1

[2016]
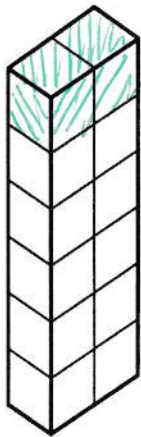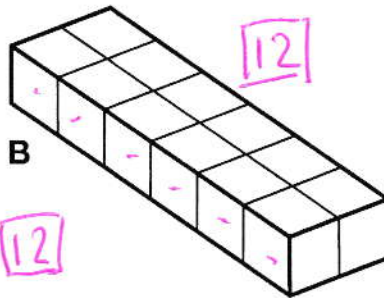
Emma makes a cuboid using 12 cubes.
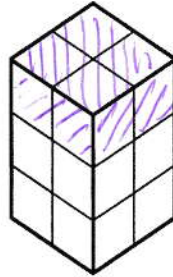
4 ON EACH LAYER
3 LAYERS
4 × 3 = 12

Write the letter of the cuboid that has a **different** volume from Emma's cuboid.

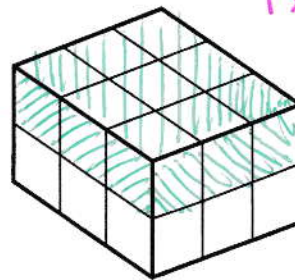*9 × 2 = 18*

2 × 6 = 12
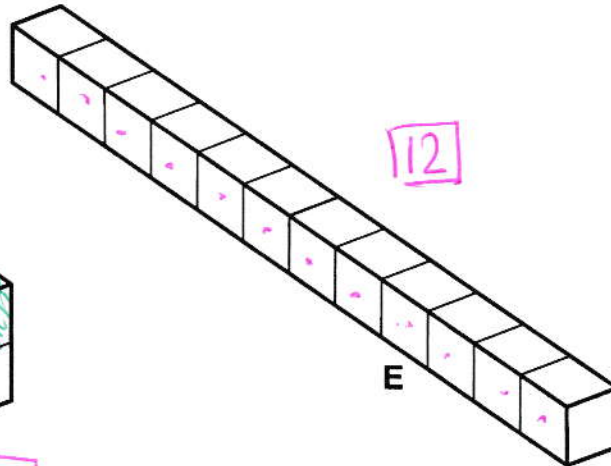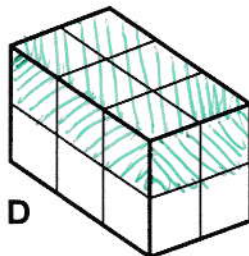
12

B

C

A

12

E

D

6 × 2 = 12

C

_____

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Questions compiled by:
@Maths4Everyone

[1 mark]

2

The squared paper shows the nets of cuboid A and cuboid B.

A   B

HEIGHT = 2

HEIGHT = 1

BASE
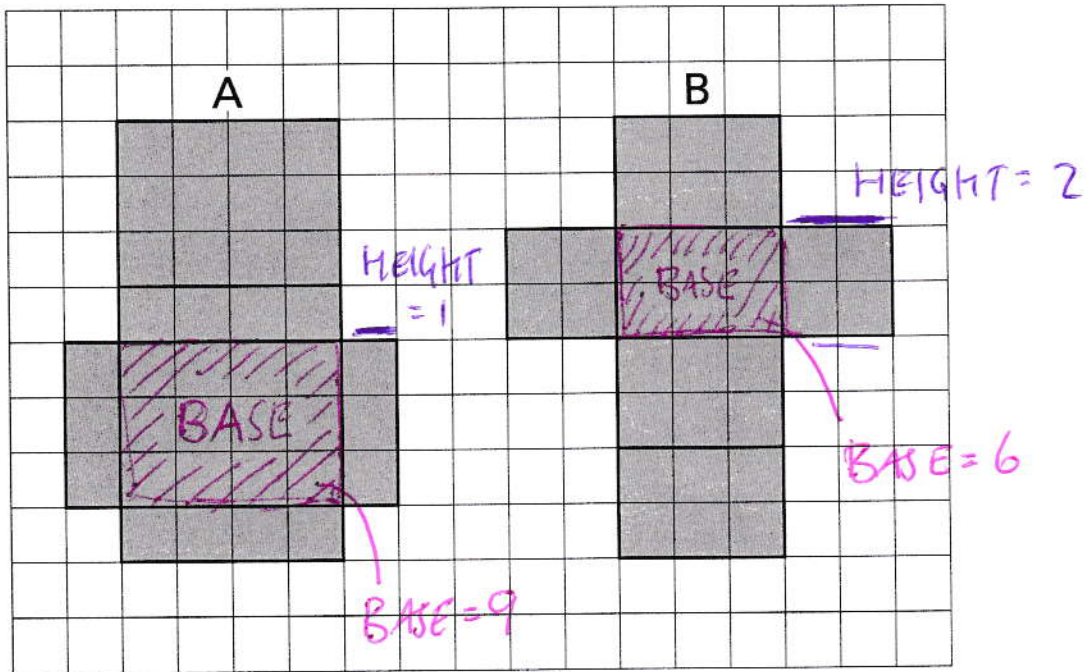
BASE

BASE = 6

BASE = 9

Calculate the volume of cuboid A.

BASE = 9
HEIGHT = 1   } 9 × 1 = 9

9 cm³

Calculate the volume of cuboid B.

BASE = 6
HEIGHT = 2   } 6 × 2 = 12

12 cm³

[2 marks]

3

[Extra]
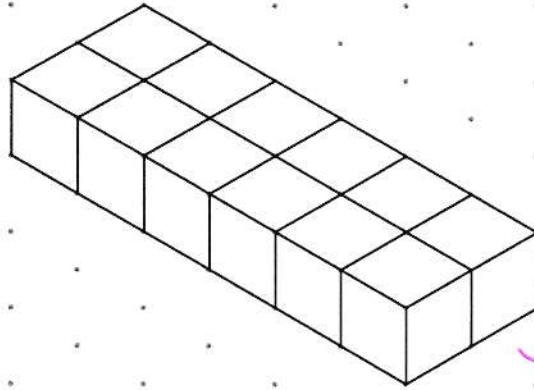
Look at the cuboid drawn on the grid.
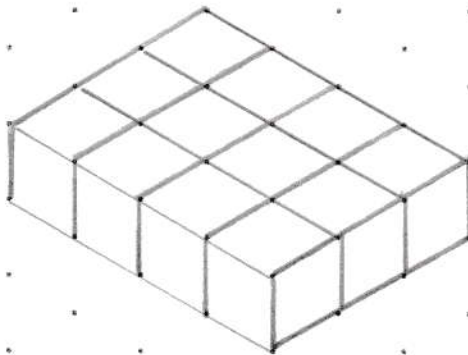
It is made from **12 cubes**.

BASE = 2 × 6

HEIGHT = 1

Isometric grid

On the grid below, draw a **different** cuboid made from 12 cubes.

BASE = 1 × 12
HEIGHT = 1

BASE = 3 × 4
HEIGHT = 1

BASE = 3 × 2
HEIGHT = 2

BASE = 6 × 1
HEIGHT = 2

ETC !

Isometric grid

[2 marks]

Here is a drawing of a cube on an isometric grid.

Draw a cuboid that has:

- the same volume
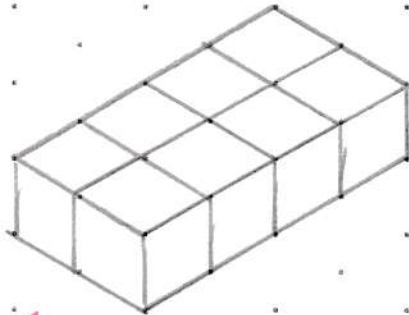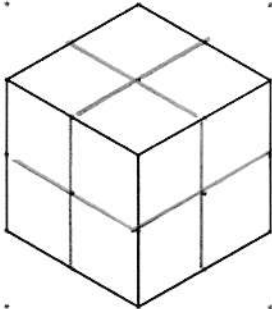
- half the height. ⟶ DOUBLE THE BASE !
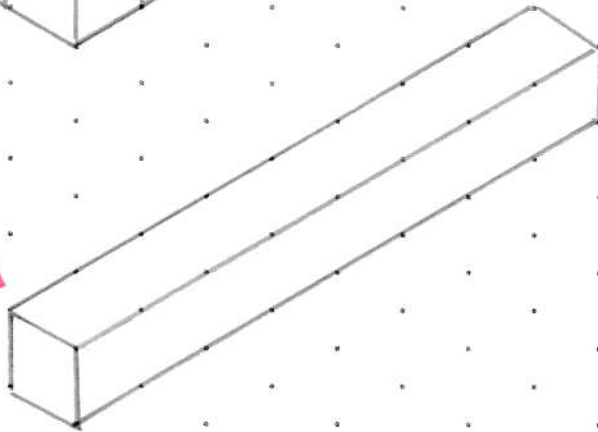
  ✗[HEIGHT → 1]   [4 CUBES ⟹ 8 CUBES]

[EITHER]

[2 marks]

5

You can make only six **different** cuboids with **24 cubes**.

Complete the table to show the dimensions.

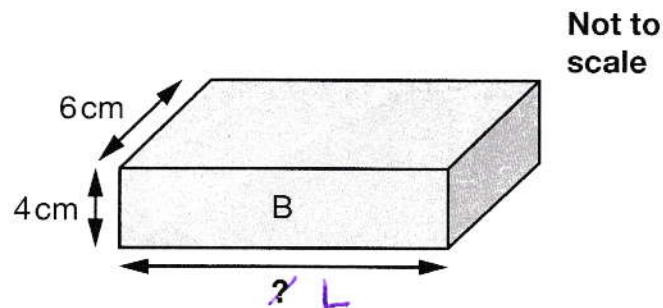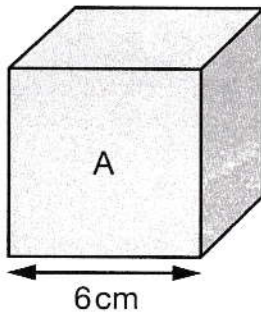|	Dimensions		
Cuboid **E**	1	1	24
Cuboid **F**	1	2	12
Cuboid **G**	1	3	8
Cuboid **H**	1	4	6
Cuboid **I**	2	2	6
Cuboid **J**	2	3	4

MUST MULTIPLY TO GIVE 24!

[1 x 2 x 12 COUNTS AS THE SAME AS 2 x 1 x 12]

[2 marks]

6

[2017]

Cube A and cuboid B have the same volume.

Not to scale

A
6cm

6cm

6cm
4cm
B
x L

Calculate the missing length on **cuboid B**.

Show your method

VOLUME OF A = 6 × 6 × 6

VOLUME OF B = 6 × 4 × L
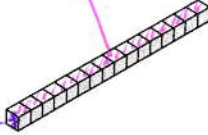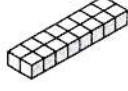
4 × L = 36 ⇒ L = 9

9 cm

[2 marks]

You can make only four different cuboids with **16 cubes**.

		Dimensions		
Cuboid **A**	*16×4* *1×2*	1	1	16
Cuboid **B**		1	2	8
Cuboid **C**		1	4	4
Cuboid **D**	*4×2* *8×4*	2	2	4

Which of the cuboids **A** and **D** has the **larger surface area**?

Tick (✓) the correct answer below.

Cuboid A   [✓]

Cuboid D   [ ]

Both the same   [ ]

YOU COULD SAY THAT "LONG FLAT" SHAPES HAVE LARGER SURFACE AREAS IF THE VOLUMES ARE THE SAME"!

Explain how you know.

> SURFACE AREA OF A = 16×4 = 64
>   ADD THE TWO ENDS (2)
>   = 66
>
> SURFACE AREA OF D = 8×4 = 32
>   ADD THE TWO ENDS (16)
>   = 48

[2 marks]

8 The cube and cuboid have **equal volumes**.

[Extra]

Ⓐ

Ⓑ

12cm

height
(H)

6cm

16cm

Not actual size
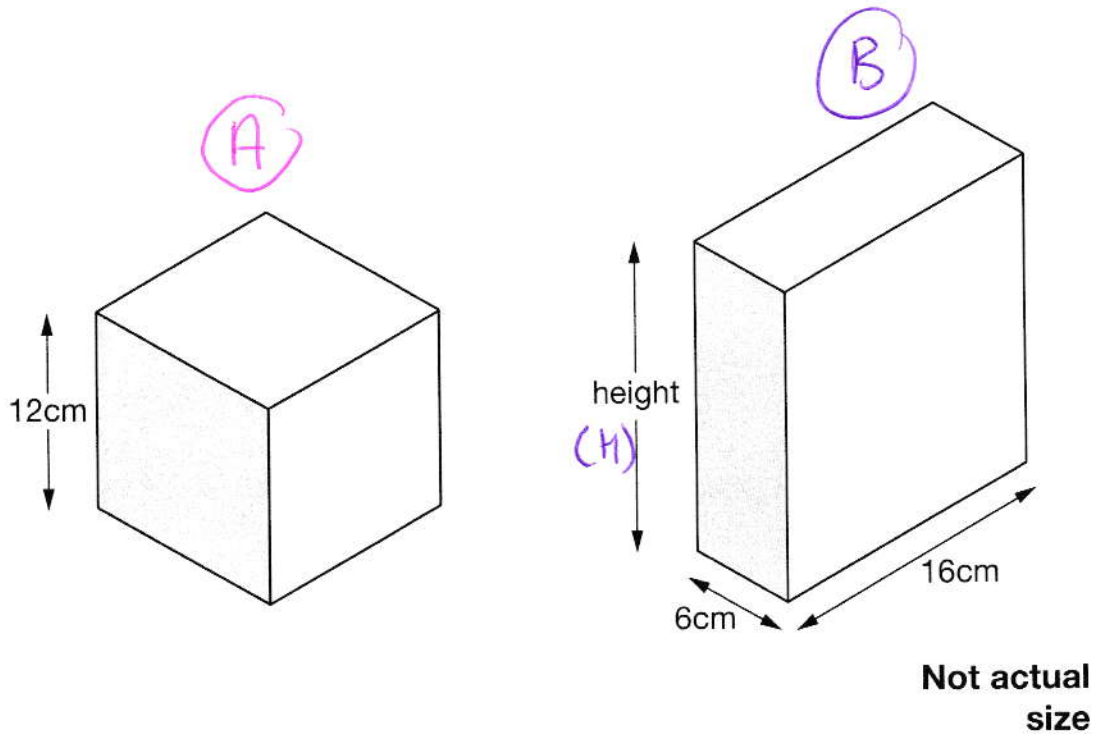
Calculate the height of the cuboid.

VOLUME OF A = 12 × 12 × 12

VOLUME OF B = 6 × (2 × 8) × H

[I WROTE 16 AS 2×8 SO I COULD CANCEL AND MAKE THE CALCULATION EASIER!]

$8 \times H = 12 \times 12$

$H = \dfrac{144}{8}$

$= \dfrac{72}{4}$

$= \dfrac{36}{2}$

$= \underline{\underline{18 \, cm}}$

18   cm

[2 marks]

9

Every second, 300cm³ of water comes out of a tap into a cuboid tank.
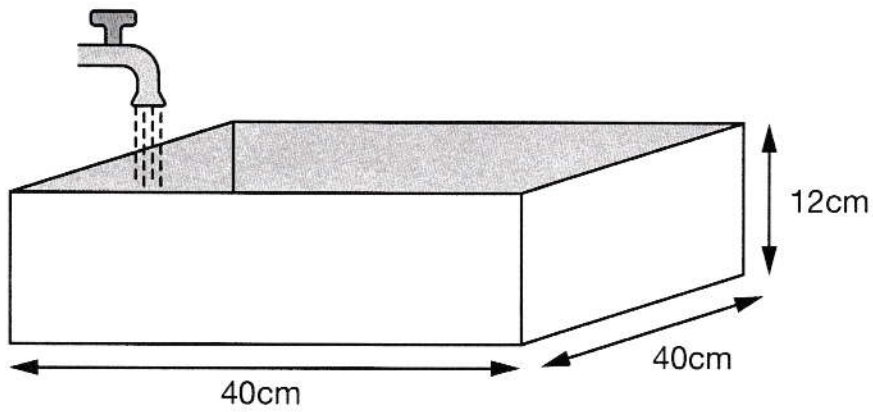
Not actual size

12cm

40cm

40cm

The base of the tank is **40cm** by **40cm**

The height is **12cm**

How many seconds does it take to fill the tank?

1ST $40 \times 40 \times 12 = 1600 \times 12$

2ND
$$
\begin{array}{r}
1600 \\
\times\ 12 \\
\hline
3200 \\
16000 \\
\hline
19200 \quad cm^3 \\
\hline
\end{array}
$$

3RD

$\dfrac{19200}{300}$ [OR DO $300\overline{)19200}$]

$= \dfrac{192}{3}$

$= \underline{64}$

| 6 4 | Seconds |

[2 marks]