

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

250 ml bottles filled by 400 liters

The number of 250 milliliter bottles that can be filled from 400 liters of water is

- (A) 16
- (B) 160
- (C) 1,600
- (D) 16,000

Item Number: M022005

Correct Response:

C

Overall Percent Correct

Singapore	68	▲
Netherlands	59	▲
Belgium (Flemish)	55	▲
Sweden	54	▲
Malaysia	53	▲
Latvia	51	▲
Estonia	50	▲
Australia	49	▲
Lithuania	49	▲
Romania	48	▲
Hungary	48	▲
Hong Kong, SAR	47	▲
Russian Federation	46	▲
Slovak Republic	44	▲
Japan	44	▲
Moldova, Republic of	43	○
Italy	42	○
Norway	42	○
England	42	○
Armenia	42	○
New Zealand	41	○
Slovenia	41	○
Korea, Republic of	41	○
Chinese Taipei	41	○
Cyprus	41	○
Scotland	40	○
Bulgaria	39	○
International average	39	
Serbia and Montenegro	38	○
Israel	38	○
United States	33	▼
Philippines	32	▼
Indonesia	32	▼
South Africa	31	▼
Palestinian Nat'l Auth.	30	▼
Lebanon	30	▼
Chile	29	▼
Jordan	29	▼
Macedonia, Republic of	29	▼
Egypt	29	▼
Iran, Islamic Republic of	28	▼
Tunisia	27	▼
Bahrain	27	▼
Botswana	25	▼
Saudi Arabia	25	▼
Morocco	22	▼
Ghana	20	▼

Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

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

Which is least amount of time

Which of these is the LEAST amount of time?

- (A) 1 day
- (B) 20 hours
- (C) 1,800 minutes
- (D) 90,000 seconds

Item Number: M022188

Correct Response:

B

Overall Percent Correct

Chinese Taipei	66	▲
Korea, Republic of	63	▲
Hungary	63	▲
Singapore	60	▲
Belgium (Flemish)	59	▲
Japan	54	▲
Hong Kong, SAR	54	▲
Slovenia	54	▲
Slovak Republic	52	▲
Netherlands	52	▲
Latvia	51	▲
Armenia	50	▲
Serbia and Montenegro	49	▲
Estonia	48	▲
Macedonia, Republic of	48	▲
Russian Federation	47	▲
United States	47	▲
Malaysia	47	○
Moldova, Republic of	45	○
Italy	45	○
Bulgaria	44	○
Sweden	44	○
International average	43	○
Romania	43	○
Lithuania	42	○
Israel	41	○
Tunisia	41	○
Australia	41	○
Lebanon	40	○
Cyprus	39	▼
England	39	○
Norway	39	▼
Jordan	38	▼
Scotland	38	▼
Palestinian Nat'l Auth.	37	▼
New Zealand	36	▼
Egypt	36	▼
Chile	35	▼
Saudi Arabia	35	▼
Philippines	35	▼
Iran, Islamic Republic of	35	▼
South Africa	32	▼
Bahrain	32	▼
Morocco	32	▼
Ghana	27	▼
Indonesia	26	▼
Botswana	26	▼

Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

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

The unit used for a soccer field

Which of these units would usually be used for an area the size of a soccer field?

- (A) square centimeters
- (B) cubic centimeters
- (C) square meters
- (D) cubic meters

Item Number: M032699

Correct Response:

C

Overall Percent Correct

Estonia	90	▲
Sweden	89	▲
New Zealand	89	▲
Italy	88	▲
Singapore	88	▲
Hungary	88	▲
Australia	87	▲
Slovak Republic	87	▲
Chile	87	▲
Belgium (Flemish)	86	▲
Netherlands	86	▲
Latvia	86	▲
Romania	86	▲
Lithuania	84	▲
Serbia and Montenegro	84	▲
Bulgaria	84	▲
Russian Federation	83	▲
Hong Kong, SAR	82	▲
Chinese Taipei	82	▲
Japan	82	▲
England	82	▲
Moldova, Republic of	82	▲
Scotland	81	▲
Norway	80	▲
Malaysia	77	○
United States	76	○
Macedonia, Republic of	76	○
International average	75	
Korea, Republic of	74	○
Slovenia	74	○
Israel	73	○
Armenia	71	▼
Cyprus	69	▼
Tunisia	68	▼
Indonesia	66	▼
Bahrain	66	▼
Morocco	64	▼
Jordan	64	▼
Egypt	62	▼
Botswana	61	▼
Philippines	60	▼
Palestinian Nat'l Auth.	58	▼
Lebanon	56	▼
Saudi Arabia	55	▼
Iran, Islamic Republic of	52	▼
South Africa	52	▼
Ghana	35	▼

Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

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

Measure of the area of a triangle

Which of these could be the measure of the area of a triangle?

- (A) 2 cm
 (B) 3 m
 (C) 5 cm²
 (D) 8 m³

Item Number: M032732

Correct Response:

C

Overall Percent Correct

Japan	84	▲
Singapore	81	▲
Estonia	78	▲
Chinese Taipei	76	▲
Belgium (Flemish)	75	▲
Russian Federation	75	▲
Hong Kong, SAR	73	▲
Slovenia	71	▲
Sweden	70	▲
Netherlands	70	▲
Lithuania	70	▲
Korea, Republic of	69	▲
Hungary	68	▲
Slovak Republic	67	▲
Serbia and Montenegro	67	▲
Italy	67	▲
Malaysia	64	▲
Romania	62	▲
Latvia	61	▲
New Zealand	57	○
Moldova, Republic of	56	○
International average	55	○
Lebanon	55	○
Norway	54	○
Bulgaria	52	○
Macedonia, Republic of	52	○
Australia	52	○
Cyprus	52	○
England	51	○
Scotland	48	▼
Botswana	48	▼
United States	47	▼
Egypt	46	▼
Jordan	45	▼
Indonesia	44	▼
Armenia	44	▼
Israel	43	▼
Tunisia	43	▼
Palestinian Nat'l Auth.	42	▼
Bahrain	37	▼
Chile	36	▼
Ghana	34	▼
South Africa	34	▼
Saudi Arabia	32	▼
Morocco	30	▼
Philippines	27	▼
Iran, Islamic Republic of	22	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Knowing Facts and Procedures

Actual length of box from rounded measure

The length of a box is 9 cm to the nearest centimeter. Which of these could be the actual length of the box?

- (A) 10 cm
- (B) 9.9 cm
- (C) 9.6 cm
- (D) 8.6 cm

Item Number: M012003

Correct Response:

D

Overall Percent Correct

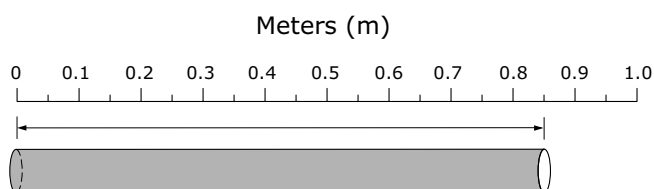
Korea, Republic of	90	▲
Hungary	89	▲
Netherlands	88	▲
Hong Kong, SAR	87	▲
Singapore	87	▲
Belgium (Flemish)	82	▲
Slovak Republic	81	▲
Chinese Taipei	80	▲
Sweden	80	▲
Scotland	76	▲
England	75	▲
Australia	73	▲
Russian Federation	73	▲
Latvia	70	▲
Estonia	67	▲
United States	67	▲
New Zealand	65	▲
Israel	64	▲
Japan	64	▲
Malaysia	62	▲
Norway	61	▲
Romania	58	▲
Serbia and Montenegro	55	▲
Slovenia	53	○
Italy	52	○
International average	50	
Armenia	45	▼
Macedonia, Republic of	42	▼
Moldova, Republic of	42	▼
Jordan	39	▼
Chile	38	▼
Cyprus	37	▼
Bahrain	33	▼
Palestinian Nat'l Auth.	33	▼
Egypt	30	▼
Indonesia	30	▼
Bulgaria	28	▼
Lebanon	23	▼
Philippines	23	▼
Lithuania	21	▼
Botswana	20	▼
Iran, Islamic Republic of	15	▼
Saudi Arabia	13	▼
South Africa	13	▼
Ghana	8	▼
Morocco	8	▼
Tunisia	7	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Knowing Facts and Procedures

Length of pipe from meter scale



What is the length of the pipe being measured?

- (A) 0.085 m
 (B) 0.805 m
 (C) 0.85 m
 (D) 8.5 m

Item Number: M012038

Correct Response:

C

Overall Percent Correct

Singapore	95	▲
Hong Kong, SAR	94	▲
Japan	93	▲
Estonia	91	▲
Chinese Taipei	90	▲
Korea, Republic of	89	▲
Netherlands	89	▲
Belgium (Flemish)	87	▲
Hungary	86	▲
Malaysia	86	▲
Sweden	86	▲
Latvia	83	▲
Russian Federation	82	▲
Lithuania	81	▲
Scotland	81	▲
England	80	▲
New Zealand	79	▲
Slovak Republic	79	▲
Slovenia	79	▲
Australia	78	▲
Italy	74	▲
Norway	74	▲
United States	73	▲
Bulgaria	72	▲
Israel	72	▲
Serbia and Montenegro	72	▲
Macedonia, Republic of	70	○
International average	67	
Lebanon	64	○
Moldova, Republic of	64	○
Romania	64	○
Botswana	61	▼
Cyprus	61	▼
Chile	58	▼
Armenia	54	▼
Indonesia	54	▼
Morocco	50	▼
Tunisia	49	▼
Iran, Islamic Republic of	48	▼
Philippines	42	▼
South Africa	40	▼
Ghana	39	▼
Jordan	38	▼
Palestinian Nat'l Auth.	34	▼
Bahrain	32	▼
Egypt	31	▼
Saudi Arabia	27	▼

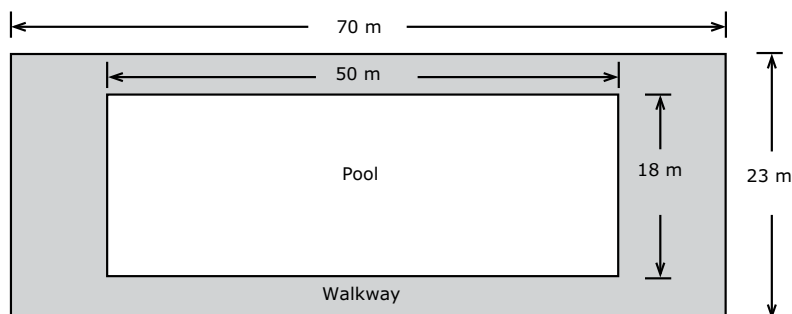
Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

Content Domain	Main Topic	Cognitive Domain
MEASUREMENT	Tools, Techniques, and Formulas	Knowing Facts and Procedures

Area of paved walkway around pool

A rectangular shaped swimming pool has a paved walkway around it as shown.



What is the area of the paved walkway?

- (A) 100 m^2
 (B) 161 m^2
 (C) 710 m^2
 (D) $1,610 \text{ m}^2$

Item Number: M022021

Correct Response:

C

Overall Percent Correct

Singapore	86	▲
Hong Kong, SAR	82	▲
Korea, Republic of	77	▲
Chinese Taipei	77	▲
Japan	76	▲
Malaysia	60	▲
Netherlands	57	▲
Estonia	53	▲
Belgium (Flemish)	51	▲
Slovak Republic	50	▲
Sweden	48	▲
Australia	46	▲
Italy	45	▲
New Zealand	44	○
Lithuania	43	▲
Hungary	43	▲
England	40	○
Slovenia	40	○
United States	40	○
Cyprus	39	○
Scotland	39	○
International average	38	
Serbia and Montenegro	38	○
Latvia	38	○
Bulgaria	38	○
Russian Federation	38	○
Israel	37	○
Egypt	33	▼
Moldova, Republic of	33	▼
Norway	32	▼
Romania	30	▼
Iran, Islamic Republic of	28	▼
Armenia	28	▼
Jordan	26	▼
Indonesia	25	▼
Bahrain	23	▼
Palestinian Nat'l Auth.	22	▼
Macedonia, Republic of	20	▼
Lebanon	19	▼
Chile	19	▼
Tunisia	18	▼
Morocco	18	▼
Saudi Arabia	17	▼
Botswana	16	▼
Philippines	16	▼
South Africa	16	▼
Ghana	13	▼

Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

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

Oranges are packed in boxes

Oranges are packed in boxes. The average diameter of the oranges is 6 cm, and the boxes are 60 cm long, 36 cm wide, and 24 cm deep.

Which of these is the BEST approximation of the number of oranges that can be packed in a box?

- (A) 30
 (B) 240
 (C) 360
 (D) 1,920

Item Number: M032647

Correct Response:

B

Overall Percent Correct

Japan	62	▲
Netherlands	61	▲
Sweden	57	▲
Singapore	57	▲
Belgium (Flemish)	56	▲
Australia	56	▲
England	55	▲
Korea, Republic of	55	▲
Chinese Taipei	55	▲
Hungary	55	▲
Latvia	54	▲
Scotland	53	▲
Russian Federation	53	▲
Estonia	53	▲
Hong Kong, SAR	51	▲
Slovenia	51	▲
Slovak Republic	51	▲
New Zealand	51	▲
Lithuania	50	▲
United States	50	▲
Norway	48	▲
Bulgaria	46	○
Italy	45	○
International average	44	
Serbia and Montenegro	43	○
Cyprus	42	○
Moldova, Republic of	42	○
Macedonia, Republic of	41	○
Chile	40	▼
Israel	39	▼
Botswana	37	▼
Malaysia	37	▼
Romania	36	▼
Morocco	35	▼
Philippines	35	▼
Lebanon	34	▼
Bahrain	32	▼
Egypt	32	▼
Tunisia	31	▼
Indonesia	31	▼
Iran, Islamic Republic of	31	▼
South Africa	31	▼
Armenia	31	▼
Jordan	29	▼
Ghana	29	▼
Palestinian Nat'l Auth.	28	▼
Saudi Arabia	28	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

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

Length of rectangle from width/perimeter

A thin wire 20 centimeters long is formed into a rectangle. If the width of this rectangle is 4 centimeters, what is its length?

- (A) 5 centimeters
 (B) 6 centimeters
 (C) 12 centimeters
 (D) 16 centimeters

Item Number: M012030

Correct Response:

B

Overall Percent Correct

Singapore	81	▲
Japan	65	▲
Chinese Taipei	62	▲
Hong Kong, SAR	62	▲
Korea, Republic of	62	▲
Netherlands	56	▲
Belgium (Flemish)	56	▲
Sweden	54	▲
Estonia	53	▲
Latvia	52	▲
Australia	50	▲
Russian Federation	47	▲
England	46	▲
Slovak Republic	45	▲
Serbia and Montenegro	45	▲
New Zealand	45	▲
Israel	44	▲
Bulgaria	43	▲
Romania	43	▲
Italy	42	▲
Malaysia	41	○
Norway	40	○
Moldova, Republic of	39	○
United States	39	○
Lithuania	38	○
International average	37	
Scotland	37	○
Hungary	37	○
Cyprus	36	○
Slovenia	33	▼
Armenia	31	▼
Iran, Islamic Republic of	28	▼
Macedonia, Republic of	27	▼
Chile	27	▼
Tunisia	26	▼
Lebanon	23	▼
Jordan	22	▼
Palestinian Nat'l Auth.	19	▼
Egypt	18	▼
Bahrain	18	▼
Botswana	17	▼
South Africa	16	▼
Saudi Arabia	14	▼
Morocco	14	▼
Philippines	14	▼
Indonesia	13	▼
Ghana	13	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

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

Time when finish homework

Kris begins her homework at 6:40. If it takes Kris three-quarters of an hour to do her homework, at what time will she finish?

Answer: _____

Item Number: M022148

SCORING**Correct Response**

- 7:25
- Other response equivalent to 7:25.

Incorrect Response

- 7:20
- 7:30
- 6:25
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

Overall Percent Correct

Netherlands	91	▲
Belgium (Flemish)	85	▲
Hungary	84	▲
England	80	▲
Sweden	78	▲
Singapore	78	▲
Scotland	76	▲
Australia	72	▲
Norway	71	▲
New Zealand	68	▲
Hong Kong, SAR	67	▲
Slovenia	67	▲
Italy	65	▲
Romania	63	▲
Japan	63	▲
Israel	63	▲
Slovak Republic	59	▲
Chinese Taipei	59	▲
Estonia	58	▲
Cyprus	58	▲
Korea, Republic of	57	▲
United States	55	▲
Malaysia	51	▲
Latvia	46	○
International average	45	
Lebanon	45	○
Moldova, Republic of	42	○
Russian Federation	41	○
Serbia and Montenegro	36	▼
Bulgaria	36	▼
Armenia	35	▼
Lithuania	34	▼
Chile	29	▼
Tunisia	20	▼
Egypt	20	▼
Jordan	19	▼
Macedonia, Republic of	18	▼
Indonesia	18	▼
Palestinian Nat'l Auth.	16	▼
Morocco	15	▼
Iran, Islamic Republic of	15	▼
Bahrain	14	▼
Botswana	11	▼
Saudi Arabia	9	▼
South Africa	8	▼
Philippines	8	▼
Ghana	4	▼

Country average vs. International average:

Higher	▲
Not different	○
Lower	▼

Time when finish homework (continued)

Item Number: M022148

Student Responses

Correct Response:

Kris begins her homework at 6:40. If it takes Kris three-quarters of an hour to do her homework, at what time will she finish?

Answer: 7:25

Incorrect Response:

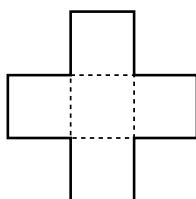
Kris begins her homework at 6:40. If it takes Kris three-quarters of an hour to do her homework, at what time will she finish?

Answer: 7:20

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

5 squares: area of one square

The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .



A. Find the area of one square.

Answer: _____ cm^2

B. Find the length of one side of one square.

Answer: _____ cm

C. Find the perimeter of the whole figure in centimeters.

Answer: _____ cm

Item Number: M02227A

SCORING

Correct Response

- 49

Incorrect Response

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

Overall Percent Correct

Singapore	89	▲
Hong Kong, SAR	88	▲
Korea, Republic of	87	▲
Japan	86	▲
Armenia	84	▲
Chinese Taipei	83	▲
Estonia	69	▲
Netherlands	69	▲
Russian Federation	68	▲
Belgium (Flemish)	67	▲
Slovenia	66	▲
Scotland	63	▲
United States	60	▲
Malaysia	60	▲
Hungary	60	▲
Bulgaria	59	▲
Romania	58	▲
Tunisia	57	▲
Moldova, Republic of	57	▲
Italy	57	▲
Slovak Republic	57	▲
Lithuania	57	▲
Australia	56	○
International average	51	
Lebanon	49	○
Sweden	48	○
England	47	○
Serbia and Montenegro	47	▼
Israel	47	▼
Egypt	46	▼
New Zealand	45	▼
Jordan	45	▼
Cyprus	43	▼
Macedonia, Republic of	41	▼
Iran, Islamic Republic of	38	▼
Bahrain	37	▼
Indonesia	33	▼
Philippines	32	▼
Norway	32	▼
Morocco	31	▼
Palestinian Nat'l Auth.	30	▼
Botswana	28	▼
Chile	24	▼
Saudi Arabia	15	▼
Ghana	10	▼
South Africa	8	▼
Latvia		

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

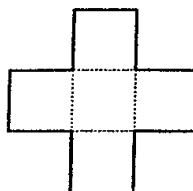
5 squares: area of one square (continued)

Item Number: M022227A

Student Responses

Correct Response:

18. The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .



$$\begin{array}{r} 49 \\ 245 \\ -20 \\ \hline 45 \end{array}$$

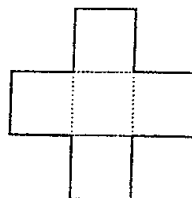
- a. Find the area of one square.

Answer: 49 cm^2

Incorrect Response:

55. The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .

$$\begin{array}{r} 245 \\ \div 5 \\ \hline 49 \end{array}$$



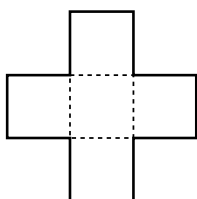
- a. Find the area of one square.

Answer: 7 cm^2

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

5 squares: length of one side

The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .



A. Find the area of one square.

Answer: _____ cm^2

B. Find the length of one side of one square.

Answer: _____ cm

C. Find the perimeter of the whole figure in centimeters.

Answer: _____ cm

Item Number: M022227B

SCORING

Correct Response

- 7 (or 49)
- Correct square root of incorrect answer to part a.

Incorrect Response

- 1 – only if the answer to part A is not 1.
- Indication of division of area of one square (as obtained in part a) by 4 (e.g., 12.25 , $49/4$, etc.).
- 24.5 or other indication of division by 2.
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

Overall Percent Correct

Singapore	80	▲
Hong Kong, SAR	78	▲
Korea, Republic of	70	▲
Chinese Taipei	65	▲
Armenia	62	▲
Romania	45	▲
Russian Federation	43	▲
Italy	43	▲
Japan	42	▲
Estonia	39	▲
Netherlands	38	▲
Belgium (Flemish)	37	▲
Serbia and Montenegro	36	▲
Moldova, Republic of	35	▲
Hungary	35	▲
Malaysia	34	▲
Lithuania	33	▲
Bulgaria	32	○
United States	29	○
Slovak Republic	29	○
Slovenia	29	○
International average	28	
Scotland	27	○
Australia	26	○
England	23	○
Sweden	23	▼
New Zealand	23	▼
Cyprus	21	▼
Israel	20	▼
Macedonia, Republic of	20	▼
Egypt	20	▼
Lebanon	18	▼
Latvia	17	▼
Jordan	16	▼
Palestinian Nat'l Auth.	16	▼
Indonesia	15	▼
Bahrain	14	▼
Norway	11	▼
Iran, Islamic Republic of	11	▼
Philippines	10	▼
Tunisia	9	▼
Morocco	8	▼
Saudi Arabia	8	▼
Chile	6	▼
Botswana	4	▼
South Africa	3	▼
Ghana	2	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

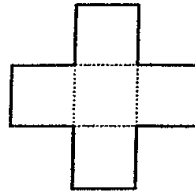
5 squares: length of one side (continued)

Item Number: M022227B

Student Responses

Correct Response:

18. The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .

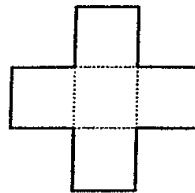


- b. Find the length of one side of one square.

Answer: 7 cm

Incorrect Response:

18. The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .



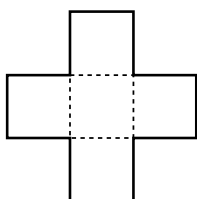
- b. Find the length of one side of one square.

Answer: 15 cm

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

5 squares: perimeter whole figure

The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .



A. Find the area of one square.

Answer: _____ cm^2

B. Find the length of one side of one square.

Answer: _____ cm

C. Find the perimeter of the whole figure in centimeters.

Answer: _____ cm

Item Number: M022227C

SCORING

Correct Response

- 84
- 12, on condition 1 was the response for part b.
- Other responses consistent with answer to part b, using multiplication by 12 (e.g., 147, 294, etc.).

Incorrect Response

- An answer that is 4 times the response to part b.
- Indication of multiplication by 12 but multiplication is incorrect.
- 245 [Confusion between area and perimeter].
- Other incorrect (including crossed out/erased, stray marks, illegible, or off task).

Overall Percent Correct

Singapore	72	▲
Hong Kong, SAR	58	▲
Korea, Republic of	53	▲
Chinese Taipei	51	▲
Japan	47	▲
Armenia	42	▲
Malaysia	38	▲
Netherlands	38	▲
Australia	30	▲
Scotland	27	▲
England	27	▲
Estonia	26	▲
Belgium (Flemish)	25	▲
Hungary	24	▲
Slovenia	24	▲
Slovak Republic	24	▲
New Zealand	23	○
Russian Federation	23	○
United States	23	○
Italy	22	○
Lithuania	22	○
Sweden	21	○

International average	20	
Serbia and Montenegro	18	○
Latvia	17	○
Cyprus	17	○
Norway	16	○
Moldova, Republic of	16	○
Romania	16	▼
Bulgaria	14	▼
Israel	12	▼
Macedonia, Republic of	8	▼
Tunisia	7	▼
Indonesia	5	▼
Chile	5	▼
Egypt	5	▼
Jordan	5	▼
Bahrain	4	▼
Palestinian Nat'l Auth.	4	▼
Botswana	3	▼
Lebanon	3	▼
Morocco	2	▼
Iran, Islamic Republic of	2	▼
South Africa	2	▼
Philippines	2	▼
Saudi Arabia	2	▼
Ghana	1	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

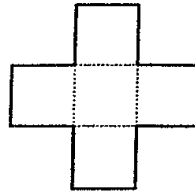
5 squares: perimeter whole figure (continued)

Item Number: M022227C

Student Responses

Correct Response:

18. The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .

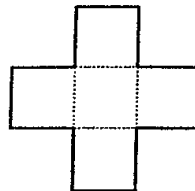


- c. Find the perimeter of the whole figure in centimeters.

Answer: 84 cm

Incorrect Response:

18. The figure consists of 5 squares of equal area. The area of the whole figure is 245 cm^2 .



- c. Find the perimeter of the whole figure in centimeters.

Answer: 49 cm

Content Domain	Main Topic	Cognitive Domain
A. MEASUREMENT B. MEASUREMENT	Tools, Techniques, and Formulas Tools, Techniques, and Formulas	Solving Routine Problems Reasoning

Car rally: average speed

In a car rally two checkpoints are 160 km apart. Drivers must travel from one checkpoint to the other in exactly 2.5 hours to earn maximum points.

A. What must the average speed be to travel the 160 km in this time?

Answer: _____

B. A driver took 1 hour to travel through a 40 km hilly section at the beginning of the course.

What must the average speed, in kilometers per hour, be for the remaining 120 km if the total time between checkpoints is to be 2.5 hours?

Answer: _____

Item Number: M032649A

SCORING

Correct Response

- 64 kph or 64 or equivalent.

Incorrect Response

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

Overall Percent Correct

Singapore	78	▲
Hong Kong, SAR	76	▲
Netherlands	70	▲
Russian Federation	67	▲
Armenia	65	▲
Estonia	64	▲
Chinese Taipei	59	▲
Japan	59	▲
Hungary	59	▲
Lithuania	56	▲
United States	55	▲
Belgium (Flemish)	54	▲
Latvia	50	▲
Slovak Republic	49	▲
Sweden	45	▲
Korea, Republic of	43	▲
Scotland	43	▲
Italy	42	▲
Moldova, Republic of	38	○
England	37	○
Norway	37	○
Australia	36	○
Israel	36	○
New Zealand	35	○
International average	35	
Serbia and Montenegro	34	○
Slovenia	33	○
Malaysia	29	▼
Romania	29	▼
Bulgaria	28	▼
Tunisia	27	▼
Macedonia, Republic of	26	▼
Jordan	24	▼
Indonesia	22	▼
Botswana	21	▼
Palestinian Nat'l Auth.	18	▼
Cyprus	16	▼
Lebanon	15	▼
Chile	15	▼
Philippines	14	▼
Bahrain	12	▼
Iran, Islamic Republic of	8	▼
Egypt	7	▼
South Africa	7	▼
Morocco	6	▼
Saudi Arabia	2	▼
Ghana	2	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

Car rally: average speed (continued)

Item Number: M032649A

Student Responses

Correct Response:

In a car rally two checkpoints are 160 km apart. Drivers must travel from one checkpoint to the other in exactly 2.5 hours to earn maximum points.

A. What must the average speed be to travel the 160 km in this time?

Answer: 64 km

Incorrect Response:

In a car rally two checkpoints are 160 km apart. Drivers must travel from one checkpoint to the other in exactly 2.5 hours to earn maximum points.

A. What must the average speed be to travel the 160 km in this time?

Answer: 32

Content Domain	Main Topic	Cognitive Domain
A. MEASUREMENT B. MEASUREMENT	Tools, Techniques, and Formulas Tools, Techniques, and Formulas	Solving Routine Problems Reasoning

Car rally: average speed for one section

In a car rally two checkpoints are 160 km apart. Drivers must travel from one checkpoint to the other in exactly 2.5 hours to earn maximum points.

A. What must the average speed be to travel the 160 km in this time?

Answer: _____

B. A driver took 1 hour to travel through a 40 km hilly section at the beginning of the course.

What must the average speed, in kilometers per hour, be for the remaining 120 km if the total time between checkpoints is to be 2.5 hours?

Answer: _____

Item Number: M032649B

SCORING

Correct Response

- 80 kph or 80

Incorrect Response

- 5, 2, 120 or 48 shown.
- Other incorrect (including crossed out/erased, stray marks, illegible or off task).

Overall Percent Correct

Armenia	54	▲
Singapore	52	▲
Netherlands	50	▲
Hong Kong, SAR	47	▲
Chinese Taipei	39	▲
Estonia	35	▲
Russian Federation	34	▲
Hungary	33	▲
Japan	33	▲
Belgium (Flemish)	30	▲
Sweden	28	▲
Lithuania	27	▲
Korea, Republic of	27	▲
Latvia	24	▲
United States	24	▲
Scotland	23	▲
England	22	○
Australia	22	○
Slovak Republic	21	○
New Zealand	19	○
Norway	19	○
International average	18	
Israel	17	○
Moldova, Republic of	17	○
Bulgaria	17	○
Slovenia	16	○
Italy	15	○
Romania	13	▼
Serbia and Montenegro	10	▼
Macedonia, Republic of	8	▼
Malaysia	7	▼
Cyprus	6	▼
Jordan	6	▼
Iran, Islamic Republic of	5	▼
Tunisia	5	▼
Chile	5	▼
Egypt	4	▼
Botswana	4	▼
Bahrain	4	▼
Indonesia	4	▼
Palestinian Nat'l Auth.	4	▼
South Africa	3	▼
Lebanon	2	▼
Philippines	2	▼
Saudi Arabia	2	▼
Ghana	1	▼
Morocco	1	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

Car rally: average speed for one section (continued)

Item Number: M032649B

Student Responses

Correct Response:

In a car rally two checkpoints are 160 km apart. Drivers must travel from one checkpoint to the other in exactly 2.5 hours to earn maximum points.

- B. A driver took 1 hour to travel through a 40 km hilly section at the beginning of the course.

What must the average speed, in kilometers per hour, be for the remaining 120 km if the total time between checkpoints is to be 2.5 hours?

Answer: 80 km

Incorrect Response:

In a car rally two checkpoints are 160 km apart. Drivers must travel from one checkpoint to the other in exactly 2.5 hours to earn maximum points.

- B. A driver took 1 hour to travel through a 40 km hilly section at the beginning of the course.

What must the average speed, in kilometers per hour, be for the remaining 120 km if the total time between checkpoints is to be 2.5 hours?

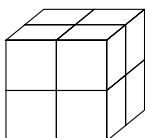
Answer: 3 kilometers

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

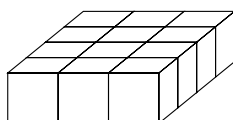
Volumes of stacks of blocks

All the small blocks are the same size. Which stack of blocks has a different volume from the others?

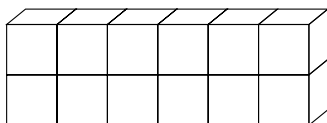
(A)



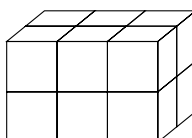
(B)



(C)



(D)



Item Number: M012013

Correct Response:

A

Overall Percent Correct

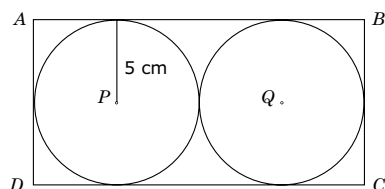
Korea, Republic of	88	▲
Singapore	86	▲
Hong Kong, SAR	83	▲
Japan	81	▲
Chinese Taipei	81	▲
Netherlands	78	▲
Australia	73	▲
Estonia	69	▲
Slovak Republic	68	▲
Belgium (Flemish)	67	▲
Scotland	67	▲
Lithuania	66	▲
Latvia	64	▲
Malaysia	62	▲
Slovenia	62	▲
New Zealand	60	▲
Hungary	58	▲
England	58	▲
Russian Federation	57	▲
Norway	56	▲
Italy	55	▲
United States	50	○
International average	50	
Sweden	50	○
Israel	49	○
Bulgaria	48	○
Moldova, Republic of	48	○
Romania	46	○
Serbia and Montenegro	45	▼
Armenia	42	▼
Cyprus	42	▼
Bahrain	41	▼
Philippines	35	▼
Lebanon	34	▼
Macedonia, Republic of	33	▼
Saudi Arabia	32	▼
Indonesia	32	▼
Palestinian Nat'l Auth.	30	▼
Jordan	29	▼
Chile	27	▼
Morocco	26	▼
Botswana	26	▼
Tunisia	26	▼
Iran, Islamic Republic of	26	▼
Egypt	24	▼
South Africa	22	▼
Ghana	20	▼

Country average vs.
International average:

Higher	▲
Not different	○
Lower	▼

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

The area of the rectangle $ABCD$



In the figure above, $ABCD$ is a rectangle, and circles P and Q each have a radius of 5 cm. What is the area of the rectangle?

- (A) 50 cm^2
 (B) 60 cm^2
 (C) 100 cm^2
 (D) 200 cm^2

Item Number: M032678

Correct Response:

D

Overall Percent Correct

Singapore	82	▲
Hong Kong, SAR	82	▲
Korea, Republic of	75	▲
Chinese Taipei	74	▲
Japan	73	▲
Netherlands	65	▲
Belgium (Flemish)	61	▲
Estonia	53	▲
Russian Federation	51	▲
Italy	51	▲
Slovak Republic	51	▲
Hungary	48	▲
Malaysia	48	▲
Latvia	46	▲
Lithuania	45	▲
Sweden	45	▲
Scotland	44	▲
England	43	○
Serbia and Montenegro	43	○
Australia	42	○
New Zealand	41	○
Slovenia	41	○
Romania	39	○
International average	39	
United States	39	○
Bulgaria	38	○
Cyprus	37	○
Armenia	36	○
Lebanon	35	○
Norway	35	▼
Israel	34	▼
Moldova, Republic of	33	▼
Tunisia	30	▼
Macedonia, Republic of	30	▼
Iran, Islamic Republic of	27	▼
Jordan	25	▼
Indonesia	24	▼
Egypt	21	▼
Bahrain	20	▼
Morocco	19	▼
Palestinian Nat'l Auth.	18	▼
Chile	18	▼
Botswana	16	▼
Philippines	15	▼
Ghana	10	▼
South Africa	10	▼
Saudi Arabia	10	▼

Country average vs. International average:

Higher	▲
Not different	○
Lower	▼