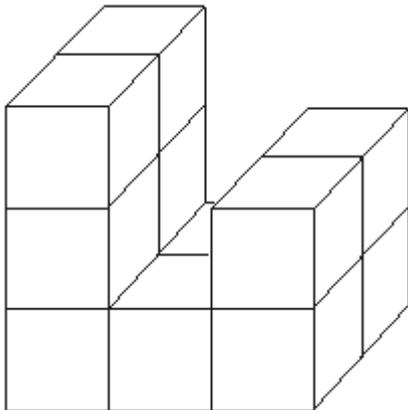


**Q1.** Here is a solid prism made from centimetre cubes.

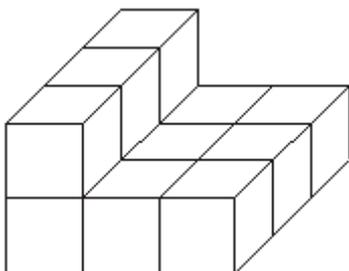


Work out the volume of the solid prism.

..... cm<sup>3</sup>

**(Total 2 marks)**

**Q2.** Here is a solid prism made from centimetre cubes.



Find the volume of the prism.

..... cm<sup>3</sup>

(Total 2 marks)

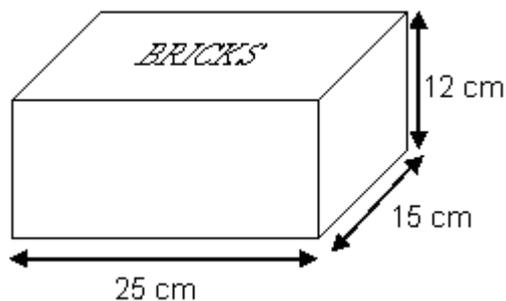
**Q3.**

A company makes building bricks for children.  
The bricks are all 5 cm cubes.

The bricks are going to be packed in boxes.

John designs a box for the bricks.  
The box is a cuboid.

The size of the box is 25 cm by 15 cm by 12 cm.



Will the box be big enough for 36 bricks?  
You must give reasons for your answer.

(Total 4 marks)

**Q4.** Here is a diagram of a cuboid.

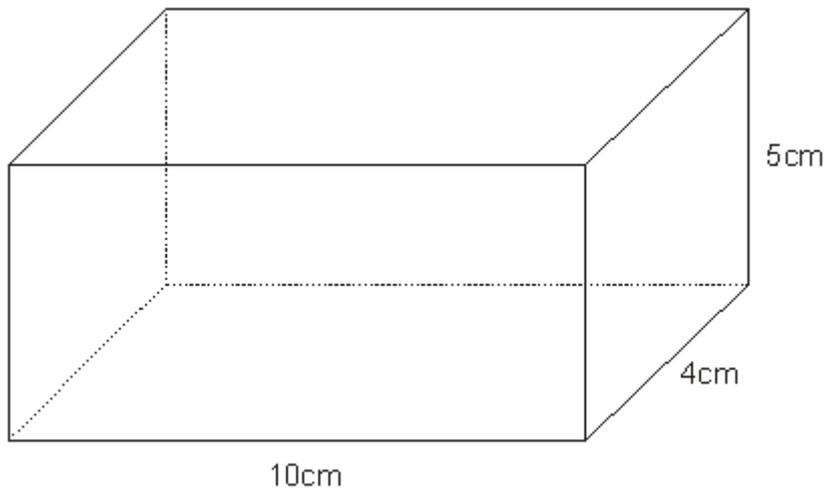


Diagram **NOT** accurately drawn

(a) Write down the number of edges of the cuboid.

.....

(1)

(b) Calculate the volume of the cuboid.

.....

(3)  
(Total 4 marks)

**Q5.** Jemilla goes swimming.  
She swims 64 lengths of a swimming pool.  
Each length is 25 m long.

- (a) Work out how far Jemilla swims.  
Give your answer in kilometres.

..... kilometres

**(3)**

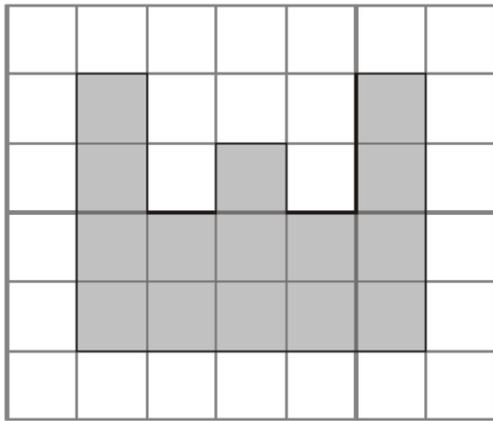
The swimming pool is 25 m long by 10 m wide by 2.5 m deep.

- (b) How many litres of water does it contain?

..... l

**(3)**  
**(Total 6 marks)**

**Q6.** A shaded shape has been drawn on the centimetre grid.



(a) Find the perimeter of the shaded shape.

..... cm

(1)

(b) Find the area of the shaded shape.

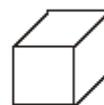
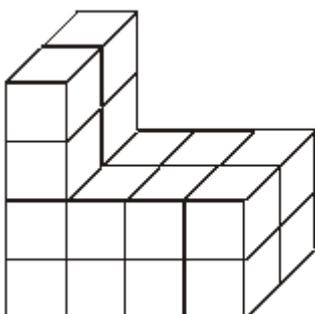
..... cm<sup>2</sup>

(1)

Here is a solid prism made from centimetre cubes.

(c) Find the volume of this prism.

Diagram **NOT** accurately drawn

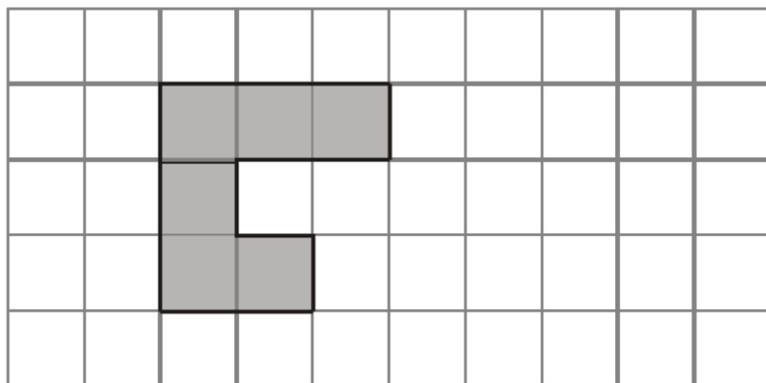


represents 1 cm<sup>3</sup>

..... cm<sup>3</sup>

(2)  
(Total 4 marks)

**Q7.**



The shaded shape is drawn on a grid of centimetre squares.

(a) Find the perimeter of the shaded shape.

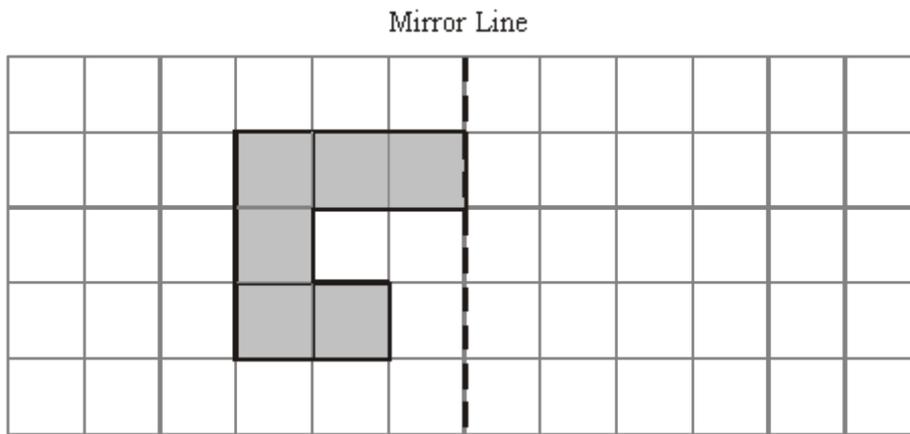
..... cm

(1)

(b) Find the area of the shaded shape.

..... cm<sup>2</sup>

(1)



(c) Reflect the shaded shape in the mirror line.

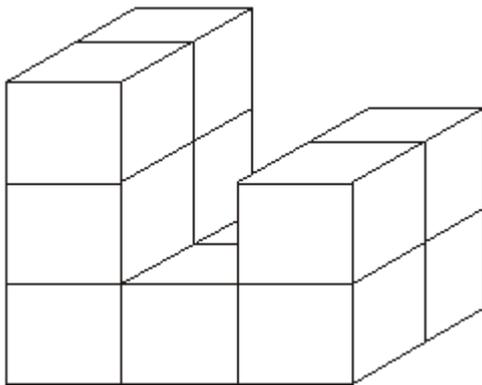


Diagram **NOT** accurately drawn

(1)

Here is a prism made of centimetre cubes.

(d) Find the volume of the prism.

..... cm<sup>3</sup>

(1)

(Total 4 marks)

**Q8.** Here is a cuboid.

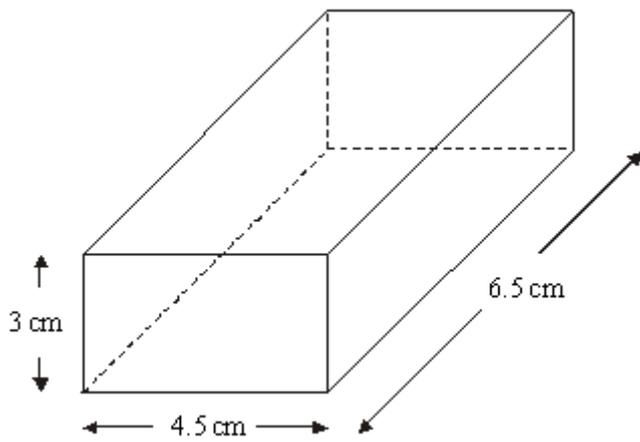


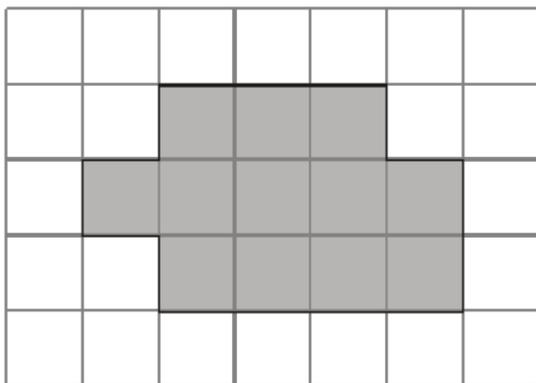
Diagram **NOT** accurately drawn

Calculate the volume of the cuboid.

..... cm<sup>3</sup>

**(Total 2 marks)**

**Q9.**



The diagram shows a shaded shape drawn on a centimetre grid.

(a) Work out the perimeter of the shaded shape.

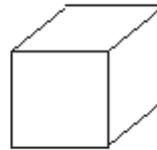
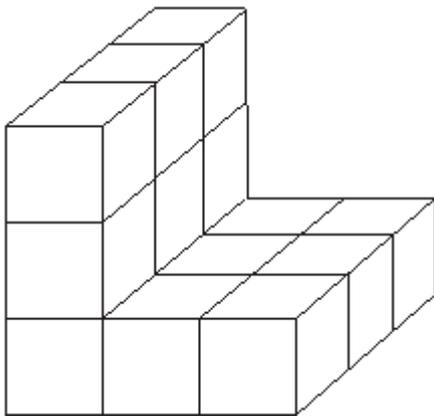
..... cm

(1)

- (b) Work out the area of the shaded shape.  
State the units of your answer.

.....

(2)



represents  
 $1 \text{ cm}^3$

Diagrams **NOT** accurately drawn

Here is a solid prism made of centimetre cubes.

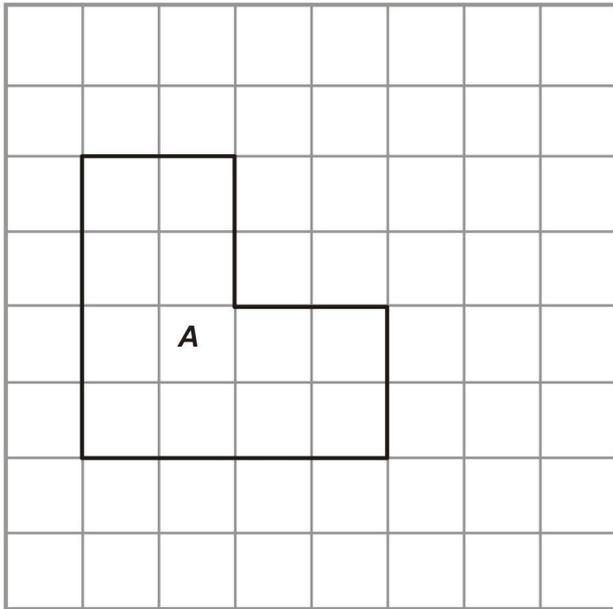
- (c) Find the volume of the solid prism.

.....  $\text{cm}^3$

(2)

(Total 5 marks)

**Q10.**



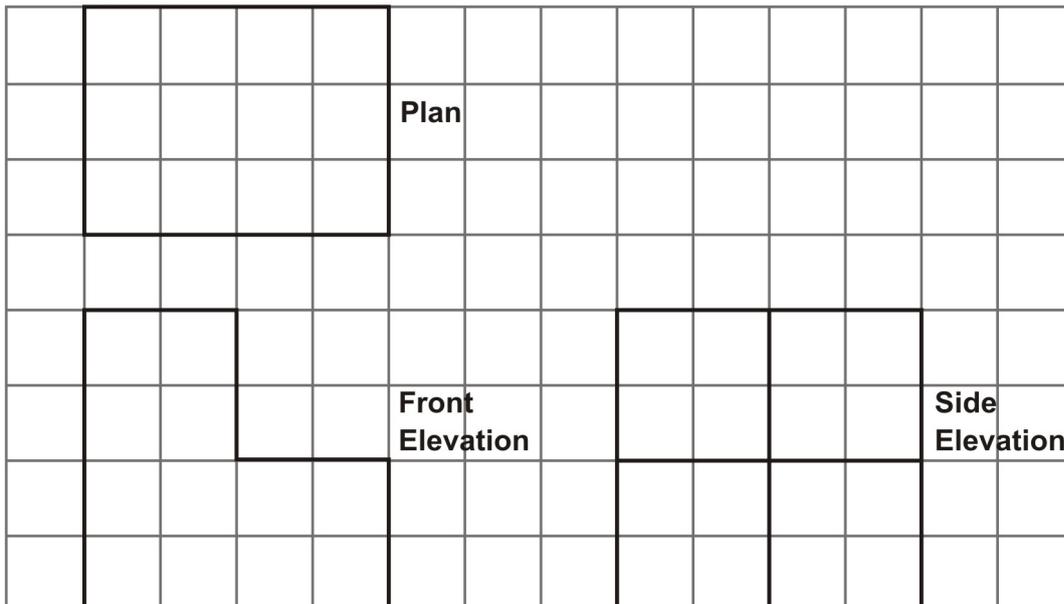
Shape A has been drawn on a centimetre grid.

- (a) Find the perimeter of shape A.

.....

(1)

The diagram shows the plan, the front elevation and the side elevation of a 3-D solid made from one centimetre cubes drawn full size.



(b) Find the volume of the 3-D shape.

.....

(4)  
(Total 5 marks)

M1.

Working	Answer	Mark	Additional Guidance
$6 \times 2$	12	2	<b>M1</b> for $6 \times 2$ or answer of 11 or 13 or 6 seen <b>A1</b> cao
<b>Total for Question: 2 marks</b>			

M2.

Answer	Mark	Additional Guidance
12	2	<b>B2</b> for 12 cao ( <b>B1</b> for 10 or 11)
<b>Total for Question: 2 marks</b>		

M3.

Working	Answer	Mark	Additional Guidance
$25 \div 5$ $15 \div 5$ $12 \div 5$ $5 \times 3 \times 2$	No	4	<b>M2</b> for 5, 3, 2 (could be on the diagram) ( <b>M1</b> for $25 \div 5$ or $15 \div 5$ or $12 \div 5$ ) <b>C2</b> QWC: No as only 30 whole bricks will fit oe statement <b>or</b> No and dimensions of a possible box given <b>or</b> No as only 2 layers of 15 will fit oe ( <b>C1</b> for correct conclusion from candidate's working

			even if incorrect eg vol: $4500 \div 125 = 36$ so yes)
<b>Total for Question: 4 marks</b>			

**M4.**

	Answer	Mark	Additional Guidance
(a)	12	1	<b>B1</b> cao
(b)	200 cm <sup>3</sup>	3	<b>M1</b> for $10 \times 4 \times 5$ <b>A1</b> cao <b>B1</b> (indep) for cm <sup>3</sup>
<b>Total for Question: 4 marks</b>			

**M5.**

	Working	Answer	Mark	Additional Guidance
(a)	$64 \times 75\text{m} = 4800\text{m}$ $4800 \div 1000$	4.8 km	3	<b>M1</b> for $64 \times 75$ <b>M1</b> for " $64 \times 75$ " $\div 1000$ <b>A1</b> cao
(b)	$\text{Vol} = 25 \times 10 \times 2.5 = 625\text{m}^3$ $625 \times 1000$	625 000	3	<b>M1</b> for attempt at finding the volume <b>M1</b> for attempt to find the number of l in $1\text{m}^3$ or $1\text{m}^3 = 1000\text{l}$ <b>A1</b> cao

<b>Total for Question: 6 marks</b>
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**M6.**

	Answer	Mark	Additional Guidance
(a)	24	1	<b>B1</b> cao
(b)	15	1	<b>B1</b> cao
(c)	20	2	<b>B2</b> cao ( <b>B1</b> for 10 or 16 or 15)
<b>Total for Question: 4 marks</b>			

**M7.**

	Answer	Mark	Additional Guidance
(a)	14	1	<b>B1</b> cao
(b)	6	1	<b>B1</b> cao
(c)	(Reflection)	1	<b>B1</b> cao
(d)	12	1	<b>B1</b> cao
<b>Total for Question: 4 marks</b>			

M8.

Answer	Mark	Additional Guidance
87.75	2	<b>M1</b> for $3 \times 4.5 \times 6.5$ seen or implied eg from answer of 87.7 or 87.8 or 88 (with no other working shown) <b>A1</b> for 87.75 cao
<b>Total for Question: 2 marks</b>		

M9.

	Answer	Mark	Additional Guidance
(a)	16	1	<b>B1</b> cao
(b)	12 cm <sup>2</sup>	2	<b>B1</b> for 12 cao, <b>B1</b> (indep) for cm <sup>2</sup>
(c)	15	2	<b>M1</b> for $5 \times 3$ <b>A1</b> cao [SC: <b>B1</b> for 10, 13 or 14]
<b>Total for Question: 5 marks</b>			

M10.

Working	Answer	Mark	Additional Guidance
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(a)		16 cm	1	<b>B1</b> cao (units included)
(b)		48 cm <sup>3</sup>	4	<b>M1</b> 3-D drawing or sketch <b>M1</b> $4 \times 4 \times 2$ and $2 \times 2 \times 4$ / $4 \times 4 \times 4$ and $2 \times 2 \times 4$ <b>M1</b> adding or subtracting <b>A1</b> cao (units included)
				<b>Total for Question: 5 marks</b>

**E1.** This standard question on finding the volume of a prism by counting cubes was not well understood with a success rate of only 45%. In 9% of cases candidates found the volume of the front face, or miscounted the volume by 1 cube.

**E2.** Counting centimetre cubes, including 2 hidden cubes, was the approach expected of candidates in this question. A large proportion of the candidates attempted to do this but accuracy was not a strong point and “9”, “10”, “11” and “13” were frequently seen. 47% of candidates scored both marks in this question with a further 5% gaining 1 mark. Many candidates attempted to calculate the volume by working out lengths, sometimes more than 3, and multiplying them together.

##

This was another QWC question. Candidates who adopted a practical approach to this question did well. Rather than moving straight to a volume calculation, which was the failing of many candidates, the best way was to consider lining up the cubes inside the box to find how many could be laid along each edge. But not only was the calculation needed, candidates then had to communicate a clear conclusion, which is why this question was flagged as being a QWC question. Many did, either by giving the maximum number of bricks that could be put in the box, giving the dimensions of a box that could fit them all, or suggesting that another layer was needed. Overall quite well answered. Centres need to be aware that practical approaches to Mathematics remain appropriate at KS4.

##

It was clear that many candidates mis-read the question, since “8” for the number of vertices or “6” for the number of sides were commonly seen. Some only counted the bold (seen) edges. In part (b) there were some attempts at finding the surface area, or the total of the edges ( $5 + 4 + 100$ ). Many stated “ $10 \times 4 \times 5$ ” but again poor arithmetic then resulted in the wrong answer. There was also a units mark for this question, but many candidates failed to spot that the units were needed, or perhaps were not used to giving them anyway. When the units were stated cm or cm<sup>2</sup> were more commonly seen than cm<sup>3</sup>.

**E6.** It is disappointing to have to report that only slightly more than half of all candidates achieved the marks in any part of this question. Errors include confusion between area and perimeter, and errors in simple counting of lines, squares or cubes. Even more able candidates were found to have errors in this question.

**E7.** There were many correct responses but a significant number of candidates confused perimeter with area and vice versa, scoring no marks. Around two thirds of the candidates got part (a) correct and/or part (b) correct.

In part (c) nearly all candidates got this correct with a few adding an extra square to give 4 squares in the top row.

In part (d) just under 60% got the correct volume. By far the most common error was to attempt to find the volume by multiplying a height by a width by a length, reaching 18 ( $3 \times 3 \times 2$ ) or even 8 ( $2 \times 2 \times 2$ ).

**E8.** It was surprising how many candidates gave an incorrect answer for this question. It was clear that many did not have calculators, and struggled to multiply the three figures together; many answers suggested that a significant number resorted to guessing the answer. Some attempted to add the numbers, suggesting they did not know how to calculate volume, or were trying to find the edge length.

**E9.** In parts (a) and (b), many candidates were confused in distinguishing between perimeter and area. Many gave 12 as their answer to part (a). In part (b), the omission of

units was common, even when the area was correct. In part (c), many candidates successfully found the correct volume by working out  $5 \times 3$  or more usually by simply counting the cubes. The most common errors seen were either calculations of  $3 \times 3 \times 3 (= 27)$  or mistakes in counting methods leading to answers of 13 and 14, which gained 1 mark, and sometimes 12 which gained no credit.