

11+ Maths Practice Paper

Year 5 · Intermediate

Lesson 6.4: Surface area and volume

Read this with your child:

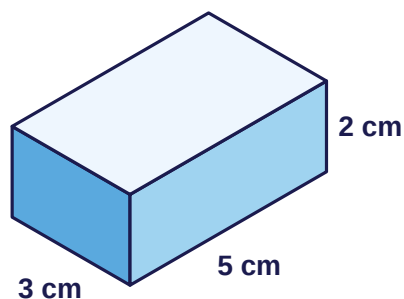
1. This paper has **24 questions** in two parts. Work through them in order. The questions get harder as you go.
2. **Part 1** is multiple choice. Choose **one** answer, A, B, C, D or E, and mark it on the separate answer sheet by drawing a firm line through the box next to its letter. If you change your mind, rub the line out completely and mark your new answer.
3. **Part 2** asks you to write your answer. Write it in the boxes on the answer sheet, **one digit in each box**, starting from the left.
4. If a question is hard, leave it and come back to it at the end.
5. You may use rough paper for working out. You may **not** use a calculator.
6. Suggested time: **30 minutes**.

The answer sheet is after the questions. The answers, with a short explanation of each, are at the back for a parent to mark with.

These are original practice questions written by Elite Learners in the style of 11+ entrance tests. They are not produced by, or connected with, GL Assessment or Cambridge University Press & Assessment (CEM).

Example

What is the volume of this cuboid?



- A** 30 cm^3 **B** 10 cm^3 **C** 15 cm^3 **D** 62 cm^3 **E** 36 cm^3

Answer: A Length $\times$ width $\times$ height: $5 \times 3 \times 2 = 30 \text{ cm}^3$.

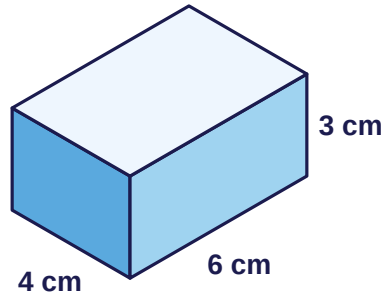
The answer, A, has already been marked on your answer sheet.

Now turn over and start Part 1.

Part 1: Multiple choice

1

What is the volume of this cuboid?

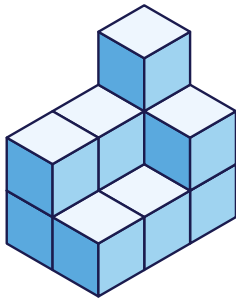


- A** 13 cm^3 **B** 24 cm^3 **C** 108 cm^3 **D** 48 cm^3 **E** 72 cm^3

2

The cubes stand on a table. Cubes cannot float, so there may be cubes hidden underneath.

How many cubes make this shape?

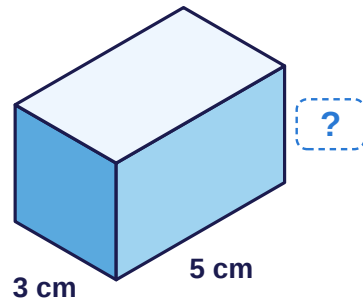


- A** 8 **B** 9 **C** 12 **D** 11 **E** 10

3

This cuboid has a volume of 45 cm^3 .

How high is it?



- A** 9 cm **B** 15 cm **C** 37 cm **D** 5 cm **E** 3 cm

4

A cube has edges 4 cm long.

What is its volume?

- A** 12 cm^3 **B** 64 cm^3 **C** 16 cm^3 **D** 96 cm^3 **E** 48 cm^3

5

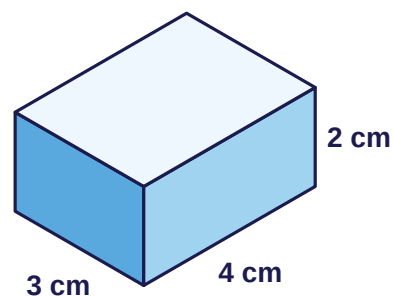
A cube has edges 3 cm long.

What is its surface area?

- A** 54 cm^2 **B** 27 cm^2 **C** 9 cm^2 **D** 36 cm^2 **E** 18 cm^2

6

What is the surface area of this cuboid?



- A** 26 cm^2 **B** 24 cm^2 **C** 52 cm^2 **D** 48 cm^2 **E** 9 cm^2

7

Which unit is used for the surface area of a box?

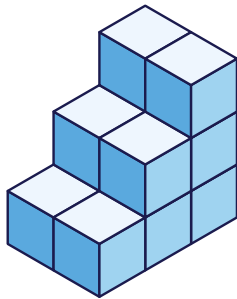
- A cm^3 B cm^2 C cm D g E ml

8

The cubes stand on a table. Cubes cannot float, so there may be cubes hidden underneath.

More cubes are added to make this shape into a cuboid 3 cubes long, 2 cubes wide and 3 cubes high.

How many more cubes are needed?



- A 12 B 6 C 18 D 9 E 3

9

A cube has a volume of 125 cm^3 .

How long is each edge?

- A 5 cm B 25 cm C 41 cm D 15 cm E 6 cm

10

A cuboid has a volume of 60 cm^3 . It is 5 cm long and 4 cm wide.

How high is it?

- A 12 cm B 15 cm C 3 cm D 51 cm E 6 cm

11

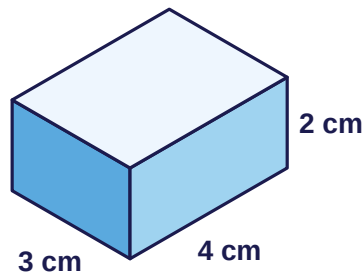
150 cm^3 of water is poured into a tank 10 cm long and 5 cm wide.

How deep is the water?

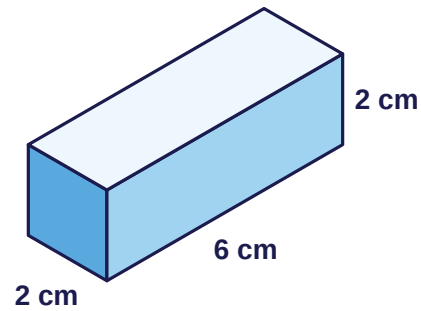
- A 3 cm B 15 cm C 30 cm D 10 cm E 5 cm

12

Which of these is true?



Shape A

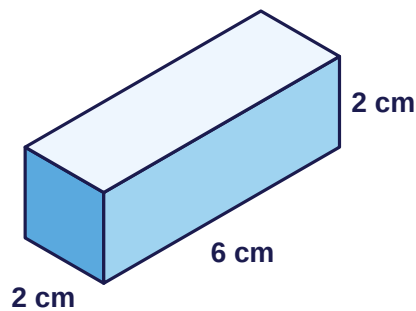


Shape B

- A** Shape A has the bigger volume
- B** Shape B has the bigger volume
- C** Shape A has twice the volume of B
- D** They have the same volume
- E** They have the same surface area

13

What is the surface area of this cuboid?



- A** 24 cm^2
- B** 28 cm^2
- C** 56 cm^2
- D** 52 cm^2
- E** 48 cm^2

14

A box is 8 cm long, 4 cm wide and 4 cm high.

How many 2 cm cubes fit inside it?

- A** 128
- B** 16
- C** 8
- D** 64
- E** 32

15

A big cube is made of 27 small cubes, 3 along each edge. It is dipped in paint.

How many small cubes have exactly 3 painted faces?

A 8

B 12

C 6

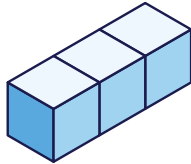
D 1

E 27

16

Three 1 cm cubes are joined in a row.

What is the surface area of the row?



A 18 cm^2

B 16 cm^2

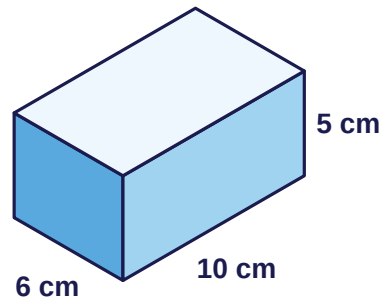
C 14 cm^2

D 12 cm^2

E 3 cm^2

17

What is the volume of this cuboid?



A 21 cm^3

B 60 cm^3

C 280 cm^3

D 300 cm^3

E 150 cm^3

18

A cube has a surface area of 24 cm^2 .

How long is each edge?

A 4 cm

B 6 cm

C 8 cm

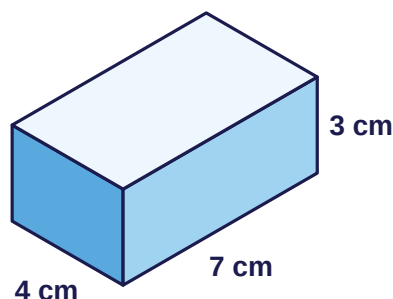
D 3 cm

E 2 cm

Part 2: Write your answer

19

What is the volume of this cuboid, in cm^3 ?



Write your answer in the boxes on the answer sheet, one digit in each box.

20

A cube has edges 5 cm long.

What is its surface area, in cm^2 ?

Write your answer in the boxes on the answer sheet, one digit in each box.

21

A box has a volume of 96 cm^3 . It is 8 cm long and 3 cm high.

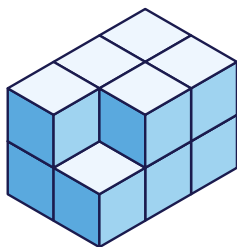
How wide is it, in cm?

Write your answer in the boxes on the answer sheet, one digit in each box.

22

The cubes stand on a table. Cubes cannot float, so there may be cubes hidden underneath.

How many cubes make this shape?



Write your answer in the boxes on the answer sheet, one digit in each box.

23

A big cube is made of 27 small cubes, 3 along each edge. It is dipped in paint.

How many small cubes have exactly 2 painted faces?

Write your answer in the boxes on the answer sheet, one digit in each box.

24

1000 cm³ of water is poured into a tank 20 cm long and 10 cm wide.

How deep is the water, in cm?

Write your answer in the boxes on the answer sheet, one digit in each box.

Answer sheet

11+ Maths Practice Paper · Year 5 · Lesson 6.4: Surface area and volume

Name

Draw a firm line through the box next to your answer, like the example.

Part 1: Multiple choice

Ex	A ☒	B ☐	C ☐	D ☐	E ☐
1	A ☐	B ☐	C ☐	D ☐	E ☐
2	A ☐	B ☐	C ☐	D ☐	E ☐
3	A ☐	B ☐	C ☐	D ☐	E ☐
4	A ☐	B ☐	C ☐	D ☐	E ☐
5	A ☐	B ☐	C ☐	D ☐	E ☐
6	A ☐	B ☐	C ☐	D ☐	E ☐
7	A ☐	B ☐	C ☐	D ☐	E ☐
8	A ☐	B ☐	C ☐	D ☐	E ☐
9	A ☐	B ☐	C ☐	D ☐	E ☐
10	A ☐	B ☐	C ☐	D ☐	E ☐
11	A ☐	B ☐	C ☐	D ☐	E ☐
12	A ☐	B ☐	C ☐	D ☐	E ☐
13	A ☐	B ☐	C ☐	D ☐	E ☐
14	A ☐	B ☐	C ☐	D ☐	E ☐
15	A ☐	B ☐	C ☐	D ☐	E ☐
16	A ☐	B ☐	C ☐	D ☐	E ☐
17	A ☐	B ☐	C ☐	D ☐	E ☐
18	A ☐	B ☐	C ☐	D ☐	E ☐

Part 2: Write your answer, one digit in each box

19		22	
20		23	
21		24	

Answers

For a parent to mark with. One mark for each question: the paper is out of 24. Talk through any your child got wrong, using the explanation.

Q	Answer	How to get it
1	E 72 cm ³	$6 \times 4 = 24$ cubes in a layer, and 3 layers: $24 \times 3 = 72 \text{ cm}^3$.
2	D 11	Layer by layer: $6 + 4 + 1 = 11$. Only 8 of them can be seen.
3	E 3 cm	One layer is $5 \times 3 = 15$ cubes. $45 \div 15 = 3 \text{ cm}$.
4	B 64 cm ³	$4 \times 4 \times 4 = 64 \text{ cm}^3$.
5	A 54 cm ²	Each face is $3 \times 3 = 9 \text{ cm}^2$, and a cube has 6 faces: $6 \times 9 = 54 \text{ cm}^2$.
6	C 52 cm ²	The faces are $4 \times 2 = 8$, $4 \times 3 = 12$ and $3 \times 2 = 6$, each twice: $2 \times (8 + 12 + 6) = 52 \text{ cm}^2$.
7	B cm ²	A surface area is an area, so it is in square units: cm ² .
8	B 6	The cuboid holds $3 \times 2 \times 3 = 18$. The shape has 12. $18 - 12 = 6$.
9	A 5 cm	$5 \times 5 \times 5 = 125$, so each edge is 5 cm.
10	C 3 cm	One layer is $5 \times 4 = 20$ cubes. $60 \div 20 = 3 \text{ cm}$.
11	A 3 cm	One layer of water 1 cm deep is $10 \times 5 = 50 \text{ cm}^3$. $150 \div 50 = 3 \text{ cm}$.
12	D They have the same volume	A: $4 \times 3 \times 2 = 24 \text{ cm}^3$. B: $6 \times 2 \times 2 = 24 \text{ cm}^3$. The same.
13	C 56 cm ²	The faces are $6 \times 2 = 12$, $6 \times 2 = 12$ and $2 \times 2 = 4$, each twice: $2 \times (12 + 12 + 4) = 56 \text{ cm}^2$.
14	B 16	Along: $8 \div 2 = 4$. Across: $4 \div 2 = 2$. Up: $4 \div 2 = 2$. $4 \times 2 \times 2 = 16$ cubes.
15	A 8	Only the corner cubes have 3 painted faces, and a cube has 8 corners.
16	C 14 cm ²	3 cubes have $3 \times 6 = 18$ faces, but the 2 joins hide 4 of them: $18 - 4 = 14 \text{ cm}^2$.
17	D 300 cm ³	$10 \times 6 = 60$ cubes in a layer, and 5 layers: $60 \times 5 = 300 \text{ cm}^3$.
18	E 2 cm	One face is $24 \div 6 = 4 \text{ cm}^2$, and $2 \times 2 = 4$, so each edge is 2 cm.
19	84	$7 \times 4 = 28$, and $28 \times 3 = 84 \text{ cm}^3$.
20	150	Each face is $5 \times 5 = 25 \text{ cm}^2$, and there are 6 faces: $6 \times 25 = 150 \text{ cm}^2$.
21	4	Length $\times$ height: $8 \times 3 = 24$. $96 \div 24 = 4 \text{ cm}$.
22	11	Bottom layer 6, top layer 5 (all but the front left): $6 + 5 = 11$.
23	12	One on each of the 12 edges, between the corners: 12.
24	5	One layer 1 cm deep is $20 \times 10 = 200 \text{ cm}^3$. $1000 \div 200 = 5 \text{ cm}$.

Score: out of 24