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

Pair of numbers bracketing 2.25

In which of these pairs of numbers is 2.25 larger than the first number but smaller than the second number?

A	1	and	2	
---	---	-----	---	--

(B) 2 and
$$\frac{5}{2}$$

$$\bigcirc \frac{5}{2} \text{ and } \frac{11}{4}$$

$$\bigcirc \frac{11}{4} \text{ and } 3$$

Item Number: M012016

Correct Response: B

Korea, Republic of Singapore		
Singapore	77	
	71	
Belgium (Flemish)	63	
Lithuania	61	
Hong Kong, SAR	61	
Chinese Taipei	60	
Russian Federation	58	
Hungary	58	
Estonia	57	
Israel	57	
Slovak Republic	55	
Japan	55	
Sweden	55	0
United States	54	
Serbia and Montenegro	54	0
Slovenia	53	0
Romania	52	0
Italy	52	0
Australia	52	0
Latvia	52	0
Philippines	52	0
Netherlands	51	0
Scotland	51	0
Norway	51	0
Cyprus	51	0
International average	50	
international average		
Bulgaria	50	0
Bulgaria Malaysia	50 50	0 0
Bulgaria Malaysia England	50 50 50	0 0 0
Bulgaria Malaysia England Moldova, Republic of	50 50 50 48	0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand	50 50 50 48 47	0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana	50 50 50 48 47 46	0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia	50 50 50 48 47 46 46	0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia	50 50 50 48 47 46 46 46	0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon	50 50 50 48 47 46 46 46 46 45	0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana	50 50 48 47 46 46 46 45 44	0 0 0 0 ♥ 0 ♥ 0 ♥
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of	50 50 48 47 46 46 46 46 45 44 44	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia	50 50 48 47 46 46 46 46 45 44 44 43	 ○ ○
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco	50 50 48 47 46 46 46 46 45 44 44 43 41	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt	50 50 48 47 46 46 46 45 44 43 41 40	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt Bahrain	50 50 48 47 46 46 46 45 44 43 41 40 40	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt Bahrain South Africa	50 50 48 47 46 46 46 45 44 44 43 41 40 40 39	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt Bahrain South Africa Chile	50 50 48 47 46 46 46 46 46 45 44 43 41 40 40 39 39	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt Bahrain South Africa Chile Palestinian Nat'l Auth.	50 50 48 47 46 46 46 46 46 44 43 41 40 40 39 39 39	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt Bahrain South Africa Chile Palestinian Nat'l Auth. Jordan	50 50 48 47 46 46 46 46 46 45 44 43 41 40 39 39 39 39 38	
Bulgaria Malaysia England Moldova, Republic of New Zealand Botswana Armenia Saudi Arabia Lebanon Ghana Macedonia, Republic of Tunisia Morocco Egypt Bahrain South Africa Chile Palestinian Nat'l Auth. Jordan Iran, Islamic Republic of	50 50 48 47 46 46 46 46 46 45 44 43 41 40 39 39 39 39 38 38	

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

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

Scoops of flour needed to fill bag

A scoop holds $rac{1}{5}$ kg of flour. How many scoops of flour are needed to fill a
bag with 6 kg of flour?
Answer:

Item Number: M022156

SCORING

Correct Response

• 30

Incorrect Response

- 30 kg [incorrect unit]
- 6/5 [6 x 1/5]
- 4 [4/5 more needed to complete 1 kg]
- 5 [5 scoops = 1 kg flour]
- 6 [from stem]
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

Singapore	79	
Hong Kong, SAR	76	
Chinese Taipei	75	
Netherlands	74	
Korea, Republic of	68	
Japan	62	
Belgium (Flemish)	62	
Sweden	60	
Australia	53	
United States	52	
Scotland	51	
Estonia	51	
Latvia	51	
Hungary	51	
England	50	
Russian Federation	49	
Israel	48	
Malaysia	47	
New Zealand	46	
Slovenia	46	
Armenia	45	
Lithuania	43	
Slovak Republic	43	
Norway	39	0
Romania	39	0
Serbia and Montenegro	38	0
Bulgaria	38	0
International average	38	
Cyprus	37	0
Moldova, Republic of	37	0
Italy	34	0
Indonesia	26	
Macedonia, Republic of	22	
Iran, Islamic Republic of	20	
Tunisia	18	. <u>.</u>
Egypt	17	-
Jordan	10	-
Chile	15	-
Chile	10	-
Philippines	15	-
Batawana	11	-
Palestinian Nat'l Auth	1 I 1 O	-
Morocco	ı ں و	.
South Africa	7	.
Saudi Arabia	, 7	•
Ghana	6	•
Ghana	<u> </u>	<u> </u>

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

Scoops of flour needed to fill bag (continued) Item Number: M022156

Student Responses

Correct Response:

A scoop holds $\frac{1}{5}$ kilograms of flour. How many scoops of flour are needed to fill a bag with 6 kilograms of flour?

Incorrect Response:

A scoop holds $\frac{1}{5}$ kilograms of flour. How many scoops of flour are needed to fill a bag with 6 kilograms of flour?

15 x 6 = 430

30 Answer:

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

Addition/multiplication with fractions

$\frac{3}{5} + (\frac{3}{10} \times$	$(\frac{4}{15}) =$		
$\bigcirc \frac{6}{25}$			
(b) $\frac{11}{25}$			
$\textcircled{E} \frac{17}{25}$			
ltem Numbe	r: M022199)	

Correct Response:

Ε

Chinese Taipei	82	
Korea, Republic of	80	
Japan	75	
Singapore	72	
Hong Kong SAR	69	
Favot	58	
Romania	54	
Italy	53	
Rolaium (Elomish)	53	
Slovonia	51	
Slovak Ropublic	51	
	51	
Fatania	50	
ESLONIA	5U 40	-
Ivididysid	40	-
Bulgaria	48	
Russian Federation	48	
Latvia	46	
Serbia and Montenegro	45	
Lithuania	44	
Armenia	42	0
International average	40	
Lebanon	40	0
Israel	40	0
Netherlands	40	0
Moldova, Republic of	39	0
Moldova, Republic of Cyprus	39 36	0
Moldova, Republic of Cyprus United States	39 36 36	0 ▼ ▼
Moldova, Republic of Cyprus United States Jordan	39 36 36 35	0 ▼ ▼
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of	39 36 36 35 34	0 • • •
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain	39 36 36 35 34 29	0 • • •
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia	39 36 36 35 34 29 28	0 V V V V V V
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia	39 36 36 35 34 29 28 28	0 V V V V V V
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England	39 36 35 34 29 28 28 28 28	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand	 39 36 35 34 29 28 28 28 28 28 28 28 28 28 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth.	 39 36 36 35 34 29 28 29 29 20 21 22 23 24 25 26 27 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of	 39 36 36 35 34 29 28 28 28 28 28 28 28 27 27 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia	 39 36 36 35 34 29 28 28 28 28 28 28 27 26 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland	 39 36 36 35 34 29 28 28 28 28 28 28 28 27 26 26 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco	 39 36 36 35 34 29 28 28 28 28 28 28 27 26 26 25 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana	 39 36 36 35 34 29 28 28 28 28 28 28 27 26 26 25 24 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden	 39 36 36 35 34 29 28 28 28 28 28 28 27 26 26 25 24 22 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden Philippines	 39 36 36 35 34 29 28 28 28 28 28 28 27 26 26 25 24 22 22 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden Philippines Chile	 39 36 36 35 34 29 28 28 28 28 28 28 27 26 26 25 24 22 21 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden Philippines Chile Norway	 39 36 36 35 34 29 28 28 28 28 28 28 28 27 26 26 25 24 22 21 21 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden Philippines Chile Norway South Africa	 39 36 36 35 34 29 28 29 21 18 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden Philippines Chile Norway South Africa Saudi Arabia	 39 36 36 35 34 29 28 29 28 28 29 21 18 16 	
Moldova, Republic of Cyprus United States Jordan Iran, Islamic Republic of Bahrain Australia Indonesia England New Zealand Palestinian Nat'l Auth. Macedonia, Republic of Tunisia Scotland Morocco Botswana Sweden Philippines Chile Norway South Africa Saudi Arabia	 39 36 36 35 34 29 28 29 28 28 29 21 18 16 	

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

Content Domain	Main Topic	Cognitive Dom	nain
NUMBER	Fractions and Decimals	Reasoning	
Number of men/women at meet	ing	Overall Percen	t Correct
Two-thirds of the people present at the Nobody leaves but 10 more men and 10 Which of the following statements is tr	e beginning of a meeting are men.) more women arrive at the meeting. rue?	Korea, Republic of Japan Netherlands Belgium (Flemish)	89 ▲ 87 ▲ 86 ▲ 83 ▲
(A) There would then be more men th	an women at the meeting.	Singapore	81 ▲ 79 ▲
B There would then be the same nu the meeting.	mber of men as there are women at	Norway Chinese Taipei	77 🔺 77 🔺

- \bigcirc There would then be more women than men at the meeting.
- \bigcirc \quad From the information given, you cannot tell whether there would be more women or men.

Item Number: M022191

Correct Response:

Α

Korea, Republic of	89	
Japan	87	
Netherlands	86	
Belgium (Flemish)	83	
Singapore	81	
Sweden	79	
Norway	77	
Chinese Taipei	77	
Malaysia	74	
Hong Kong, SAR	73	
Hungary	71	
Italy	70	
Slovenia	68	
Slovak Republic	68	
Estonia	67	
Scotland	67	
England	67	
Bulgaria	67	
Australia	66	
Israel	65	
Cyprus	64	
Serbia and Montenegro	63	
New Zealand	63	0
Latvia	62	0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>	\sim
Lithuania	60	0
Lithuania International average	59	0
International average Russian Federation	60 59 57	0
Lithuania International average Russian Federation Moldova, Republic of	57 56	0
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of	59 57 56 56	0 0 0 0
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States	50 57 56 56 52	0 0 0 V
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile	50 57 56 56 52 51	
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan	59 57 56 56 52 51 51	0 0 0 V V
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia	50 57 56 52 51 51 51 50	0 0 0 V V
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania	50 57 56 56 52 51 51 50 48	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain	50 57 56 56 52 51 51 50 48 46	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth.	50 57 56 52 51 51 50 48 46 46	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco	50 57 56 52 51 51 50 48 46 46 46	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt	50 57 56 56 52 51 51 50 48 46 46 46 46	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of	50 57 56 52 51 51 50 48 46 46 46 46 46 45	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana	50 57 56 52 51 51 50 48 46 46 46 46 46 45 42	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Area ania	50 57 56 52 51 51 50 48 46 46 46 46 46 45 42 40	
International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Armenia Saudi Arabia	50 57 56 52 51 51 50 48 46 46 46 46 46 45 42 40 40 27	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Armenia Saudi Arabia Chana	50 57 56 52 51 51 50 48 46 46 46 46 46 45 42 40 40 37 31	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Armenia Saudi Arabia Ghana Dhilipainac	50 57 56 52 51 51 50 48 46 46 46 46 46 46 45 42 40 37 31 37	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Armenia Saudi Arabia Ghana Philippines	50 57 56 52 51 51 50 48 46 46 46 46 46 46 46 45 42 40 37 31 27 24	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Armenia Saudi Arabia Ghana Philippines Lebanon South Africa	50 57 56 52 51 51 50 48 46 46 46 46 46 46 46 45 42 40 37 31 27 24 22	
Itthuania International average Russian Federation Moldova, Republic of Iran, Islamic Republic of United States Chile Jordan Indonesia Romania Bahrain Palestinian Nat'l Auth. Morocco Egypt Macedonia, Republic of Botswana Tunisia Armenia Saudi Arabia Ghana Philippines Lebanon South Africa	60 59 57 56 52 51 50 48 46 46 46 46 47 40 37 31 27 24 23	

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

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

Fraction of hour between two time points

	What fraction of an hour has passed between 1:10 a.m. and 1:30 a.m.?	Singapore	85	
		Hong Kong, SAR	80	
	1	Korea, Republic of	//	
	$(A) = \frac{1}{2}$	Chinese Taipei	77	
	\smile 5	Sweden	73	
		England	68	
	\bigcirc $\frac{1}{2}$	Netherlands	67	
	$(\mathbf{B}) = \frac{3}{2}$	Japan	67	
		Belgium (Flemish)	66	
	1	Hungary	66	
	$\bigcirc \frac{1}{2}$	Australia	65	
	2	Slovak Republic	64	
		Scotland	63	
	\mathbb{D}	United States	62	
		Latvia	62	
		Israel	61	
		Malaysia	61	
	$(\underline{E}) = \frac{-}{4}$	New Zealand	60	
		Slovenia	58	
		Norway	57	
		Bulgaria	56	
		Cyprus	56	
		Estonia	55	0
		Russian Federation	53	0
		International average	52	
		Moldova Republic of	52	0
		Armenia	50	0
		Lithuania	50	0
		Serbia and Montenegro	18	0
		Jordan	40	Ĭ
		Bomania	40	÷
		Roloctinian Nat'l Auth	45	. <u>.</u>
		Falestinian Nat I Auth.	45	
		Egypt	45	
		Italy	41	
1			40	
1	item Number: MU12U27	Philippines	40	
		Macedonia, Republic of	40	
		Bahrain	40	_
		Iran, Islamic Republic of	38	
		Indonesia	38	
		Saudi Arabia	30	

Correct Response: B

Overall Percent Correct

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

Botswana Chile

Morocco

Ghana

Tunisia

South Africa

▼

▼ ▼

▼ ▼

▼

29

28

27

26

24

20

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

Fraction birthdays in first half of year

In a group of children, 16 have birthdays during the first half of the year, and 14 have birthdays during the second half of the year. What fraction of the group have birthdays during the first half of the year?



Item Number: M012041

Correct Response: D

Korea, Republic of	90	
Singapore	90	
Hong Kong, SAR	86	
Netherlands	82	
Chinese Taipei	79	
Belgium (Flemish)	76	
Sweden	76	
England	75	
Malaysia	75	
Israel	74	
United States	72	
Norway	71	
Australia	69	
New Zealand	69	
Scotland	69	
Japan	68	
Estonia	62	
Slovenia	60	
Cyprus	59	
Hungary	58	
Italy	57	
Latvia	57	
Lithuania	57	0
Russian Federation	55	0
Slovak Republic	54	0
Slovak Republic International average	54 52	0
Slovak Republic International average Iran, Islamic Republic of	54 52 46	0
Slovak Republic International average Iran, Islamic Republic of Bulgaria	54 52 46 43	0
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania	54 52 46 43 41	0 • •
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana	54 52 46 43 41 40	0 • • •
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of	54 52 46 43 41 40 38	0 V V V
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan	54 52 46 43 41 40 38 37	○ ▼ ▼ ▼
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile	54 46 43 41 40 38 37 36	0 • • • • •
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia	54 46 43 41 40 38 37 36 36 36	0 V V V V V V V V
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt	54 46 43 41 40 38 37 36 36 35	 ○ ▼ ▼
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon	54 46 43 41 40 38 37 36 36 35 33	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of	54 52 46 43 41 40 38 37 36 36 35 33 31 21	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth.	54 52 46 43 41 40 38 37 36 36 35 33 31 31 31	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 22	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Dhilipajaga	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 30 22	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Philippines	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 30 28 27	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Philippines Armenia Marceco	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 30 28 27 21	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Philippines Armenia Morocco South Africe	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 31 31 30 28 27 21 21	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Philippines Armenia Morocco South Africa	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 31 31 31 28 27 21 21 20	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Philippines Armenia Morocco South Africa Ghana Saudi Arabia	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 31 31 31 28 27 21 21 20 15	
Slovak Republic International average Iran, Islamic Republic of Bulgaria Romania Botswana Moldova, Republic of Jordan Chile Indonesia Egypt Lebanon Macedonia, Republic of Palestinian Nat'l Auth. Serbia and Montenegro Tunisia Bahrain Philippines Armenia Morocco South Africa Ghana Saudi Arabia	54 46 43 41 40 38 37 36 36 35 33 31 31 31 31 31 31 31 31 28 27 21 21 20 15	

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

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

4/5 of books more than 2/3

A teacher and a doctor each have 45 books. If $\frac{4}{5}$ of the teacher's books and
$\frac{2}{2}$ of the doctor's books are novels, how many more novels does the teacher
have than the doctor?
A 2
B 3
© 6
D 30
E 36
Item Number: M022004

Correct Response: C

Singapore	85	
Korea. Republic of	80	
Hong Kong SAR	78	
Chinese Taipei	78	
Malavsia	69	
Netherlands	68	
lanan	66	
Sweden	65	
Belgium (Elemish)	63	
Scotland	61	
Hungary	60	
England	57	
Lingiana	57	
Slovenia	57	
Italy	56	
Estonia	54	
Pomania	52	
Australia	53	
Slovak Popublic	55	
	52	0
Guprus		0
Lithuania	51	0
Litriudilid New Zealand	50	0
New Zedianu	50	0
	50	0
Pulgaria	40	0
Bulgaria	49 48	0
Bulgaria Serbia and Montenegro	49 48	0 0
Bulgaria Serbia and Montenegro International average	49 48 48	0
Bulgaria Serbia and Montenegro International average Russian Federation	49 48 48 45	0
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of	49 48 48 45 44	0 0 0
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway	49 48 48 45 44 43 28	0 0 0 0
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of	49 48 45 44 43 38	0 0 0 0
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia	49 48 45 44 43 38 38 22	0 0 0 V V
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of	49 48 45 44 43 38 38 38 38 27	0 0 0 V V
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Dbilicacians	49 48 45 44 43 38 38 38 38 37 25	0 0 0 V V V
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines	49 48 45 44 43 38 38 38 38 38 37 35 25	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia	49 48 45 44 43 38 38 38 38 37 35 35	0 0 0 • • • • •
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth.	49 48 45 44 43 38 38 38 38 37 35 35 34	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana	49 48 45 44 38 38 38 38 37 35 35 34 33	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan	49 48 45 44 43 38 38 38 38 37 35 35 34 33 33 33	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile	49 48 45 44 43 38 38 38 38 37 35 35 34 33 33 33 33 33	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon	49 48 45 44 38 38 38 38 37 35 35 34 33 33 33 28	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon Bahrain	49 48 45 44 38 38 38 38 37 35 35 35 34 33 33 33 28 27 27	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon Bahrain South Africa	49 48 45 44 38 38 38 38 37 35 35 35 34 33 33 33 28 27 27	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon Bahrain South Africa Ghana	49 48 45 44 38 38 38 38 37 35 35 35 34 33 33 33 28 27 27 27 25	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon Bahrain South Africa Ghana Tunisia	49 48 45 44 38 38 38 38 37 35 35 35 34 33 33 33 28 27 27 27 25 25	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon Bahrain South Africa Ghana Tunisia Morocco	49 48 45 44 38 38 38 37 35 35 35 34 33 33 28 27 25 25 25 24 27	
Bulgaria Serbia and Montenegro International average Russian Federation Moldova, Republic of Norway Macedonia, Republic of Armenia Iran, Islamic Republic of Egypt Philippines Indonesia Palestinian Nat'l Auth. Botswana Jordan Chile Lebanon Bahrain South Africa Ghana Tunisia Morocco Saudi Arabia	49 48 45 44 38 38 38 37 35 35 34 33 33 33 33 28 27 27 25 25 24 24 24	

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

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

Time for Betty to run race

Alice ran a race in 49.86 seconds. Betty ran the same race in 52.30 seconds. How much longer did it take Betty to run the race than Alice?

- \bigcirc 2.44 seconds
- (B) 2.54 seconds
- \bigcirc 3.56 seconds
- \bigcirc 3.76 seconds

Item Number: M022010

Correct Response:

Α

Singapore	88	
Korea, Republic of	87	
Malaysia	81	
Netherlands	81	
Hungary	80	
Chinese Taipei	80	
Japan	78	
Russian Federation	76	
Hong Kong, SAR	75	
Slovak Republic	74	
United States	74	
Slovenia	73	
Estonia	72	
Belgium (Flemish)	71	
Scotland	71	
Moldova, Republic of	69	
Serbia and Montenegro	68	
Latvia	67	
Bulgaria	66	
Lithuania	65	
Romania	64	0
Tunisia	63	0
Australia	63	0
Sweden	63	0
Italy	62	0
Botswana	61	0
Lebanon	61	0
International average	61	
Armenia	60	0
Macedonia, Republic of	59	0
Cyprus	59	0
Egypt	58	0
Israel	58	0
Indonesia	55	▼
England	54	▼
New Zealand	53	▼
Jordan	46	▼
Norway	46	▼
Philippines	45	▼
Morocco	45	▼
Bahrain	45	▼
Iran, Islamic Republic of	44	▼
Chile	42	▼
Palestinian Nat'l Auth.	37	▼
Ghana	32	▼
South Africa	29	▼
Saudi Arabia	19	▼

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

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

Fuel remaining in tank at end of trip

A car has a fuel tank that holds 45 L of fuel. The car consumes 8.5 L of fuel for each 100 km driven. A trip of 350 km was started with a full tank of fuel. How much remained in the tank at the end of the trip?

- (A) 15.25 L
- B 16.25 L
- © 24.75 L
- (D) 29.75 L

Item Number: M022127

Correct Response: A

Singapore	56	
Chinese Taipei	50	
Hong Kong SAR	43	
Korea Republic of	43	
lanan	38	
Netherlands	38	
Malaysia	34	
Moldova Republic of	22	
Lithuania	32	
Hungany	32	
Estonia	31	
Pomania	20	
Rolaium (Elomich)	20	
Bussian Endoration	20	
	29	0
Australia	28	0
Armenia	27	0
Latvia	26	0
International average	26	
Slovenia	26	0
Macedonia, Republic of	25	0
United States	25	0
Slovak Republic	24	0
New Zealand	24	0
Indonesia	23	0
Sweden	23	0
Jordan	23	0
Bulgaria	23	0
Cyprus	22	
Saudi Arabia	22	0
Israel	22	
Serbia and Montenegro	22	
Italy	21	
Egypt	21	
Botswana	20	▼
Chile	20	▼
Ghana	20	
England	20	
Scotland	19	
Morocco	19	
Tunisia	19	▼
South Africa	18	▼
Iran, Islamic Republic of	18	
Palestinian Nat'l Auth	17	
Philippines	17	
Bahrain	16	
Norway	16	
Lebanon	12	
	_	

Country average vs. International average:		
Higher		
Not different	0	
Lower	$\mathbf{\bullet}$	

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

John and Cathy to divide a number by 100

John and Cathy were told to divide a number by 100. By mistake John multiplied the number by 100 and obtained an answer of 450. Cathy correctly divided the number by 100. What was her answer?

- (A) 0.0045
- **B** 0.045
- © 0.45
- (D) 4.5

Item Number: M032079

Correct Response: B

Singapore	58	
Belgium (Elemish)	58	
Estonia	56	
lanan	56	
Hong Kong SAR	56	
Korea Republic of	52	
Russian Enderation	51	
	51	
Nothorlands	51	
Chinoso Tainoi	21	
Chinese Taiper	40	
	45	-
Lithuania	43	-
Israel	41	
Sweden	41	
	37	0
New Zealand	36	0
Australia	35	0
Scotland	35	0
International average	34	0
Italy	34	0
England	34	0
Cyprus	33	0
Slovenia	32	0
United States	32	0
Moldova, Republic of	32	0
Serbia and Montenegro	32	0
Norway	31	0
Romania	29	
Armenia	28	
Egypt	27	
Malaysia	27	
Saudi Arabia	26	
Lebanon	26	
Macedonia, Republic of	23	
Bahrain	23	▼
Philippines	23	▼
Morocco	23	▼
Chile	23	▼
Iran, Islamic Republic of	22	
Ghana	22	
Bulgaria	22	
Indonesia	21	▼
Palestinian Nat'l Auth.	21	▼
South Africa	20	▼
Tunisia	18	▼
Botswana	16	▼

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

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

Number of squares in shaded fraction

Г

In the figure, how many MORE small squares need to be shaded so that $rac{4}{5}$ of			
the small squares are sh	naded?		
(A) 5 (B) 4			
© 3			
D 2			
(E) I			
Item Number: M012001			

Correct Response:

Α

Singapore	88	
Hong Kong, SAR	87	
Belgium (Flemish)	84	
Korea, Republic of	82	
Netherlands	80	
Japan	79	
Chinese Taipei	78	
Sweden	71	
Malaysia	67	
Israel	67	
Hungary	66	
Australia	66	
Scotland	63	
Norway	62	
England	62	
United States	61	
New Zealand	60	
Slovenia	59	
Estonia	59	
Cyprus	56	
Latvia	56	
Russian Federation	52	0
Slovak Republic	52	0
Moldova Republic of	50	0
moldova, hepublic of	50	0
Italy	50	0
Italy	50 49	0
Italy International average	50 49 47	0
Italy International average Lithuania Bulgaria	50 49 47 46	0
Italy International average Lithuania Bulgaria Romania	50 49 47 46 45	0
Italy International average Lithuania Bulgaria Romania Armenia	50 49 47 46 45 42	0 0 0 0
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro	50 49 47 46 45 42 42 42	0 0 0 0
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of	50 49 47 46 45 42 42 42 41	0 0 0 0 V
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia Republic of	50 49 47 46 45 42 42 41 37	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Iordan	50 49 47 46 45 42 42 41 37 32	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt	50 49 47 46 45 42 42 41 37 32 30	0 0 0 V V V
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth	50 49 47 46 45 42 42 41 37 32 30 29	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia	50 49 47 46 45 42 42 41 37 32 30 29 26	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain	50 49 47 46 45 42 42 41 37 32 30 29 26 25	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23 22	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23 22 22 22	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23 22 22 22 21	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile Indonesia	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23 22 22 22 21 21	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile Indonesia Saudi Arabia	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23 22 22 21 21 19	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile Indonesia Saudi Arabia South Africa	50 49 47 46 45 42 42 41 37 32 30 29 26 25 23 22 22 21 21 19 16	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile Indonesia Saudi Arabia South Africa Botswana	50 49 47 46 45 42 41 37 32 30 29 26 25 23 22 22 21 21 19 16 16	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile Indonesia Saudi Arabia South Africa Botswana Ghana	50 49 47 46 45 42 41 37 32 30 29 26 25 23 22 22 21 21 19 16 16 8	
Italy International average Lithuania Bulgaria Romania Armenia Serbia and Montenegro Iran, Islamic Republic of Macedonia, Republic of Jordan Egypt Palestinian Nat'l Auth. Tunisia Bahrain Philippines Lebanon Morocco Chile Indonesia Saudi Arabia South Africa Botswana Ghana	50 49 47 46 45 42 41 37 32 30 29 26 25 23 22 21 21 19 16 16 8	

Country average vs.	
International av	erage:
Higher	
Not different	0
Lower	$\mathbf{\bullet}$

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

Fraction less than 4/9

Write a fraction that is less than $\frac{4}{2}$.	Sing Kore
9	Japa
	Hon
	Chir
	Israe
	Hun
Answer:	Arm
	Aust
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	Unit
	Neth
	Engl
	Slov
	New
	Non
	Slov
	Esto
	Belg
	Russ
	Scot
	Сур
	Inte
	Rom
	Bulg
	Serb
	Egy
	Latv
	Lith
	Pale
	Bots
	Italy
	Jord
	Tuni
	Iran,
	Mala
tem Number: M022012	Bał Mc

SCORING

Correct Response

- A fraction with numerator smaller than 4 and denominator equal to 9, includes 3/9 = 1/3 OR 1/3.
- A fraction with numerator equal to 4 and denominator greater than 9, includes 4/10 = 2/5 OR 2/5.
- 3/8
- Other correct fraction

Incorrect Response

- 5/9
- 2/3
- Any fraction equivalent to 4/9.
- · Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

Singapore	84	
Korea, Republic of	81	
Japan	81	
Hong Kong, SAR	79	
Chinese Taipei	77	
Israel	74	
Hungary	72	
Armenia	72	
Australia	71	
Sweden	70	
United States	69	
Netherlands	69	
England	68	
Slovak Republic	66	
New Zealand	64	
Norway	64	
Slovenia	64	
Estonia	63	
Belgium (Flemish)	62	
Russian Federation	62	
Scotland	60	
Cyprus	60	
International average	54	
Romania	54	0
Bulgaria	54	0
Bulgaria Serbia and Montenegro	54 52	0 0
Bulgaria Serbia and Montenegro Egypt	54 52 52	0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia	54 52 52 52	0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania	54 52 52 52 50	0 0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth.	54 52 52 52 50 50	0 0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana	54 52 52 52 50 50 49	
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy	54 52 52 50 50 49 48	0 0 0 0 V
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan	54 52 52 50 50 49 48 48	0 0 0 0 V V
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia	54 52 52 50 50 49 48 48 48 47	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of	54 52 52 50 50 49 48 48 48 47 47	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia	54 52 52 50 50 49 48 48 48 47 47 43	0 0 0 • • • •
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain	54 52 52 50 50 49 48 48 47 47 43 41	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of	54 52 52 50 50 49 48 48 47 47 43 41 40	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia	54 52 52 50 50 49 48 48 47 47 43 41 40 39	0 0 0 • • • • • • •
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36	0 0 0 • • • • • • • • • •
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile Macedonia, Republic of	54 52 52 50 50 49 48 47 47 43 41 40 39 36 35	
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile Macedonia, Republic of South Africa	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36 35 30	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile Macedonia, Republic of South Africa Lebanon	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36 35 30 28	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile Macedonia, Republic of South Africa Lebanon Indonesia	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36 35 30 28 26	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile Macedonia, Republic of South Africa Lebanon Indonesia	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36 35 30 28 26 25	
Bulgaria Serbia and Montenegro Egypt Latvia Lithuania Palestinian Nat'l Auth. Botswana Italy Jordan Tunisia Iran, Islamic Republic of Malaysia Bahrain Moldova, Republic of Saudi Arabia Chile Macedonia, Republic of South Africa Lebanon Indonesia Philippines	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36 30 28 26 25 24	
BulgariaSerbia and MontenegroEgyptLatviaLithuaniaPalestinian Nat'l Auth.BotswanaItalyJordanTunisiaIran, Islamic Republic ofMalaysiaBahrainMoldova, Republic ofSaudi ArabiaChileMacedonia, Republic ofSouth AfricaLebanonIndonesiaPhilippinesMoroccoGhana	54 52 52 50 50 49 48 48 47 47 43 41 40 39 36 35 30 28 26 25 24 21	

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

Fraction less than 4/9 (continued) Item Number: M022012

Student Responses

Correct Response:



Incorrect Response:

Write a fraction that is less than $\frac{4}{9}$.

Answer: _____2/3_____

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

Decimal rounded to nearest hundredth

Which of the following is 78.2437 rounded to the nearest hundredth?
(A) 100
B 80
© 78.2
D 78.24
E 78.244
L Item Number: M022144

Overall Percent Correct

Korea Republic of	88	
Serbia and Montenegro	74	
Russian Federation	73	
Lithuania	72	
Hungary	72	
Slovak Republic	71	
Belgium (Flemish)	66	
United States	66	
Estonia	62	
Moldova, Republic of	55	
Sweden	55	
Singapore	54	
Italy	54	
Japan	54	
Latvia	54	
Netherlands	54	
Chinese Taipei	49	0
Slovenia	49	0
International average	47	
Australia	47	0
Cyprus	46	0
Lebanon	45	0
Malaysia	45	0
Palestinian Nat'l Auth.	44	0
Israel	43	0
New Zealand	41	•
Eavot	41	•
Scotland	41	
Jordan	40	•
England	40	•
Indonesia	39	
Philippines	38	•
Bulgaria	38	•
Iran Islamic Republic of	37	•
Morocco	37	
Saudi Arabia	36	•
Romania	35	÷.
Norway	33	
Bahrain	32	•
Macedonia Republic of	32	÷.
Chile	30	÷.
Armenia	29	
Ghana	29	•
Hong Kong SAR	29	•
Botswana	28	V
South Africa	22	•
seath / med		*
Country average	e vs.	

International av	erage:
Higher	
Not different	0
Lower	▼

Correct Response:

D

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

Decimals ordered greatest to least

In which list are the numbers ordered from greatest to least?
(A) 0.233, 0.3, 0.32, 0.332
(B) 0.3, 0.32, 0.332, 0.233
© 0.32, 0.233, 0.332, 0.3
D 0.332, 0.32, 0.3, 0.233
Item Number: M022198

Correct Response: D

Singapore	79	
Belgium (Flemish)	74	
Hong Kong, SAR	72	
Netherlands	66	
Chinese Taipei	63	
Estonia	62	
Malaysia	62	
Korea, Republic of	59	
Sweden	59	
Latvia	58	
Japan	53	
Australia	53	
Slovak Republic	52	
Lithuania	49	
Russian Federation	49	
Scotland	48	0
United States	48	
Slovenia	48	0
Italy	47	0
Hungary	47	0
Bulgaria	47	0
Egypt	46	0
Romania	46	0
Moldova, Republic of	44	0
England	44	0
England International average	44 44	0
England International average Armenia	44 44 42	0
England International average Armenia Lebanon	44 44 42 42	0
England International average Armenia Lebanon New Zealand	44 44 42 42 42 42	0 0 0 0 0
England International average Armenia Lebanon New Zealand Cyprus	44 42 42 42 42 39	0 0 0 0 0 0 0 0 0
England International average Armenia Lebanon New Zealand Cyprus Israel	44 42 42 42 42 39 38	0 0 0 0 0
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco	44 42 42 42 42 39 38 38	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile	44 42 42 42 42 39 38 38 38 35	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway	44 42 42 42 42 39 38 38 38 35 35	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan	44 42 42 42 39 38 38 38 35 35 35 35	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro	44 42 42 42 39 38 38 35 35 35 35 34	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia	44 42 42 42 39 38 38 35 35 35 35 34 33	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of	44 42 42 42 39 38 38 35 35 35 35 34 33 32	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia	44 42 42 42 39 38 38 35 35 35 35 35 34 33 32 29	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth.	44 42 42 42 39 38 35 35 35 35 35 34 33 32 29 29	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth. Bahrain	44 42 42 42 39 38 35 35 35 35 35 34 33 32 29 29 27	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth. Bahrain Philippines	44 42 42 42 39 38 38 35 35 35 35 34 33 32 29 29 29 27 25	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'I Auth. Bahrain Philippines Saudi Arabia	44 42 42 42 39 38 38 35 35 35 35 34 33 32 29 29 29 27 25 23	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'I Auth. Bahrain Philippines Saudi Arabia Ghana	44 42 42 42 39 38 38 35 35 35 35 35 34 33 32 29 29 29 27 25 23 20	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth. Bahrain Philippines Saudi Arabia Ghana Iran, Islamic Republic of	44 42 42 42 39 38 38 35 35 35 35 35 34 33 32 29 29 29 27 25 23 20 18	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth. Bahrain Philippines Saudi Arabia Ghana Iran, Islamic Republic of Botswana	44 42 42 39 38 38 35 35 35 35 35 34 33 32 29 29 27 25 23 20 18 18	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth. Bahrain Philippines Saudi Arabia Ghana Iran, Islamic Republic of Botswana South Africa	44 42 42 39 38 35 35 35 35 35 35 34 33 32 29 29 27 25 23 20 18 18 18 16	
England International average Armenia Lebanon New Zealand Cyprus Israel Morocco Chile Norway Jordan Serbia and Montenegro Tunisia Macedonia, Republic of Indonesia Palestinian Nat'l Auth. Bahrain Philippines Saudi Arabia Ghana Iran, Islamic Republic of Botswana South Africa	44 42 42 39 38 35 35 35 35 35 34 33 32 29 29 27 25 23 20 18 18 18 16	

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

Content Domain	Main Topic	Cognitive Doma	in
NUMBER	Fractions and Decimals	Using Concepts	5
The number closest to 10		Overall Percent	Correct
Use the patterns in the previous table	to answer the following questions.	Netherlands Sweden Estonia	97 ▲ 96 ▲ 96 ▲
A. Pat made a shape with a total of 6 how many were red?	4 tiles. How many were black and	Singapore Lithuania Belgium (Flemish) Korea, Republic of	95 ▲ 95 ▲ 94 ▲ 94 ▲
Answer: black tiles	red tiles	Malaysia Japan Serbia and Montenegro	93 ▲ 92 ▲ 91 ▲
B. Pat made a shape that used 49 bla How many red tiles did Pat use in	ck tiles. that shape?	Russian Federation Latvia Slovak Republic	91 ▲ 91 ▲ 90 ▲ 90 ▲
Answer: red tiles		Italy Hong Kong, SAR Scotland Chinasa Tainai	90 ▲ 89 ▲ 89 ▲
C. Next, Pat made a shape using 44 or would Pat need to complete the bla	f the red tiles. How many black tiles ck part of the shape?	Cyprus Hungary Australia	88 A 88 A 88 A
Answer: black tiles		United States Slovenia	87 🔺 87 🔺

Item Number: M032670

Correct Response:

В

Slovenia 87 New Zealand 86 85 Bulgaria England 82 Moldova, Republic of 82 Israel 81 79 0 Romania Macedonia, Republic of 78 0 International average 76 Tunisia 0 76 Morocco 75 0 Indonesia 74 0 Iran, Islamic Republic of 69 ▼ Chile 67 ▼ ▼ Lebanon 67 ▼ Armenia 66 Jordan 55 ▼ Palestinian Nat'l Auth. 50 ▼ Bahrain 49 ▼ 48 ▼ Egypt Philippines 42 ▼ Botswana 40 ▼ ▼ Saudi Arabia 35 South Africa 30 ▼ Ghana 24 ▼ ~

International av	ge vs. erage:
Higher	
Not different	0
Lower	V

Content Domain	Main Topic	Cognitive Domain
NUMBER	Integers	Knowing Facts and Procedures

The value of 1 minus 5 times -2

What is the value of $1 - 5 \times 6$	Japan	74	
What is the value of $1 - 5 \times 0$	Singapore	70	
\bigcirc 11	Hong Kong, SAR	67	
(A) 11	Chinese Taipei	66	
(B) 8	Netherlands	61	
	Belaium (Flemish)	55	
0 -8	Korea, Republic of	54	
(D) -9	Slovak Republic	52	
, C	Estonia	52	
	Israel	52	
	Romania	49	
	New Zealand	48	
	Russian Federation	46	
	Bulgaria	46	
	Australia	45	
	Armenia	44	
	Latvia	42	
	Hungary	42	
	Lebanon	42	
	Malaysia	39	0
	Botswana	39	0
	Lithuania	38	0
	United States	38	0
	lite by	37	0
	Italy	57	0
	Egypt	37	0
	Egypt Slovenia	37 36	0 0 0
	Egypt Slovenia International average	37 36 35	0
	Egypt Slovenia International average Serbia and Montenegro	37 36 35 33	0
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of	37 36 35 33 33	0 0 0 0 0 0
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of	37 36 35 33 33 32 25	0 0 0 0 0 0 0 0 0 0
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England	37 36 35 33 33 32 25 24	
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia	37 36 35 33 33 32 25 24 22	
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippi ince	37 36 35 33 33 32 25 24 23 21	
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines	37 36 35 33 33 32 25 24 23 21	
	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palortinian Nat'l Auth	37 36 35 33 32 25 24 23 21 19	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Ecotland	37 36 35 33 32 25 24 23 21 19 19	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland Scotland	37 36 35 33 33 32 25 24 23 21 19 19 18	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Pahrain	37 36 35 33 32 25 24 23 21 19 19 18 17	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain	37 36 35 33 32 25 24 23 21 19 19 18 17 15 12	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain Indonesia Saudi Arabia	37 36 35 33 32 25 24 23 21 19 19 18 17 15 12 12	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain Indonesia Saudi Arabia	37 36 35 33 33 32 25 24 23 21 19 19 19 19 18 17 15 12 12 10	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain Indonesia Saudi Arabia Sweden Chila	37 36 35 33 32 25 24 23 21 19 19 19 18 17 15 12 12 10 10	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain Indonesia Saudi Arabia Sweden Chile	37 36 35 33 32 25 24 23 21 19 19 18 17 15 12 12 10 10 10	
Item Number: M032612	Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain Indonesia Saudi Arabia Sweden Chile Iran, Islamic Republic of	37 36 35 33 32 25 24 23 21 19 19 19 18 17 15 12 12 10 10 10 5	
Item Number: M032612	Italy Egypt Slovenia International average Serbia and Montenegro Moldova, Republic of Macedonia, Republic of England Tunisia Cyprus Philippines Jordan Palestinian Nat'l Auth. Scotland South Africa Bahrain Indonesia Saudi Arabia Sweden Chile Iran, Islamic Republic of Morocco Norway	37 36 35 33 32 25 24 23 21 19 19 19 18 17 15 12 12 10 10 10 6 5	

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

i Response.

Content Domain	Main Topic	Cognitive Domain
NUMBER	Integers	Using Concepts

If *n* is a negative integer

If n is a negative integer, which of these is the largest number?
(A) $3+n$
(B) $3 \times n$
© 3-n
(D) $3 \div n$
Item Number: M032643

С

Overall Percent Correct

Korea, Republic of	78	
Chinese Taipei	74	
Russian Federation	69	
Japan	68	
Hong Kong, SAR	67	
Singapore	58	
Hungary	53	
Estonia	51	
Latvia	49	
Belgium (Flemish)	48	
United States	48	
Israel	48	
Armenia	47	
Slovak Republic	46	
Serbia and Montenegro	46	
Netherlands	44	0
Bulgaria	42	0
Romania	41	0
Lebanon	41	0
Lithuania	40	0
Malavsia	40	0
International average	40	
Moldova, Republic of	39	0
Slovenia	38	0
Egypt	37	0
Australia	36	0
Cyprus	34	▼
Italy	32	▼
Iran. Islamic Republic of	32	▼
Philippines	32	•
Macedonia, Republic of	32	•
New Zealand	31	
Jordan	29	•
Palestinian Nat'l Auth	29	
Sweden	28	
Scotland	28	
Indonesia	27	Ť.
England	26	•
South Africa	20	÷
Nonway	25	÷
Morocco	25	÷
Saudi Arabia	25	÷
Babrain	25	÷.
Tunicia	22	<u> </u>
Rotswana	22	-
Chilo	10	<u> </u>
CIIIIe	10	•

Country avera	ye vs.
International av	verage:
Higher	
Not different	0
Lower	

Correct Response:

Content Domain	Main Topic	Cognitive Domain
NUMBER	Ratio, Proportions, and Percent	Knowing Facts and Procedures

Percent decrease in travel time

When a new highway is built, the average time it takes a bus to travel from one town to another is reduced from 25 minutes to 20 minutes. What is the percent decrease in time taken to travel between the two towns?



- B 5%
- C) 20%
- (D) 25%

Item Number: M022139

Correct Response: C

Singapore	70	
Netherlands	62	
Hong Kong, SAR	61	
Malaysia	48	
Sweden	47	
Australia	46	
Korea, Republic of	45	
Scotland	42	
England	42	
Hungary	40	
Chinese Taipei	40	
New Zealand	40	
Japan	39	
Slovak Republic	38	
Israel	38	
Slovenia	38	
Belgium (Flemish)	38	
Estonia	37	
Latvia	37	
United States	35	
Lithuania	34	0
Cyprus	34	0
Norway	34	0
Russian Federation	32	0
Serbia and Montenegro	32	0
Serbia and Montenegro International average	32 31	0
Serbia and Montenegro International average Moldova, Republic of	32 31 29	0
Serbia and Montenegro International average Moldova, Republic of Bulgaria	32 31 29 28	0 0 0
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania	32 31 29 28 27	0 0 0 V
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan	32 31 29 28 27 22	0 0 ▼
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa	32 31 29 28 27 22 21	0 0 V V
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile	32 31 29 28 27 22 21 21 21	0 0 ♥ ♥ ♥
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia	32 31 29 28 27 22 21 21 21 20	○ ○ ♥ ♥ ♥
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy	32 31 29 28 27 22 21 21 21 20 20	 ○ ○
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of	32 31 29 28 27 22 21 21 20 20 19	 ○ ○
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain	32 31 29 28 27 22 21 21 20 20 19 19	0 0 7 7 7 7 7 7 7
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia	32 31 29 28 27 22 21 21 20 20 19 19 19	0 0 7 7 7 7 7 7 7 7 7 7
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth.	32 31 29 28 27 22 21 21 20 20 19 19 19 19	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of	32 31 29 28 27 22 21 21 20 20 19 19 19 19 18 18	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana	32 31 29 28 27 22 21 21 20 20 19 19 19 19 18 18 18	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana Lebanon	32 31 29 28 27 22 21 21 20 20 19 19 19 19 18 18 18 18	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana Lebanon Egypt	32 31 29 28 27 22 21 21 20 20 19 19 19 19 18 18 18 18 18 17 7	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'I Auth. Iran, Islamic Republic of Botswana Lebanon Egypt Philippines	32 31 29 28 27 22 21 20 20 19 19 19 19 19 18 18 18 18 18 17 7 17	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana Lebanon Egypt Philippines Saudi Arabia	32 31 29 28 27 22 21 20 20 19 19 19 19 19 18 18 18 18 17 17 17	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana Lebanon Egypt Philippines Saudi Arabia Morocco	32 31 29 28 27 22 21 20 20 19 19 19 19 19 18 18 18 17 17 17 17	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana Lebanon Egypt Philippines Saudi Arabia Morocco Ghana	32 31 29 28 27 22 21 20 20 19 19 19 19 19 18 18 18 17 17 17 17 15 5	
Serbia and Montenegro International average Moldova, Republic of Bulgaria Romania Jordan South Africa Chile Armenia Italy Macedonia, Republic of Bahrain Indonesia Palestinian Nat'l Auth. Iran, Islamic Republic of Botswana Lebanon Egypt Philippines Saudi Arabia Morocco Ghana Tunisia	32 31 29 28 27 22 21 20 20 19 19 19 19 19 19 18 18 17 17 17 17 15 15 12	

Country average vs.		
International average:		
Higher		
Not different O		
Lower 🔻		

Content Domain	Main Topic	Cognitive Domain
NUMBER	Ratio, Proportions, and Percent	Knowing Facts and Procedures

The ratio of the shaded area to the unshaded



In the figure above, each of the smaller triangles has the same area. What is the ratio of the shaded area to the unshaded area?

- A 5:3
- **B** 8:5
- © 5:8
- D 3:5

Item Number: M032447

Correct Response: A

Singapore	87	
Chinese Taipei	81	
Korea, Republic of	80	
Hong Kong, SAR	74	
Malaysia	72	
Japan	71	
Slovak Republic	56	
Australia	55	
Scotland	54	
Latvia	52	
England	52	
Hungary	52	
Netherlands	51	
United States	50	
Lithuania	50	
Slovenia	48	
Serbia and Montenegro	48	
Russian Federation	47	
Indonesia	45	0
Bulgaria	44	0
Belgium (Flemish)	43	0
Estonia	42	0
International average	41	
Now Zooland	20	0
New Zealanu	39	0
Israel	39 38	0
Israel Cyprus	39 38 37	0 0
Israel Cyprus Romania	39 38 37 37	0 0 0
Israel Cyprus Romania Philippines	39 38 37 37 37	0 0 0 0
Israel Cyprus Romania Philippines Moldova, Republic of	39 38 37 37 37 37 37	0 0 0 0 0
Israel Cyprus Romania Philippines Moldova, Republic of Italy	39 38 37 37 37 37 37 35	0 0 0 0 0
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of	39 38 37 37 37 37 37 35 35	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden	39 38 37 37 37 37 35 35 31	0 0 0 0 0 0 0 0
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia	39 38 37 37 37 37 35 35 35 31 28	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth.	39 38 37 37 37 37 35 35 31 28 27	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of	39 38 37 37 37 37 35 35 31 28 27 26	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt	 39 38 37 37 37 35 35 31 28 27 26 26 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia	 39 38 37 37 35 35 31 28 27 26 26 26 26 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway	 39 38 37 37 37 35 35 31 28 27 26 26 26 23 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan	 39 38 37 37 37 35 31 28 27 26 26 26 23 21 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile	 39 38 37 37 37 35 31 28 27 26 26 23 21 20 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain	 39 38 37 37 37 35 31 28 27 26 26 23 21 20 19 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain Botswana	 39 38 37 37 37 35 35 31 28 27 26 26 23 21 20 19 17 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain Botswana South Africa	 39 38 37 37 37 35 35 31 28 27 26 26 23 21 20 19 17 16 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain Botswana South Africa Morocco	 39 38 37 37 37 35 35 31 28 27 26 26 23 21 20 19 17 16 16 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain Botswana South Africa Morocco Lebanon	 39 38 37 37 37 35 31 28 27 26 26 23 21 20 19 17 16 16 16 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain Botswana South Africa Morocco Lebanon Tunisia	 39 38 37 37 37 35 31 28 27 26 26 23 21 20 19 17 16 16 14 	
Israel Cyprus Romania Philippines Moldova, Republic of Italy Macedonia, Republic of Sweden Armenia Palestinian Nat'l Auth. Iran, Islamic Republic of Egypt Saudi Arabia Norway Jordan Chile Bahrain Botswana South Africa Morocco Lebanon Tunisia	 39 38 37 37 37 35 31 28 27 26 23 21 20 19 17 16 16 14 	

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

Content Domain	Main Topic	Cognitive Domain
NUMBER	Ratio, Proportions, and Percent	Reasoning

A computer club had 40 members

A computer club had 40 members, and 60% of the members were girls. Later, 10 boys joined the club. What percent of the members now are girls? Show the calculations that led to your answer.

Answer: _____

Item Number: M032233

SCORING

Correct Response

• 48% with calculations shown.

Partial Response

- 24 girls
- Correct method but computational error.
- 48% with no calculations shown.

Incorrect Response

- 50%
- Other incorrect (including crossed out/erased, stray marks, illegible or off task).

Singapore	64	
Korea, Republic of	44	
Chinese Taipei	41	
Hong Kong, SAR	29	
Hungary	28	
Malaysia	23	
Belgium (Flemish)	21	
Sweden	21	
Slovak Republic	19	
Estonia	19	
Netherlands	18	
Lithuania	18	
Japan	16	
England	16	0
Scotland	14	0
United States	14	0
Australia	13	0
Slovenia	13	0
Israel	13	0
New Zealand	12	0
International average	12	0
Lalvia	9	0
Armonia	9	0
Pomania	0 7	-
Rundina Russian Enderation	6	÷.
Italy	6	÷.
Bulgaria	6	÷
Cyprus	4	÷
Norway	ר ר	÷
Chile	3	•
Indonesia	3	•
Lebanon	3	
Philippines	2	
South Africa	2	•
Iran. Islamic Republic of	2	
Jordan	2	
Palestinian Nat'l Auth.	2	▼
Eavpt	2	
Morocco	1	▼
Botswana	1	
Tunisia	1	▼
Moldova, Republic of	1	▼
Macedonia, Republic of	1	▼
Bahrain	0	
Ghana	0	▼

Country average International av	ge vs. erage:	
Higher		
Not different O		
Lower 🔻		

A computer club had 40 members (continued)

Item Number: M032233

Student Responses

Correct Response:

A computer club had 40 members, and 60% of the members were girls. Later, 10 boys joined the club. What percent of the members now are girls? Show the calculations that lead to your answer.



Partial Response:

A computer club had 40 members, and 60% of the members were girls. Later, 10 boys joined the club. What percent of the members now are girls? Show the calculations that lead to your answer.

Answer:

Incorrect Response:

- A computer club had 40 members, and 60% of the members were girls.
- Later, 10 boys joined the club. What percent of the members now are girls? Show the calculations that lead to your answer.



Answer: _ 50%

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

Laps run by Carol and Alice from ratio

Alice can run 4 laps around a track in the same time that Carol can run 3 laps. When Carol has run 12 laps, how many laps has Alice run?

A	9				
В	11				
C	13				
D	16				

Item Number: M012004

Correct Response: D

Singanore		
Jiligapore	75	
Belgium (Flemish)	69	
Japan	68	
Chinese Taipei	66	
Netherlands	66	
Sweden	62	
Hong Kong, SAR	61	
Slovak Republic	59	
Latvia	55	
Lithuania	55	
Russian Federation	54	
Israel	53	
Australia	52	0
Norway	52	
Estonia	51	
Korea, Republic of	51	
Iran, Islamic Republic of	48	0
United States	48	0
Ghana	47	0
International average	47	
Serbia and Montenegro	47	0
South Africa	47	0
Cyprus	46	0
Lebanon	46	0
Lebunon		
New Zealand	46	0
New Zealand Slovenia	46 46	0 0
New Zealand Slovenia England	46 46 45	0 0 0
New Zealand Slovenia England Scotland	46 46 45 45	0 0 0
New Zealand Slovenia England Scotland Hungary	46 46 45 45 43	0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia	46 45 45 43 43	0 0 0 V
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth.	46 45 45 43 43 43	0 0 0 • 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia	46 45 45 43 43 43 42	0 0 0 ▼ 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines	46 45 45 43 43 43 42 42	0 0 0 V 0 V
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia	46 45 45 43 43 43 43 42 42 42	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan	46 45 45 43 43 43 42 42 42 42 41	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt	46 45 45 43 43 43 42 42 42 42 41 40	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of	46 45 45 43 43 42 42 42 42 41 40 40	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana	46 45 45 43 43 42 42 42 41 40 40 39	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania	46 45 45 43 43 43 42 42 42 41 40 40 39 37	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria	46 45 45 43 43 43 42 42 42 41 40 40 39 37 36	
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of	46 45 45 43 43 43 42 42 42 41 40 40 39 37 36 36	0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of Italy	46 45 45 43 43 43 42 42 42 42 41 40 40 39 37 36 35	0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of Italy Saudi Arabia	46 45 45 43 43 42 42 42 42 41 40 40 39 37 36 35 35	0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of Italy Saudi Arabia Indonesia	46 45 45 43 43 42 42 42 42 41 40 40 39 37 36 35 35 34	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of Italy Saudi Arabia Indonesia Morocco	46 45 45 43 43 42 42 42 42 41 40 40 39 37 36 35 35 35 34 33	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of Italy Saudi Arabia Indonesia Morocco Chile	46 45 45 43 43 42 42 42 42 41 40 40 39 37 36 35 35 34 33 32	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
New Zealand Slovenia England Scotland Hungary Malaysia Palestinian Nat'l Auth. Armenia Philippines Tunisia Jordan Egypt Moldova, Republic of Botswana Romania Bulgaria Macedonia, Republic of Italy Saudi Arabia Indonesia Morocco Chile Bahrain	 46 45 45 43 43 42 42 42 42 41 40 39 37 36 35 34 33 32 29 	

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

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

A shop increased its prices by 20%

A shop increased its prices by 20%. What is the new price of an item which previously sold for 800 zeds?

- (A) 640 zeds
- B 900 zeds
- (C) 960 zeds
- D 1,000 zeds

Item Number: M032228

Correct Response: C

Singapore	87	
Hong Kong, SAR	86	
Netherlands	79	
Chinese Taipei	74	
Korea, Republic of	74	
Slovak Republic	73	
Hungary	72	
Belgium (Flemish)	72	
Sweden	70	
Estonia	65	
lanan	63	
Scotland	62	
Malavsia	62	
Russian Federation	61	
Lithuania	58	
Israel	58	
United States	57	
Australia	55	
Slovenia	55	
Romania	54	0
Latvia	54	0
England	52	0
Serbia and Montenegro	51	0
International average	19	-
international average		
New Zealand	49	0
New Zealand Italy	49 49	0 0
New Zealand Italy Norway	49 49 48	0 0 0
New Zealand Italy Norway Bulgaria	49 49 48 47	0 0 0 0
New Zealand Italy Norway Bulgaria Armenia	49 49 48 47 45	0 0 0
New Zealand Italy Norway Bulgaria Armenia Cyprus	49 49 48 47 45 45	0 0 0 0
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of	49 49 48 47 45 45 45 44	0 0 0 V V
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile	49 49 48 47 45 45 44 41	0 0 0 ▼ ▼
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia	49 49 48 47 45 45 45 44 41 40	0 0 0 ▼ ▼ ▼
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of	49 49 48 47 45 45 44 41 40 39	0 0 0 ▼ ▼ ▼
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia	49 49 48 47 45 45 44 41 40 39 34	○ ○ ○ ▼ ▼ ▼ ▼
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana	49 49 48 47 45 45 44 41 40 39 34 32	0 0 0 V V V V V V
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines	49 49 48 47 45 45 44 41 40 39 34 32 31	0 0 0 V V V V V V V V V V V V
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon	49 49 48 47 45 45 44 41 40 39 34 32 31 31	0 0 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30	0 0 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29 27	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain Palestinian Nat'l Auth.	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29 27 26	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain Palestinian Nat'l Auth. Jordan	49 49 48 47 45 45 44 41 40 39 34 32 31 30 29 27 26 25	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain Palestinian Nat'l Auth. Jordan Iran, Islamic Republic of	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29 27 26 25 24	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain Palestinian Nat'l Auth. Jordan Iran, Islamic Republic of Saudi Arabia	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29 27 26 25 24 22	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain Palestinian Nat'l Auth. Jordan Iran, Islamic Republic of Saudi Arabia South Africa	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29 27 26 25 24 22 19	
New Zealand Italy Norway Bulgaria Armenia Cyprus Moldova, Republic of Chile Tunisia Macedonia, Republic of Indonesia Botswana Philippines Lebanon Morocco Egypt Bahrain Palestinian Nat'l Auth. Jordan Iran, Islamic Republic of Saudi Arabia South Africa Ghana	49 49 48 47 45 45 44 41 40 39 34 32 31 31 30 29 27 26 25 24 22 19 16	

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

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

A machine uses 2.4 liters of gasoline

A machine uses 2.4 liters of gasoline for every 30 hours of operation. How many liters of gasoline will the machine use in 100 hours?

(A)	7.2	

- **B** 8.0
- © 8.4
- D 9.6

Item Number: M032533

Correct Response: B

Singapore	89	
Netherlands	78	
Hong Kong, SAR	77	
Korea. Republic of	75	
Belgium (Flemish)	74	
Chinese Taipei	71	
Malavsia	68	
Japan	66	
Estonia	65	
Lithuania	64	
Slovak Republic	63	
Hungary	63	
Sweden	60	
Lebanon	55	
United States	55	
Russian Federation	54	
Israel	53	
England	50	0
Scotland	50	0
Latvia	50	0
Slovenia	50	0
Australia	49	0
Romania	48	0
International average	47	0
Serbia and Montenegro	45	0
Serbia and Montenegro Italy	45 44	0 0
Serbia and Montenegro Italy Norway	45 44 44	0 0 0
Serbia and Montenegro Italy Norway Moldova, Republic of	45 44 44 44	0 0 0 0
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus	45 44 44 44 44	0 0 0 0
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria	45 44 44 44 44 43	0 0 0 0 0
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand	45 44 44 44 44 43 42	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia	45 44 44 44 43 42 41	0 0 0 0 0 0
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan	45 44 44 44 43 42 41 40	0 0 0 0 0 0 0 0
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of	45 44 44 43 42 41 40 38	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt	45 44 44 43 42 41 40 38 34	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of	45 44 44 43 42 41 40 38 34 31	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia	45 44 44 43 42 41 40 38 34 31 31	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth.	45 44 44 43 42 41 40 38 34 31 31 31	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia	45 44 44 43 42 41 40 38 34 31 31 31 30	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile	45 44 44 43 42 41 40 38 34 31 31 31 30 29	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines	45 44 44 43 42 41 40 38 34 31 31 31 30 29 27	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco	45 44 44 43 42 41 40 38 34 31 31 31 30 29 27 27 27	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco Botswana	45 44 44 43 42 41 40 38 34 31 31 31 30 29 27 27 27 23	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco Botswana Bahrain	45 44 44 43 42 41 40 38 34 31 31 31 31 30 29 27 27 27 23 23	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco Botswana Bahrain Saudi Arabia	45 44 44 43 42 41 40 38 34 31 31 31 31 30 29 27 27 23 23 23 22	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco Botswana Bahrain Saudi Arabia South Africa	45 44 44 43 42 41 40 38 34 31 31 31 31 30 29 27 27 27 23 23 23 22 17	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco Botswana Bahrain Saudi Arabia South Africa Ghana	45 44 44 43 42 41 40 38 34 31 31 31 30 29 27 27 23 23 23 22 17 17	
Serbia and Montenegro Italy Norway Moldova, Republic of Cyprus Bulgaria New Zealand Armenia Jordan Macedonia, Republic of Egypt Iran, Islamic Republic of Indonesia Palestinian Nat'l Auth. Tunisia Chile Philippines Morocco Botswana Bahrain Saudi Arabia South Africa Ghana	45 44 44 43 42 41 40 38 34 31 31 31 31 30 29 27 27 23 23 23 22 17 17	

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

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

Three brothers receive 45,000 zeds

Three brothers, Bob, Dan, and Mark, receive a gift of 45,000 zeds from their father. The money is shared between the brothers in proportion to the number of children each one has. Bob has 2 children, Dan has 3 children, and Mark has 4 children.

How many zeds does Mark get?

- (A) 5,000
- B 10,000
- (C) 15,000
- (D) 20,000

Item Number: M032727

Correct Response: D

Singapore	85	
Hong Kong, SAR	73	
Korea, Republic of	71	
Chinese Taipei	68	
Sweden	67	
Hungary	67	
Estonia	67	
Netherlands	66	
Slovak Republic	65	
Belgium (Flemish)	63	
Japan	60	
Malaysia	57	
England	55	
Australia	55	
Romania	53	
Israel	52	
Russian Federation	52	
New Zealand	50	0
Lithuania	49	0
Italy	48	0
Scotland	48	0
Serbia and Montenegro	48	0
United States	45	0
Norway	45	0
Slovenia	45	0
Slovenia International average	45 45	0
Slovenia International average Cyprus	45 45 42	0
Slovenia International average Cyprus Chile	45 45 42 41	0 0 0
Slovenia International average Cyprus Chile Moldova, Republic of	45 45 42 41 40	0 0 0 0
Slovenia International average Cyprus Chile Moldova, Republic of Latvia	45 45 42 41 40 37	0 0 0 0
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria	45 42 41 40 37 37	0 0 0 0 V
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of	45 42 41 40 37 37 36	0 0 0 ♥ ♥
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of	45 42 41 40 37 37 36 35	0 0 0 ♥ ♥ ♥
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa	45 42 41 40 37 37 36 35 32	 ○ ○ ○ ○ ○ ○ ✓ ✓
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana	45 42 41 40 37 37 36 35 32 32 32	○ ○ ○ ♥ ♥ ♥
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines	45 42 41 40 37 37 36 35 32 32 29	 ○ ○
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan	45 42 41 40 37 37 36 35 32 32 29 29 29	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia	45 42 41 40 37 37 36 35 32 32 29 29 29 28	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth.	45 42 41 40 37 37 36 35 32 32 29 29 29 28 28 28	
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia	45 42 41 40 37 37 36 35 32 29 29 29 29 28 28 28 27	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon	45 42 41 40 37 37 36 35 32 29 29 29 28 28 28 28 27 26	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia	45 42 41 40 37 37 36 35 32 32 29 29 29 28 28 27 26 24	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia Morocco	45 42 41 40 37 36 35 32 32 29 29 28 28 29 28 28 27 26 24 22	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia Morocco Botswana	45 42 41 40 37 37 36 35 32 29 29 28 28 29 28 28 27 26 24 22 21	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia Morocco Botswana Bahrain	45 42 41 40 37 36 35 32 29 29 29 28 28 29 28 28 27 26 24 22 21 21 21	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia Morocco Botswana Bahrain Egypt	45 42 41 40 37 37 36 35 32 29 29 29 29 28 28 27 26 24 22 21 21 20	
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia Morocco Botswana Bahrain Egypt Saudi Arabia	45 42 41 40 37 37 36 35 32 29 29 29 28 29 29 28 29 29 28 27 26 24 22 21 21 20 18	
Slovenia International average Cyprus Chile Moldova, Republic of Latvia Bulgaria Macedonia, Republic of Iran, Islamic Republic of South Africa Ghana Philippines Jordan Armenia Palestinian Nat'l Auth. Indonesia Lebanon Tunisia Morocco Botswana Bahrain Egypt Saudi Arabia	45 42 41 40 37 37 36 35 32 29 29 28 28 29 29 28 28 27 26 24 22 21 21 20 18	

Country average vs. International average:		
Higher		
Not different O		
Lower 🔻		

Content Domain	Main Topic	Cognitive Domain
NUMBER	Ratio, Proportions, and Percent	Using Concepts

3/25 of the people in the audience were children

At a play, $\frac{3}{25}$ of the people in the audience were children.
What percent of the audience was this?
A 12%
B 3%
© 0.3%
(b) 0.12%
Item Number: M032570

Overall Percent Correct

Singapore

Malaysia

England

Botswana New Zealand

Australia

Scotland

Slovenia

Sweden

Lithuania

Slovak Republic

International average

Russian Federation

Estonia

Hungary

Indonesia

Bulgaria

Norway

Romania

Japan

Latvia Cyprus

Israel

Netherlands

Chinese Taipei

United States

Korea, Republic of

Hong Kong, SAR

Belgium (Flemish)

96

90

87

84

79

77

76

71

70

70

67

67

65

64

63

63

61

61 60

59

57

56

55

55

52

51

50

50

49

0

0

0

0

0

0

0 ▼

▼

Correct Response:

Α

Italy	47	▼
Serbia and Montenegro	45	▼
Egypt	44	▼
Armenia	42	▼
Macedonia, Republic of	42	
Philippines	42	
Moldova, Republic of	42	
Ghana	41	
Iran, Islamic Republic of	39	
Palestinian Nat'l Auth.	39	
Jordan	39	
Chile	39	▼
Bahrain	36	▼
Lebanon	34	▼
South Africa	33	▼
Tunisia	30	▼
Morocco	29	▼
Saudi Arabia	25	▼
Country averag	e vs.	
International ave	erage:	
Higher		
Not different	0	
Lower		

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

The closest to 11 squared plus 9 squared

Overall Percent Correct

88

88

85

84

82

82

81

81

80

80

80

80

80

80

80

79

79

77

74

73

69

68

67

65

64

64

63

59

56

53

50

49

48

47

45

44

0

0

0 0

0

0

▼ ▼

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▼

▼

▼

Hong Kong, SAR

Russian Federation

United States

Slovak Republic

Belgium (Flemish)

Korea, Republic of

Serbia and Montenegro

Macedonia, Republic of

International average

Palestinian Nat'l Auth.

Chinese Taipei

Latvia Hungary

Estonia

Slovenia

Lebanon

Malaysia

Romania

Singapore

Lithuania

Cyprus

Australia

Bulgaria

Indonesia

England

Armenia

Scotland

Tunisia

Japan

Jordan

Morocco

Egypt

Philippines

New Zealand

Israel

Netherlands

Italy

Which of these is closest to 11^2	$+9^{2}?$
(A) 20 + 20	
B 20 + 80	
© 120 + 20	
D 120 + 80	
tem Number: M032609	
Correct Response:	D

Iran, Islamic Republic of	44	▼
Chile	41	▼
Bahrain	37	▼
Sweden	36	▼
Ghana	28	▼
Botswana	26	▼
Saudi Arabia	22	▼
South Africa	20	▼
Moldova, Republic of	18	▼
Norway	13	▼
Country average International ave	e vs. rage:	
Higher		
Not different	0	
Lower		

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

Which equals 370 times 998 plus 370 times 2

Wh	ich of these is equal to $370 \times 998 + 370 \times 2?$
A	$370 \times 1,000$
B	372×998
C	740 imes 998
D	$370 \times 998 \times 2$
Item N	umber: M032690

Overall Percent Correct

Correct Response: A

Singapore	70	
Hong Kong, SAR	69	
Chinese Taipei	68	
Hungary	61	
Netherlands	59	
Estonia	57	
Lebanon	53	
Israel	52	
Egypt	52	
Belgium (Flemish)	50	
Russian Federation	49	
Australia	49	
United States	48	
Lithuania	47	
Malaysia	47	
New Zealand	46	
Korea, Republic of	43	0
Romania	43	0
Botswana	41	0
Scotland	40	0
International average	39	
Armenia	38	0
Latvia	38	0
Slovak Republic	38	0
		0
Japan	37	0
Japan Bulgaria	37 37	0
Japan Bulgaria Moldova, Republic of	37 37 37	0 0 0
Japan Bulgaria Moldova, Republic of Slovenia	37 37 37 37 36	
Japan Bulgaria Moldova, Republic of Slovenia Italy	37 37 37 36 35	0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of	37 37 37 36 35 34	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England	37 37 37 36 35 34 34	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth.	37 37 37 36 35 34 34 33	0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia	37 37 37 36 35 34 34 33 31	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines	37 37 36 35 34 34 33 31 30	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain	37 37 37 36 35 34 34 33 31 30 28	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus	37 37 37 36 35 34 34 33 31 30 28 24	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden	37 37 36 35 34 34 33 31 30 28 24 23	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro	37 37 36 35 34 34 33 31 30 28 24 23 23	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway	37 37 36 35 34 34 33 31 30 28 24 23 23 22	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia	37 37 36 35 34 34 33 31 30 28 24 23 23 22 22	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia Morocco	 37 37 36 35 34 34 33 31 30 28 24 23 23 22 22 21 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia Morocco South Africa	 37 37 36 35 34 34 33 31 30 28 24 23 23 22 21 21 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia Morocco South Africa Chile	 37 37 36 35 34 34 33 31 30 28 24 23 23 22 21 21 18 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia Morocco South Africa Chile Indonesia	 37 37 36 35 34 34 33 31 30 28 24 23 23 22 21 18 18 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia Morocco South Africa Chile Indonesia Jordan	 37 37 36 35 34 34 33 31 30 28 24 23 23 22 21 18 18 17 	
Japan Bulgaria Moldova, Republic of Slovenia Italy Macedonia, Republic of England Palestinian Nat'l Auth. Tunisia Philippines Bahrain Cyprus Sweden Serbia and Montenegro Norway Saudi Arabia Morocco South Africa Chile Indonesia Jordan Iran, Islamic Republic of	 37 37 36 35 34 34 33 31 30 28 24 23 22 21 21 18 18 17 14 	 ○ ○

Country average vs. International average:		
Higher		
Not different O		
Lower 🔻		

Content Domain	Main Topic	Cognitive Domain	
NUMBER	Whole Numbers	Solving Routine Proble	ms
rrangements of 4-digit whole n	umbers	Overall Percent Co	rrect
9 1 The four digits above are to be arranged four-digit number. The same four digits smallest to largest to form another four difference between the two resulting for (A) 3,726 (B) 4,726 (C) 8,082 (D) 8,182 (E) 8,192	4 5 d from largest to smallest to form a sare then to be arranged from odigit number. What is the ur-digit numbers?	Korea, Republic of92Singapore88Chinese Taipei87Hong Kong, SAR86Japan85Malaysia79Latvia77Slovenia75Belgium (Flemish)75Sweden72Bulgaria71Italy71Russian Federation70Sovek Republic69Estonia68Australia68Moldova, Republic of67Scotland66Israel66Hungary65Lithuania65Macedonia, Republic of64Netherlands61England60International average59	
em Number: M012028		Armenia57New Zealand56Iran, Islamic Republic of56Cyprus55Egypt53Tunisia52Jordan50Chile50Norway45Palestinian Nat'l Auth.41Lebanon41Bahrain41Indonesia40	
		Philippines 35 Botswana 32 Morocco 30 Ghana 22	

Correct Response:

С

South Africa

Saudi Arabia

▼

▼

21

21

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

Approximate number of magazines sold

	8 400	-	
A)	0,400		
B	35,000		
C)	84,000		
D	350,000		
E	3,500,000		

Correct Response:

D

Korea, Republic of	74	
Singapore	74	
Chinese Taipei	71	
Netherlands	69	
Belaium (Flemish)	69	
Hong Kong, SAR	68	
Australia	67	
Hungary	66	
Japan	66	
Śweden	63	
New Zealand	62	
Estonia	62	
England	61	
Slovenia	60	
Slovak Republic	59	
United States	58	
Malavsia	58	
Russian Federation	58	
Scotland	58	
Norway	58	
Lithuania	57	
Latvia	57	
Bulgaria	56	
Israel	54	
151461	51	_
Italy	53	
Italy Serbia and Montenegro	53 50	
Italy Serbia and Montenegro International average	53 50 49	▲ 0
Italy Serbia and Montenegro International average Romania	53 50 49 47	▲ 0
Italy Serbia and Montenegro International average Romania Cyprus	53 50 49 47 47	 0 0 0 0
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of	53 50 49 47 47 47 44	 0 0 0 0 0
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of	53 50 49 47 47 44 44 42	▲ 0 0 0 0
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia	53 50 49 47 47 47 44 42 39	▲ 0 0 0 0 0
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia	53 50 49 47 47 44 42 39 38	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia	53 50 47 47 47 44 42 39 38 37	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines	53 50 49 47 47 44 42 39 38 37 36	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon	53 50 49 47 47 44 42 39 38 37 36 36 36	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile	53 50 49 47 47 44 42 39 38 37 36 36 36 36	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco	53 50 49 47 47 44 42 39 38 37 36 36 36 36 33	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain	53 50 49 47 47 44 42 39 38 37 36 36 36 36 36 33 31	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of	53 50 47 47 44 42 39 38 37 36 36 36 36 33 31 29	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan	53 50 47 47 44 42 39 38 37 36 36 36 36 33 31 29 28	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt	53 50 47 47 44 42 39 38 37 36 36 36 36 36 33 31 29 28 23	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt Saudi Arabia	53 50 49 47 44 42 39 38 37 36 36 36 36 36 33 31 29 28 23 23	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt Saudi Arabia Palestinian Nat'l Auth.	53 50 49 47 44 42 39 38 37 36 36 36 36 36 33 31 29 28 23 23 21	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt Saudi Arabia Palestinian Nat'l Auth. South Africa	53 50 49 47 47 44 42 39 38 37 36 36 36 36 33 31 29 28 23 23 23 21 20	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt Saudi Arabia Palestinian Nat'l Auth. South Africa Botswana	53 50 49 47 47 44 42 39 38 37 36 36 36 36 33 31 29 28 23 23 23 23 21 20 19	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt Saudi Arabia Palestinian Nat'I Auth. South Africa Botswana Ghana	53 50 49 47 47 44 42 39 38 37 36 36 36 36 33 31 29 28 23 23 23 21 20 19 18	
Italy Serbia and Montenegro International average Romania Cyprus Moldova, Republic of Macedonia, Republic of Armenia Indonesia Tunisia Philippines Lebanon Chile Morocco Bahrain Iran, Islamic Republic of Jordan Egypt Saudi Arabia Palestinian Nat'I Auth. South Africa Botswana Ghana	53 50 49 47 44 42 39 38 37 36 36 36 36 36 33 31 29 28 23 23 23 21 20 19 18	

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

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

The teachers plan to send 6 newsletters per year

The teachers at Parkway School plan to send 6 newsletters per year to each of the 620 families with children at the school. The newsletters each need 2 sheets of paper. The paper is sold in packs of 500 sheets.

What is the least number of packs of paper needed to print the school newsletter for the year?

Answer: _____

Item Number: M032652

SCORING

Correct Response

• 15

Incorrect Response

- 14 or 14.88
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

Armenia	60	
Netherlands	57	
Singapore	57	
Hong Kong, SAR	53	
Belgium (Flemish)	46	
Japan	44	
Chinese Taipei	44	
Korea, Republic of	43	
United States	36	
Hungary	35	
Slovak Republic	33	
Scotland	32	
Estonia	32	
Sweden	30	
New Zealand	29	
Russian Federation	29	
Lithuania	29	
Australia	28	
England	27	0
Slovenia	24	0
Latvia	22	0
International average	21	
Italy	21	0
D .	20	0
Bulgaria	20	0
Israel	20 20	0
Bulgaria Israel Norway	20 20 20	0 0
Bulgaria Israel Norway Cyprus	20 20 20 18	0 0 V
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Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of	20 20 18 14 13 11 10	0 0 V V V
Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia	20 20 18 14 13 11 10 8	0 0 • • •
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Israel Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain	20 20 18 14 13 11 10 8 8 4 4 3 3 3 3 3 3 3	
Israel Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain Egypt	20 20 18 14 13 11 10 8 8 4 4 3 3 3 3 3 3 3 3 3	
Buigaria Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain Egypt Palestinian Nat'l Auth.	20 20 18 14 13 11 10 8 8 4 4 3 3 3 3 3 3 2	
Buigaria Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain Egypt Palestinian Nat'l Auth. Morocco	20 20 18 14 13 11 10 8 8 4 4 3 3 3 3 3 3 2 1	
Buigaria Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain Egypt Palestinian Nat'l Auth. Morocco Botswana	20 20 18 14 13 11 10 8 8 4 4 3 3 3 3 3 3 2 1 0	
Buigaria Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain Egypt Palestinian Nat'l Auth. Morocco Botswana Ghana	20 20 20 18 14 13 11 10 8 8 8 4 4 3 3 3 3 3 3 3 2 1 0 0	
Buigaria Israel Norway Cyprus Romania Serbia and Montenegro Macedonia, Republic of Moldova, Republic of Malaysia Chile Tunisia Jordan Lebanon Philippines Indonesia South Africa Iran, Islamic Republic of Bahrain Egypt Palestinian Nat'l Auth. Morocco Botswana Ghana Saudi Arabia	20 20 20 18 14 13 11 10 8 8 4 4 3 3 3 3 3 3 2 1 0 0 0	

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

The teachers plan to send 6 newsletters per year (continued) *Item Number: M032652*

Student Responses

Correct Response:

The teachers at Parkway School plan to send 6 newsletters per year to each of the 620 families with children at the school. The newsletters each need 2 sheets of paper. The paper is sold in packs of 500 sheets.

What is the least number of packs of paper needed to print the school newsletter for the year?



Incorrect Response:

The teachers at Parkway School plan to send 6 newsletters per year to each of the 620 families with children at the school. The newsletters each need 2 sheets of paper. The paper is sold in packs of 500 sheets.

What is the least number of packs of paper needed to print the school newsletter for the year?

Answer: 3 parties of 300

620

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

Garden with 14 rows of 20 plants each

A garden has 14 rows. Each row has 20 plants. The gardener then plants 6 more rows with 20 plants in each row.

How many plants are now there altogether?

Answer: _____

Item Number: M032671

SCORING

Correct Response

400 or equivalent.

Incorrect Response

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

Singapore	91	
Netherlands	88	
Hong Kong, SAR	87	
Belgium (Flemish)	86	
Korea, Republic of	85	
Estonia	85	
Chinese Taipei	83	
Sweden	82	
Malaysia	81	
United States	78	
Latvia	78	
Russian Federation	78	
New Zealand	77	
Australia	76	
England	75	
Hungary	72	
Israel	72	
Lithuania	72	
Scotland	71	
Italy	71	
Slovenia	67	
Moldova Republic of	66	
Cyprus	66	
Romania	65	
Rulgaria	63	
Slovak Republic	63	0
lanan	61	0
Chile	61	0
Serbia and Montenegro	61	0
International average	61	0
Norway	60	0
Macedonia, Republic of	56	•
Indonesia	49	
Tunisia	48	•
Armenia	47	
Iran Islamic Republic of	44	
Lebanon	43	
lordan	43	
Bahrain	41	
Morocco	39	
Favot	36	
Philippines	35	
Palestinian Nat'l Auth	33	•
Botswana	28	.
Saudi Arabia	23	, in the second
South Africa	18	•
Ghana	11	•
		•

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

Garden with 14 rows of 20 plants each (continued) *Item Number: M032671*

Student Responses

Correct Response:

A garden has 14 rows. Each row has 20 plants. The gardener then plants 6 more rows with 20 plants in each row.

How many plants are now there altogether?

Answer: ____400__

Incorrect Response:

A garden has 14 rows. Each row has 20 plants. The gardener then plants 6 more rows with 20 plants in each row.

How many plants are now there altogether?

40 Answer: 100

Item Index 1999

N18

P16

R09

V02

Probability of drawing chip

Day/time in table at shown temperature

Time for pendulum to swing 20 times

Cheaper magazine subscription

Content Domain

Fractions and Number Sense

B08	Calories in portion of food from ratio
B09	Figure showing equivalent fractions
B10	Smallest decimal fraction
D09	Smallest simple fraction
D12	Estimate of point P on a number line
F07	Average speed from distance and time
F09	Number between two decimal fractions
F12	Fraction of a circle shaded
H08	Figure showing fraction of shaded square
H09	Sum closest to 691 + 208
J12	Division of fractions
J14	Division of decimals
J18	Distance between towns from map
L09	Length of building compared to car
L10	Two hundred six and nine-tenths
L18	Subtraction with three fractions
N11	Number of cars from rounded value
N14	List of equivalent fractions
N16	Number of marbles in bag
N17	Amount of paint left
N19	Shade in 3/8 of squares in grid
P13	Estimate of total cars in parking lot
P14	Estimate of distance from explosion
P15	Fraction of cherries in basket
P17	Write decimal as fraction
R07	Subtraction of decimals to 0.001
R08	Average weight of salt crystals
R13	Subtraction of 4-digit whole numbers
R14	How much money left if spent 5/8
R15	Money from total magazine sales
T02A	Number/fraction of 2 types of boxes
T02B	Number/fraction of 2 types of boxes
T04	Height of stack of paper from thickness
V01	Two possibilities for actual height
V03	Ratio of nitrate to total fertilizer

Algebra

B12	Equation representing relationship
D08	Value of x from equivalent ratios
D10	Equation to determine cost of cards
F11	Find 1/3 of number from relationship
H10	Equation from x/y table
H12	Symbolic linear equation of magazines
J17	Missing number in table
L12	Distance traveled by elevator

D	
Pad	e

Content Domain

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L17	Value of <i>x</i> in mathematical equation	48
N13	Value of expression substituting $x=3$	49
P09	Expression equivalent to $n \ge n \ge n$	50
P11	Equivalent expression: $k+k+k+k+k$	51
R10	Expression when a, b, c are real	52
R12	Operations on negative number	53
T01	Total club members: boys and girls	54
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V04C	Sequence of figures with circles	57
Meas	surement	
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J10	Area of path around garden	60
L13	Most paces to walk to end of hallway	61
N15	Angle closest to 45 degrees	62
P08	Ratio of width/perimeter in rectangle	63
P12	Length of string pulled straight	64
T03	Area of rectangle inside parallelogram	65
Geor	netry	
B11	Cube from folded 2-dimensional net	66
D07	Angles in symmetric polygon	67
J11	NOT true for all rectangles	68
J15	Two similar triangles	69
J16	Point on graph from coordinates	70
L16	Measure of angle in quadrilateral	71
N12	Position of point on number line	72
P10	Length of side from similar triangle	73
R11	Right triangles to cover rectangle	74
Data	Representation, Analysis and Probabili	ty
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F08	Likely result of fifth coin toss	76
H07	Barchart histogram of travel time	77
H11	Defective bulbs from random sample	78
J13	Interpretation of pictograph of houses	79
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Content Domain

Algebra

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M022002	Three consecutive even numbers	90
M022251	Total number of books three boys have	91
M032044	Carla paid x zeds for 3 cartons of juice	92
M012040	Find <i>n</i> from proportionality equation	93
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M012002	Objects balanced on scale	102
M032046	If y equals 3x plus 2	103
M012017	Number of matchsticks continuing pattern	104
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M032762	Phone plans: least expensive plan for Betty
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M032763	Phone plans: cost of plans for Frank
M032764	Phone plans: minutes talk by Darlene
M012006	Comparison of two average scores
M012014	Pie graph of crop distribution
M022252	Most likely sector on spinner
M032271	In a school there were 1200 students
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Content Domain



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M032678	The area of the rectangle ABCD	179

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Content Domain

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M022191	Number of men/women at meeting	184
M012027	Fraction of hour between two time points	185
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M022004	4/5 of books more than $2/3$	187
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