Q1.

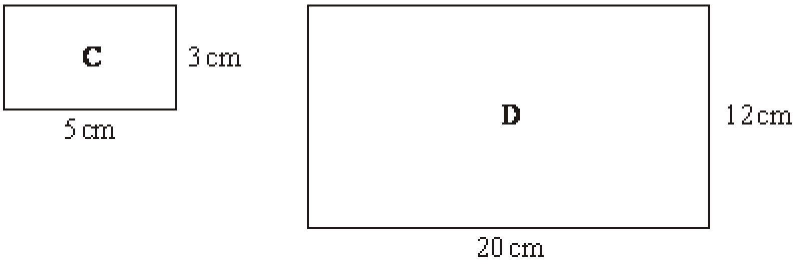


Diagram **NOT** accurately drawn

Rectangle **D** is an enlargement of rectangle **C**.

Find the scale factor of the enlargement.

....

(Total 2 marks)

Q2.

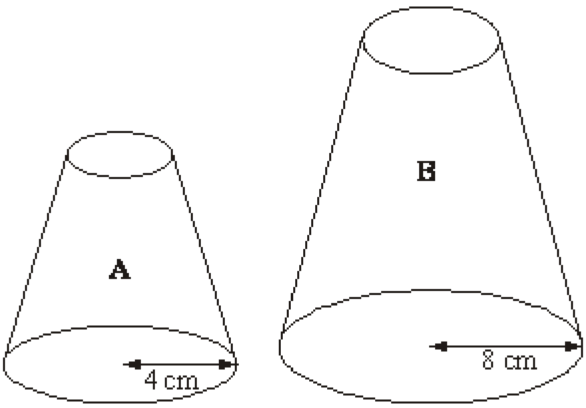


Diagram **NOT** accurately drawn

Two solid shapes, **A** and **B**, are mathematically similar.
The base of shape **A** is a circle with radius 4 cm.
The base of shape **B** is a circle with radius 8 cm.

The surface area of shape **A** is 80 cm^2.

(a) Work out the surface area of shape **B**.

.... cm^2

(2)

The volume of shape **B** is 600 cm^3.

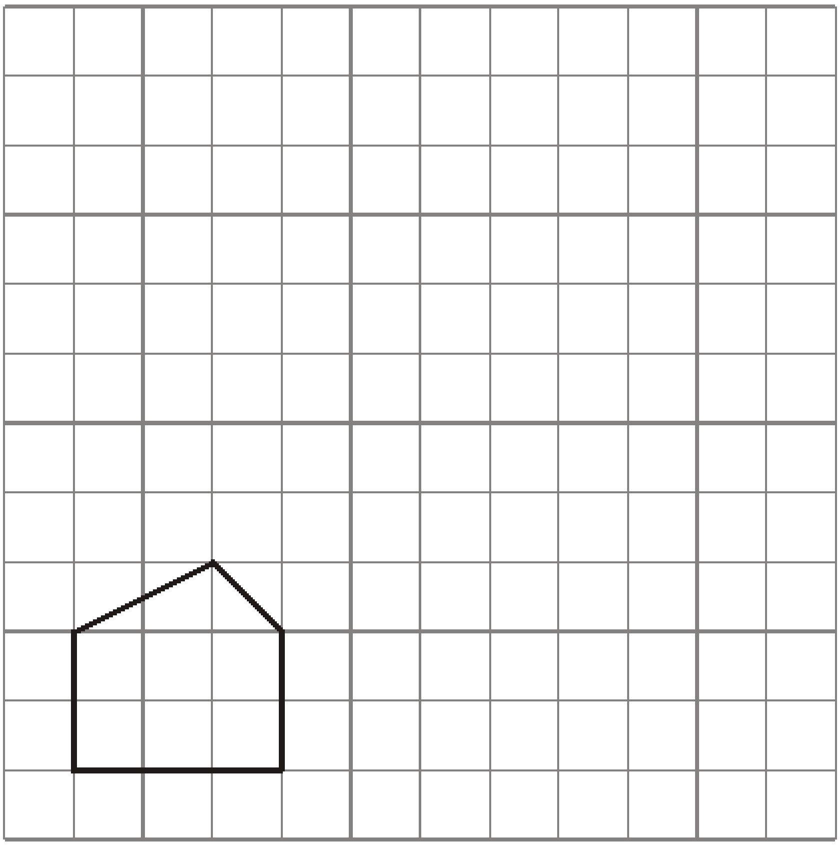
(b) Work out the volume of shape **A**.

.... cm^3

(2)

(Total 4 marks)

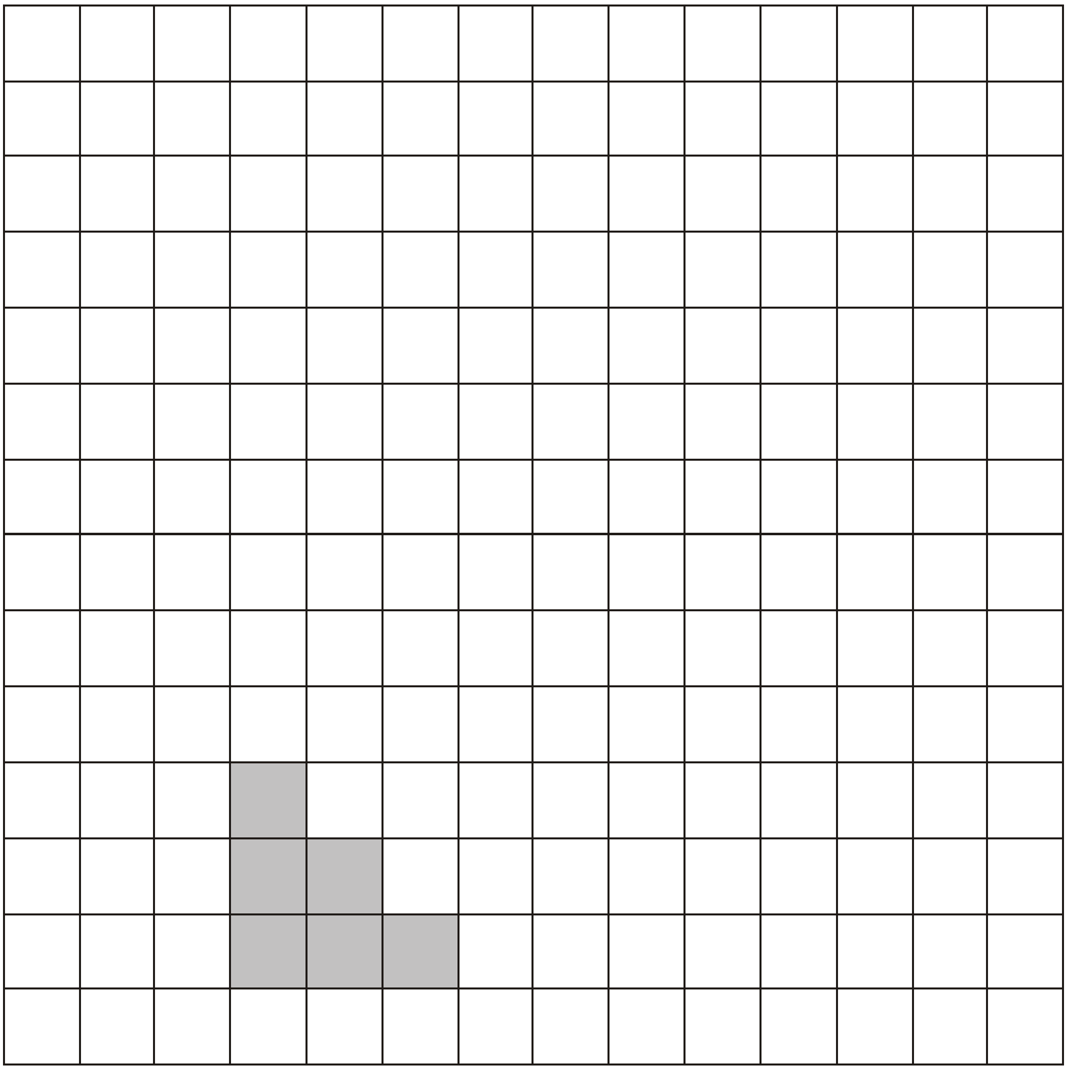
Q3.



On the grid, enlarge the shape with a scale factor of 2

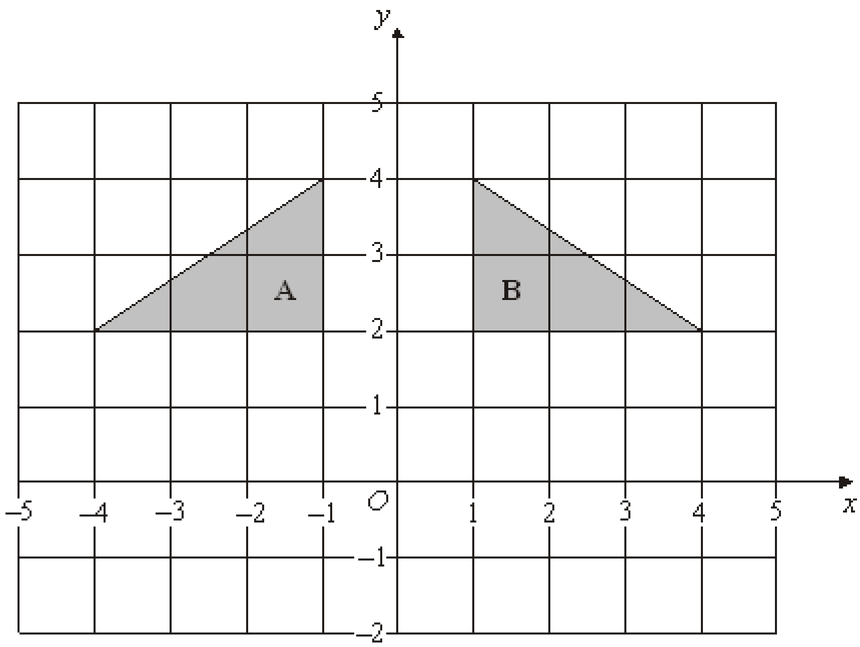
(Total 2 marks)

Q4.



(a) On the grid, draw an enlargement, scale factor 2, of the shaded shape.

(2)



(b) Describe fully the single transformation that maps triangle **A** onto triangle **B**.

....

(2)
(Total 4 marks)

M1.

Answer	Mark	Additional Guidance
4	2	**M1** for $\frac{20}{5}$ or $\frac{5}{20}$ or $\frac{12}{3}$ or $\frac{3}{12}$ **OR** 3 × 4 and 5 × 4 seen **A1** cao SC: **B1** for 4:1 or 1:4 oe
		Total for Question: 2 marks

M2.

	Working	Answer	Mark	Additional Guidance
(a)	$\left(\frac{8}{4}\right)^2 \times 80$	320	2	**M1** for $\left(\frac{8}{4}\right)^2$ or $\left(\frac{4}{8}\right)^2$ oe or $8^2:4^2$ or $4^2:8^2$ or 1:4 or 4:1 **A1** for 320 cao
(b)	$\left(\frac{4}{8}\right)^3 \times 600$	75	2	**M1** for 600 × $\left(\frac{4}{8}\right)^3$ or 600 × $\left(\frac{8}{4}\right)^3$ oe **A1** for 75 cao
				Total for Question: 4 marks

M3.

Answer	Mark	Additional Guidance
(Enlargement)	2	**B2** cao (**B1** for 2 lines correct, or correct enlargement sf 3)
		Total for Question: 2 marks

M4.

	Answer	Mark	Additional Guidance
(a)	Correct shape	2	**B2** for correct shape; any orientation. (**B1** for any two sides correct or all correct for scale factor other than 1 or 2), tolerance to within half square
(b)	Reflection in line $x = 0$	2	**B1** for reflection, reflect, reflected. **B1** for line $x = 0$ or y-axis NB: more than one transformation should be awarded 0 marks.
			Total for Question: 4 marks

E1. This question was done well. More than two thirds of the candidates were able to score 2 marks for this question. Common errors in this question include: adding or subtracting the two areas; finding the perimeter of shape D; writing the final answer as 4 × 4, 4^2, 4/4 or 4 : 4.

E2. Only the best candidates were able to score full marks in this question. For the surface area in part (a), the vast majority of candidates simply multiplied 80 by 2 (the linear scale of the enlargement). Similarly for the volume in part (b), the vast majority of candidates simply divided 600 by 2.

E3. This question was generally well answered with most candidates scoring at least one mark and around 63% of the candidates scoring both marks. Of those who gained one mark for correctly enlarging at least two of the sides this was usually for the two vertical sides. A common error was to make the length of the base 5 units instead of 6 or make the roof only one square high.

E4. **Specification A**

Foundation

In part (a) there were many correct diagrams drawn and the vast majority of candidates scored at least one mark for drawing a diagram which shows at least two of the sides enlarged correctly. Some gave an enlargement that was scale factor 3. In part (b) performance was much worse. Some recognised this as a reflection, but few stated the line of symmetry. Many appeared to think this was a rotation. Others use common language such as “flipped” or “mirrored” rather than the correct description of “reflection”.

Higher

Part (a) was extremely well answered by candidates, with most scoring full marks. The few mistakes included using a scale factor of 3 instead of 2, or doubling the number of steps rather than increasing their length. Most candidates clearly knew what the transformation was in part (b) and gained the first mark for reflection, but many lacked the skill to describe adequately, using words such as flipped and mirrored. However the second mark was not so readily achieved.

Although the correct answer was probably the most common, some confused the y-axis with the line $y = 0$ or merely called it the y line and a few quoted $y = x$ as their mirror line.

Specification B

Foundation

Drawing an enlargement using a scale factor of 2 in part (a) produced many all correct diagrams (75%) with a good degree of accuracy, often drawn using a ruler. Some used a scale factor of 3 and this was partially rewarded as was a diagram with two lengths correct using the intended scale factor of 2. The unsure just continued with a step diagram failing to appreciate what was being asked of them.

Part (b) requiring a description of the transformation produced some weird and wonderful ideas. The word ‘flip’ seemed to dominate despite the fact that it is not a mathematical name used to describe a transformation. The phrase ‘mirror image’ was ever present along with variations on the same theme. In reality it was a simple ‘reflection in the y-axis’, both parts being required to obtain full marks. It was extremely disappointing to note how many candidates were not familiar with the term ‘reflection’ or even related terms such as ‘reflect’, ‘reflected’ etc. Over 75% of the candidates failed to score on this question.

Higher

(a) This was a straightforward question for this tier and consequently very well done.

(b) It was surprising and disappointing to see so many wrong responses from candidates for this transformations question. Not all candidates could use the vocabulary for the type of transformation correctly, so that ‘flip’ appeared far too often. Of those that knew the transformation was a reflection the detailed description was often incorrect. This mainly involved an incorrect description of the y-axis as $y = 0$ or referring to the origin so that ‘a reflection in *O*’ or ‘reflection by 90° in *O*’ were often seen so the transformation was being described as a rotation -which of course it could be when referring to 3D.