kong-CHN	78 ▲
Korea, Rep. of	75 ▲
Netherlands	74 ▲
Singapore	73 ▲
Japan	71 ▲
Portugal	70 ▲
Norway	67 ▲
Germany	67 ▲
Denmark	66 ▲
England-GBR	65 ▲
Sweden	64 ▲
Lithuania	64 ▲
Ireland	64 ▲
Slovenia	64 ▲
Finland	63 ▲
<b>United States</b>	<b>63 ▲</b>
Belgium (Flemish)-BEL	62 ▲
New Zealand	60 ▲
Northern Ireland-GBR	59
Serbia	59 ▲
Australia	58
Austria	57
Georgia	55
<b>International average</b>	<b>54</b>
Russian Federation	53
Malta	52
Croatia	51
Poland	51
Slovak Republic	50
Spain	50
Turkey	50 ▼
Chile	50 ▼
Italy	49 ▼
Romania	48 ▼
Kazakhstan	47 ▼
Hungary	47 ▼
Thailand	46 ▼
Czech Republic	45 ▼
Iran, Islamic Rep. of	44 ▼
United Arab Emirates	41 ▼
Qatar	41 ▼
Bahrain	39 ▼
Saudi Arabia	38 ▼
Oman	33 ▼
Armenia	29 ▼
Morocco	29 ▼
Yemen	29 ▼
Kuwait	26 ▼
Tunisia	26 ▼
Azerbaijan	—

## Benchmarking education system

North Carolina-USA	61 ▲
Alberta-CAN	60 ▲
Ontario-CAN	58
Florida-USA	56
Dubai-UAE	48 ▼
Quebec-CAN	46 ▼
Abu Dhabi-UAE	37

▲ Percent higher than International average

▼ Percent lower than International average

— Not applicable