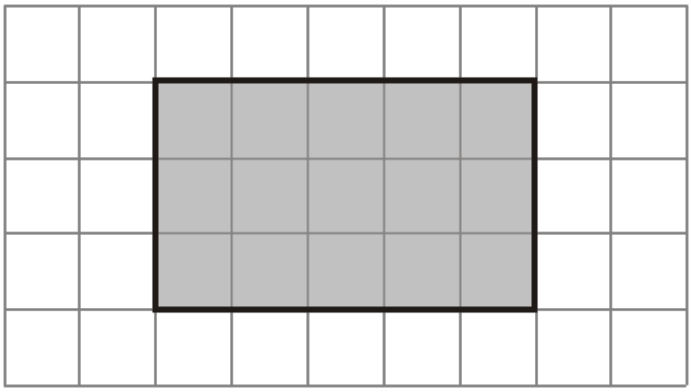
Q1. Here is a shaded shape on a grid of centimetre squares.



(a) Find the perimeter of the shaded shape.

..... cm

(1)

(b) Find the area of the shaded shape.

..... cm^2

(1)

(c) Write down the mathematical name of the shaded shape.

.....

(1)

(Total 3 marks)

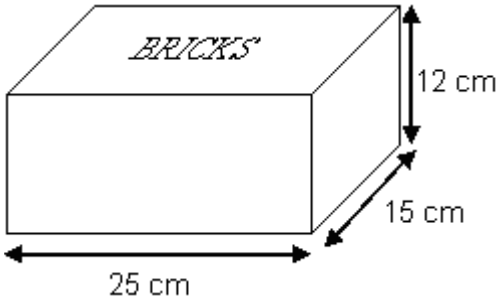
Q2.

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)

Q3. Here is a solid cuboid.

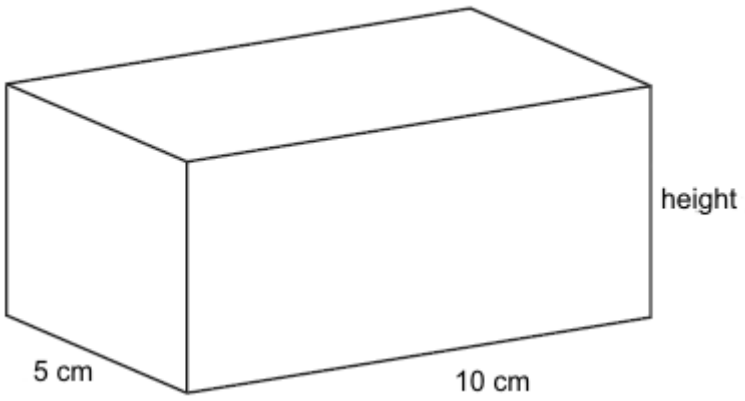


Diagram **NOT** accurately drawn

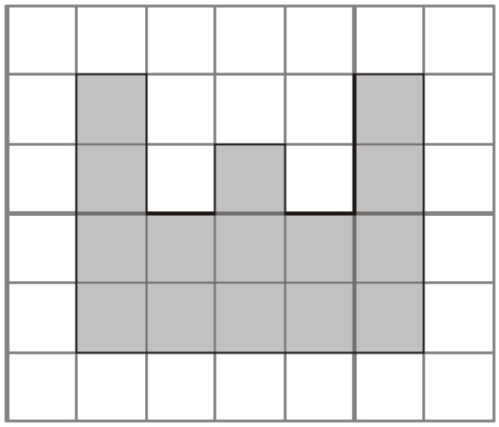
The cuboid has a width of 5 cm and a length of 10 cm.
The cuboid has a total surface area of 280 cm^2.

Work out the height of the cuboid.

..... cm

(Total 4 marks)

Q4. 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.

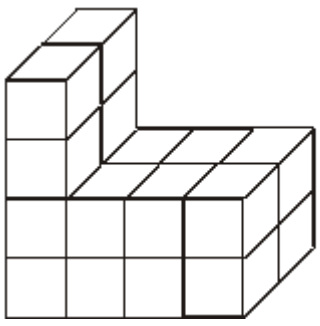
..... cm^2

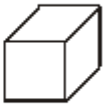
(1)

Here is a solid prism made from centimetre cubes.

(c) Find the volume of this prism.

Diagram **NOT** accurately drawn





represents 1 cm^3

..... cm^3

(2)
(Total 4 marks)

Q5. Here is a rectangle.

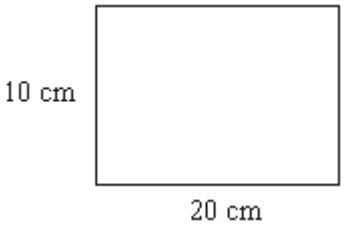


Diagram **NOT** accurately drawn

(a) Work out the perimeter of the rectangle.

..... cm

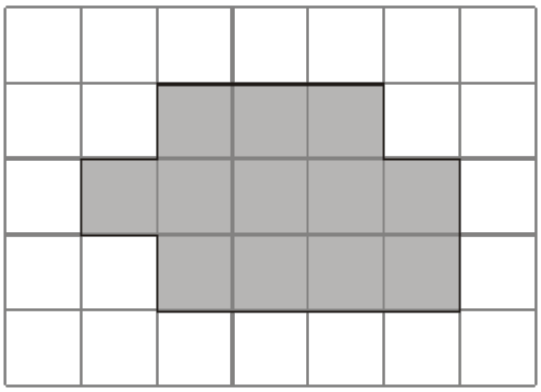
(2)

(b) Work out the area of the rectangle.

..... cm^2

(2)
(Total 4 marks)

Q6.



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

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

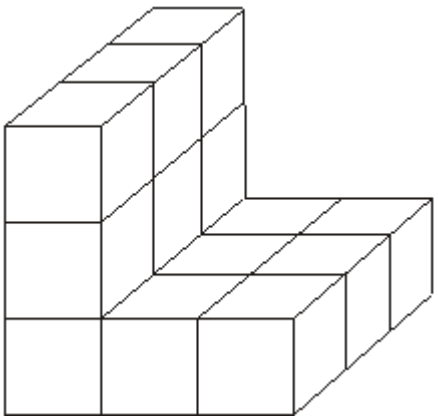
..... cm

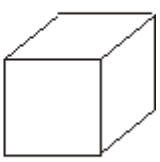
(1)

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

.....

(2)





represents
1 cm^3

Diagrams **NOT** accurately drawn

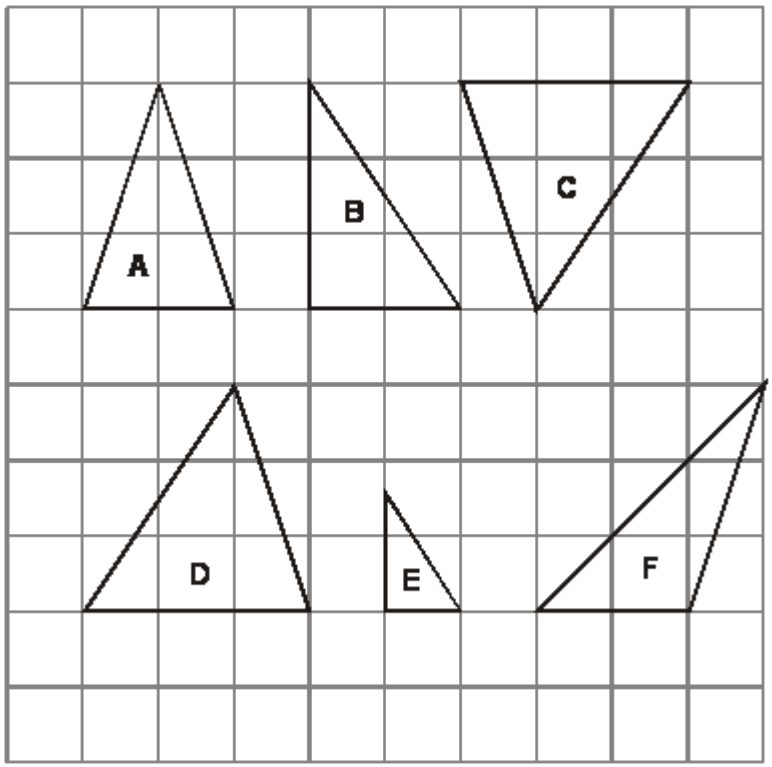
Here is a solid prism made of centimetre cubes.

(c) Find the volume of the solid prism.

..... cm^3

(2)
(Total 5 marks)

Q7. These triangles have been drawn on a centimetre grid.



(a) Write down the letters of the **two** triangles that are congruent.

..... and .....

(1)

(b) Write down the letters of **two different** triangles that are similar.

..... and .....

(1)

(c) Find the area of triangle **D**.

.....

(1)
(Total 3 marks)

M1.

	Answer	Mark	Additional Guidance
(a)	16	1	**B1** for 16 cao
(b)	15	1	**B1** for 15 cao
(c)	rectangle	1	**B1** for rectangle, quadrilateral, trapezium, parallelogram or oblong
			Total for Question: 3 marks

M2.

Working	Answer	Mark	Additional Guidance
25 ÷ 5 15 ÷ 5 12 ÷ 5 5 × 3 × 2	No	4	**M2** for 5, 3, 2 (could be on the diagram) (M1 for 25 ÷ 5 or 15 ÷ 5 or 12 ÷ 5) **C2** QWC: No as only 30 whole bricks will fit oe statement **or** No and dimensions of a possible box given **or** No as only 2 layers of 15 will fit oe (C1 for correct conclusion from candidate's working even if incorrect eg vol: 4500÷125=36 so yes)
			Total for Question: 4 marks

M3.

Working	Answer	Mark	Additional Guidance
Bottom / top is 5 × 10 = 50; 50 × 2 = 100; 280 – 100 = 180 Other dimensions: 10 + 10 + 5 + 5 = 30; 180 ÷ 30 =	6	4	**M1** recognition that the bottom/top is 5 × 10 (= 50), 50 seen **M1** for 280 – 2 × "50" (= 180) **M1** for "180" ÷ "other dimensions" or valid attempt to find height using these dimensions **A1** cao
			Total for Question: 4 marks

M4.

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

M5.

	Working	Answer	Mark	Additional Guidance
(a)	10 + 20 + 10 + 20	60	2	**M1** for 10 + 20 + 10 + 20 **A1** cao
(b)	10 × 20	200	2	**M1** for 10 × 20

				A1 cao
				Total for Question: 4 marks

M6.

	Answer	Mark	Additional Guidance
(a)	16	1	**B1** cao
(b)	12 cm^2	2	**B1** for 12 cao, **B1** (indep) for cm^2
(c)	15	2	**M1** for 5 × 3 **A1** cao [SC: **B1** for 10, 13 or 14]
			Total for Question: 5 marks

M7.

	Working	Answer	Mark	Additional Guidance
(a)		C and D	1	**B1** cao
(b)		B and E	1	**B1** cao
(c)		4.5 cm^2	1	**B1** cao
				Total for Question: 3 marks

E1. A well understood question by most candidates; however a significant minority mixed up area and perimeter and some candidates found the area and perimeter of the grid on which the shaded shape was drawn. Almost all candidates wrote rectangle for the shape though some candidates did write quadrilateral, square or even kite.

##

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.

##

This was almost always treated as if the 280 was volume. Some appeared to recognise that is wasn't volume and they took the area from 280, but then reverted to volume. Some thought that the height must be the same as the width and gave the answer 5 cm. Very few correct answers.

E4. 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.

E5. Although some was seen, there seemed less confusion between perimeter and area than in the past. Part (a) was successfully answered by over 80% of candidates. Some candidates only added the two sides given and gave 30 as their answer. Examiners rarely saw any working in part (b). Over 60% of candidates gained both marks in this part of the question.

E6. 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 × 3 or more usually by simply counting the cubes. The most common errors seen were either calculations of 3 × 3 × 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.