1.   A shaded shape is shown on the grid of centimetre squares.

Mirror
line

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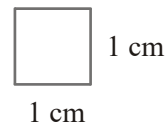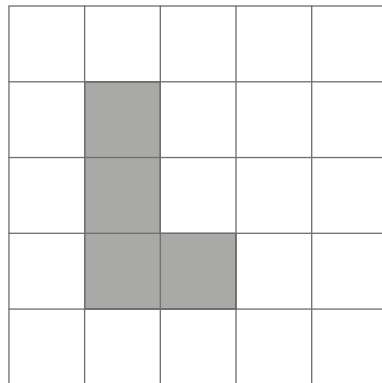
......................cm

(1)

(b)   Work out the area of the shaded shape.

....................cm^2

(1)

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

(2)
(Total 4 marks)

2.

1 cm

1 cm

(a)   (i)   Find the area of the shaded shape.

.... cm^2

(ii)   Find the perimeter of the shaded shape.

.... cm

(2)

Here is a solid prism made from centimetre cubes.

1 cm^3
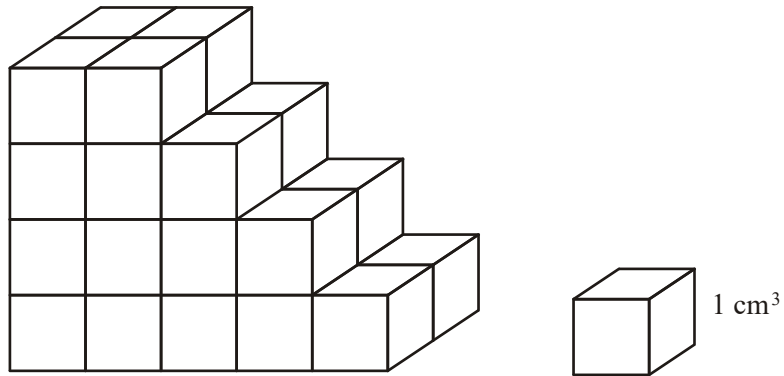
(b)   Find the volume of the solid prism.

.... cm^3

(2)
(Total 4 marks)

3.
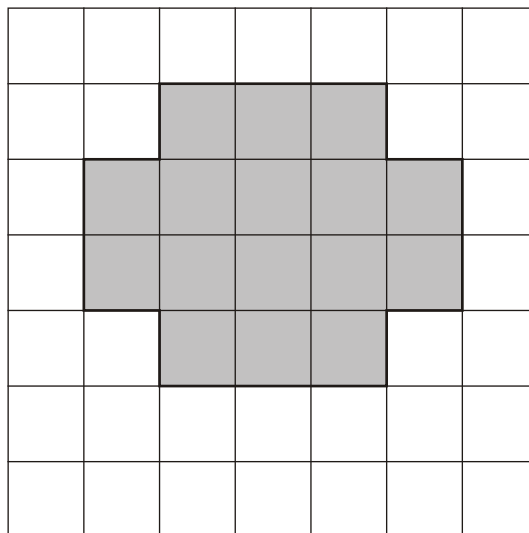
The diagram shows a shaded shape drawn on a centimetre grid.

(a)   Find the area of the shaded shape.
       State the units of your answer.

                                                    ……………………….

                                                                            (2)

(b)   Find the perimeter of the shaded shape.

                                                    ………………………cm

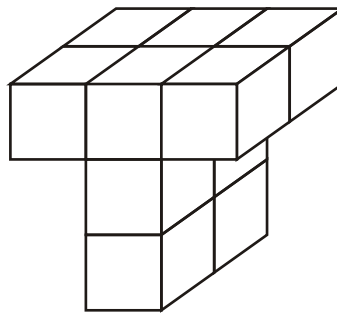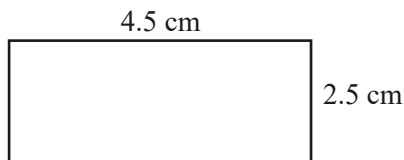   **(1)**

The diagram shows a prism made of centimetre cubes.

(c)   Find the volume of the prism.

                                                    ……………………….cm^3

                                                                            (2)
                                                                    (Total 5 marks)

4.   (a)   Work out the area of this rectangle.

                            Diagram **NOT** accurately drawn

                    4.5 cm

                                    2.5 cm

                                                    ………………………cm^2

                                                                            (2)

A square has an area of 324 cm^2.

(b) Work out the length of one side of the square.

Diagram **NOT** accurately drawn

Area

324cm^2
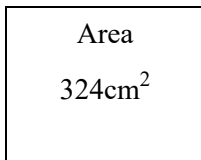
…………………………cm

(2)
(Total 4 marks)

5. Here is a shaded shape on a centimetre grid.
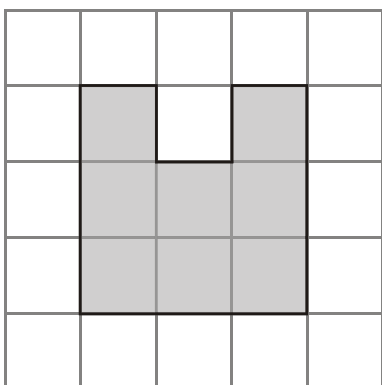
(a) Find the area of the shaded shape.

.... cm^2

(1)

(b) Find the perimeter of the shaded shape.

.... cm

(2)

Here is a solid prism made of centimetre cubes.
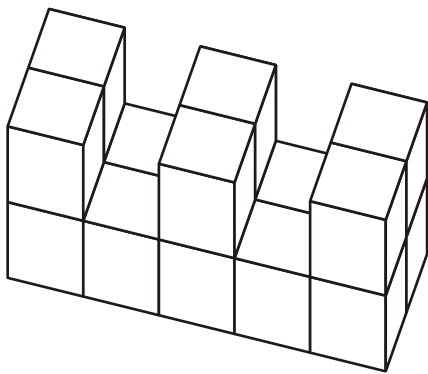
(c) Find the volume of the solid prism.

.... cm^3

(2)
(Total 5 marks)

6. This shaded shape is drawn on a grid of centimetre squares.

(a)   Find the perimeter of the shaded shape.

.... cm

(1)
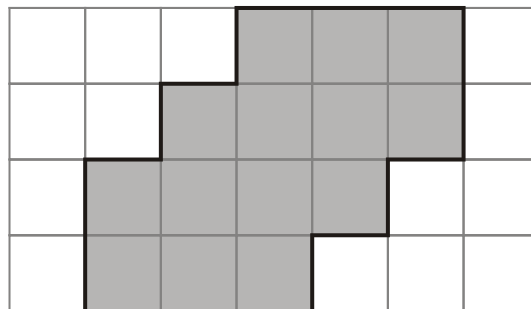
(b)   Find the area of the shaded shape.

.... cm^2

(1)

This solid prism is made from centimetre cubes.

(c)   Find the volume of the prism.

Diagram **NOT**
accurately drawn

.... cm^3

(2)
(Total 4 marks)

7.   A shaded shape has been drawn on the centimetre grid.

(a)   Find the perimeter of the shaded shape.

.... cm

(1)
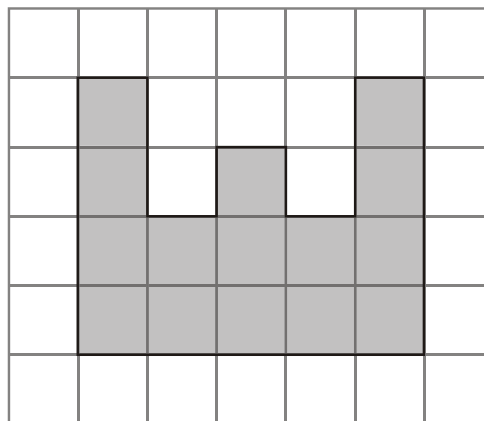
(b)   Find the area of the shaded shape.

.... cm^2

(1)

Here is a solid prism made from centimetre cubes.

(c)   Find the volume of this prism.
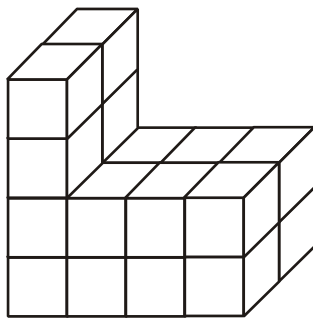
Diagram **NOT**
accurately drawn
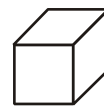
represents 1 cm^3

.... cm^3

(2)
(Total 4 marks)

8.   Here is a rectangle.

10 cm

20 cm
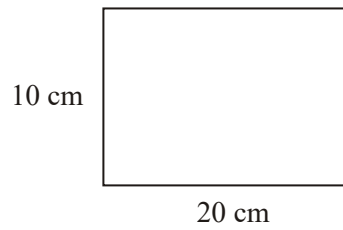
Diagram **NOT** accurately drawn

(a)   Work out the perimeter of the rectangle.

.... cm

(2)

(b)   Work out the area of the rectangle.

.... cm^2

(2)
(Total 4 marks)

9.
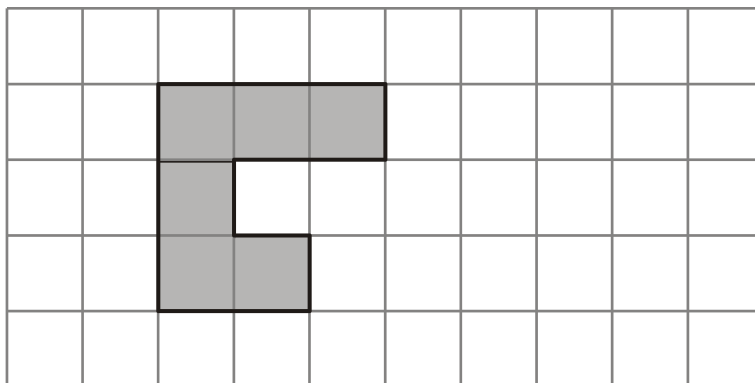
The shaded shape is drawn on a grid of centimetre squares.
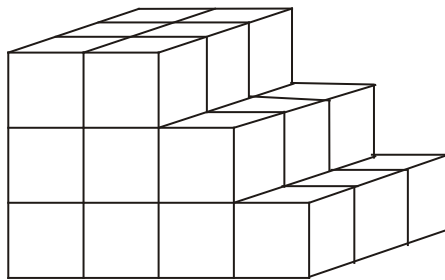
(a)   Find the perimeter of the shaded shape.

.... cm

(1)

(b)   Find the area of the shaded shape.

.... cm^2

(1)
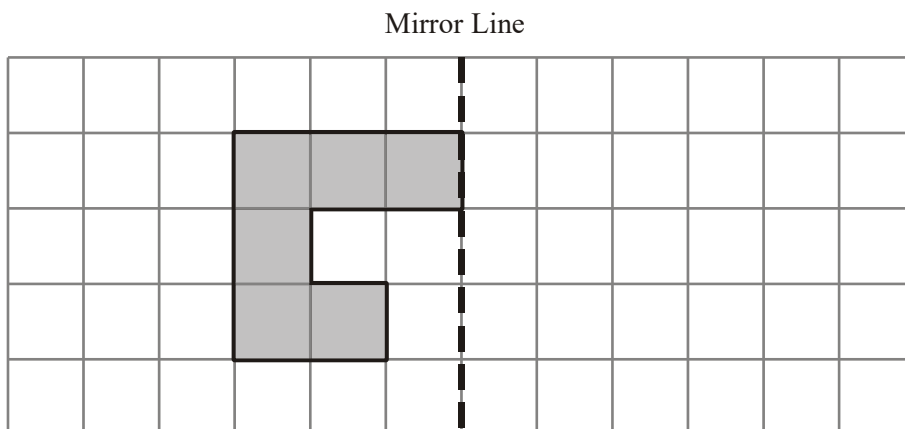
Mirror Line

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

(1)
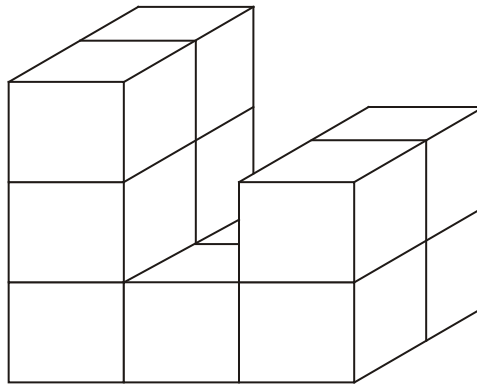
Diagram **NOT** accurately drawn

Here is a prism made of centimetre cubes.

(d)   Find the volume of the prism.

.... cm³

(1)
(Total 4 marks)

10.
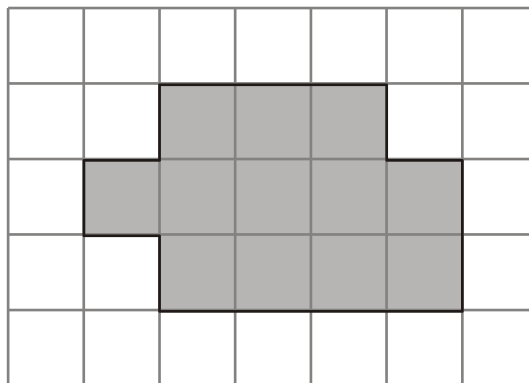
The diagram shows a shaded shape drawn on a centimetre grid.

(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.

         ....
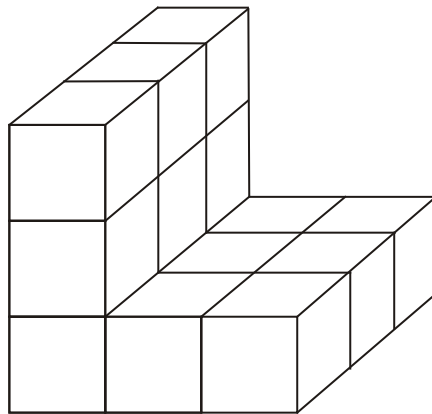
         (2)
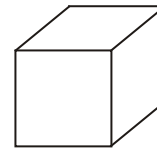
represents
$1\,\text{cm}^3$

Diagrams **NOT** accurately drawn

Here is a solid prism made of centimetre cubes.

(c)   Find the volume of the solid prism.

         .... cm^3

         (2)
         (Total 5 marks)

11.
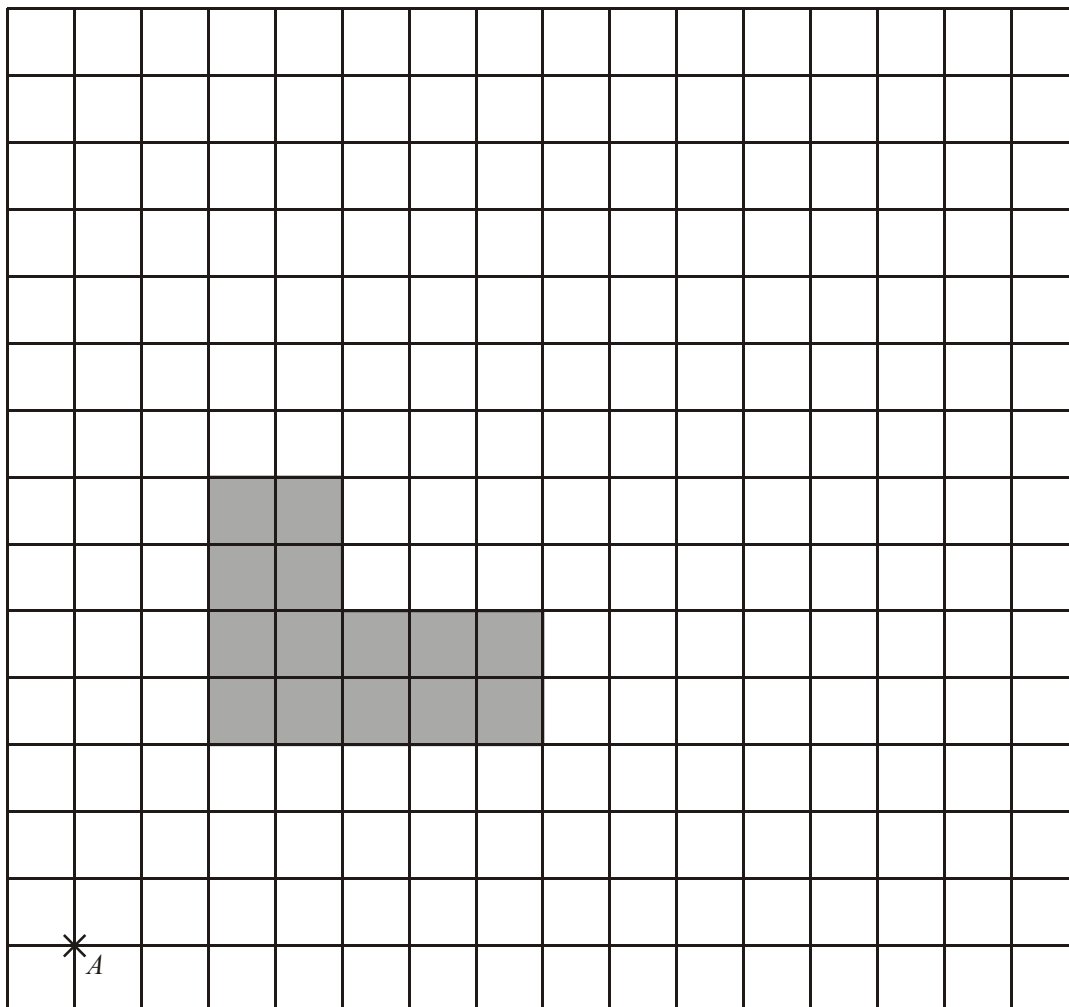
This is a grid of centimetre squares.

(a)   Write down the perimeter of the shaded shape.

                                                    …………………………

(2)

(b)   On the grid, enlarge the shaded shape by a scale factor of 2, centre *A*.

(3)
(Total 5 marks)

12.   Here is a formula for the **perimeter** of a rectangle.

> Perimeter = (length × 2) + (width × 2)

The length of a rectangle is 12 cm.
Its width is 4 cm.

Use the formula to work out the perimeter of this rectangle.

……………………….. cm

(Total 2 marks)

13.

= 1 cm²
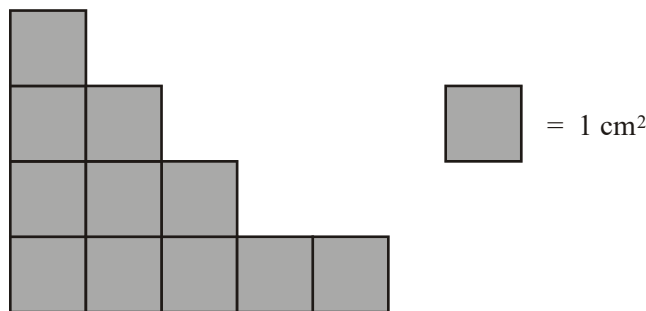
(a)   Find the area of the shape.

…....………. cm²

(1)

(b)   Find the perimeter of the shape.

…....……………

(2)
(Total 3 marks)

14.
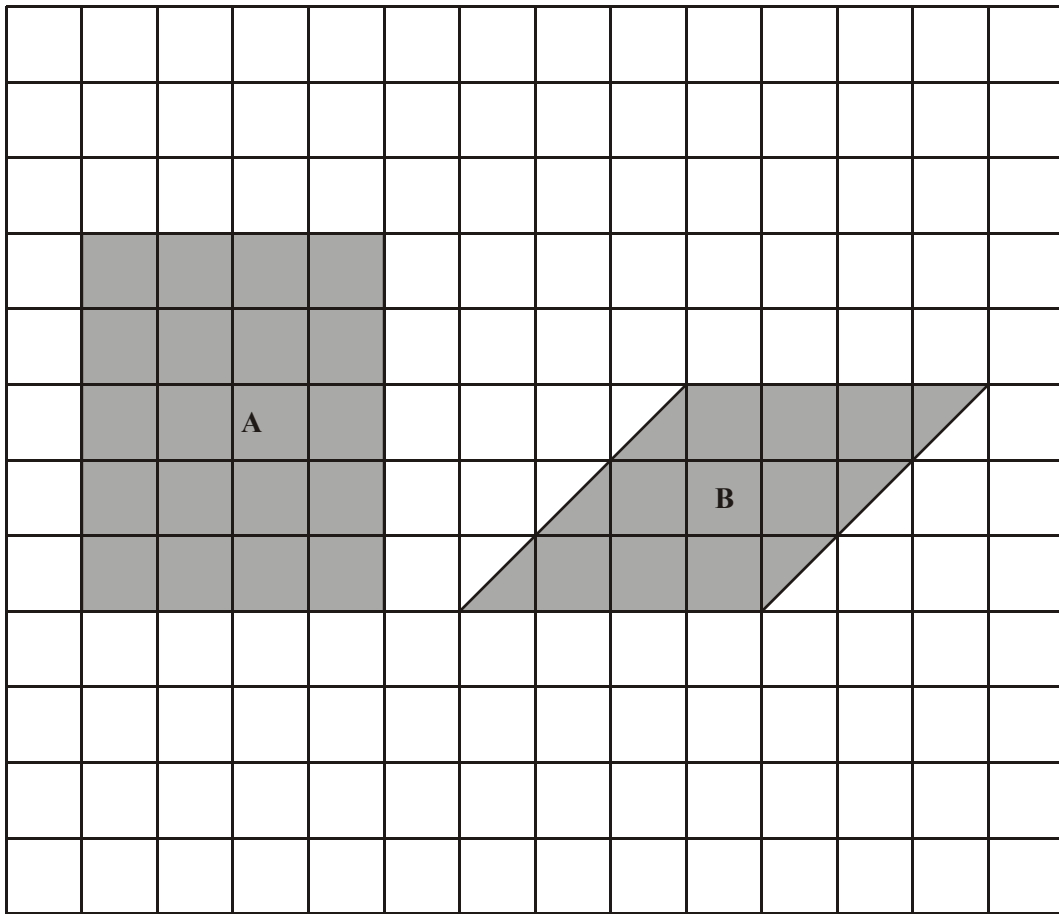
Two shaded shapes are shown on the grid of centimetre squares.

(a)   Find the perimeter of shape **A**.

....

(2)

(b)   Work out the area of shape **B**.

.... cm^2

(2)

(Total 4 marks)

15.   Here is a rectangle.

Diagram **NOT**
accurately drawn

3 cm

4 cm

(a)   Work out the area of the rectangle.

.... cm^2

(2)

(b)   Work out the perimeter of the rectangle.

.... cm

(1)
(Total 3 marks)

16.   A shaded shape has been drawn on a grid of centimetre squares.
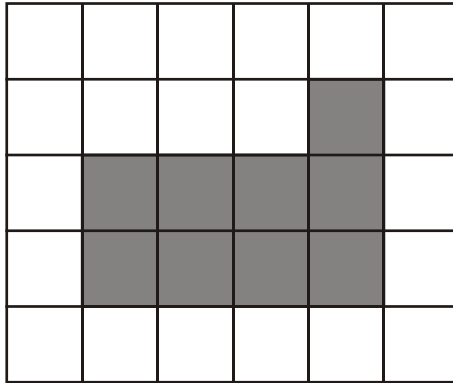
(a)   Find the perimeter of the shaded shape.

.....................................cm

(1)

Another shaded shape has been drawn on a grid of centimetre squares.
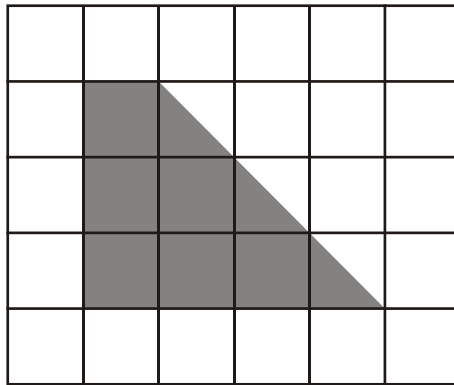
(b)   Find the area of the shaded shape.

.... cm^2

(2)
(Total 3 marks)

17.   This shaded shape is drawn on a centimetre grid.
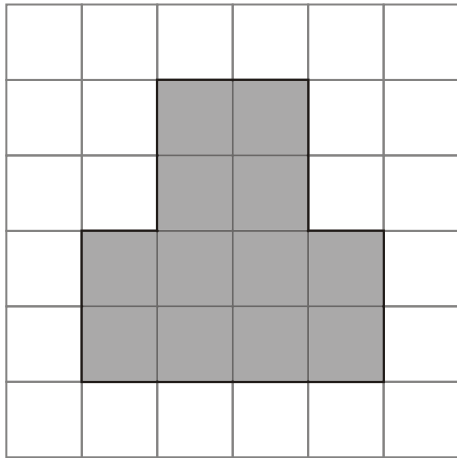
(a)   Work out the perimeter of the shaded shape.

.... cm

(1)

(b)   Work out the area of the shaded shape.

.... cm^2

(1)
(Total 2 marks)

18.
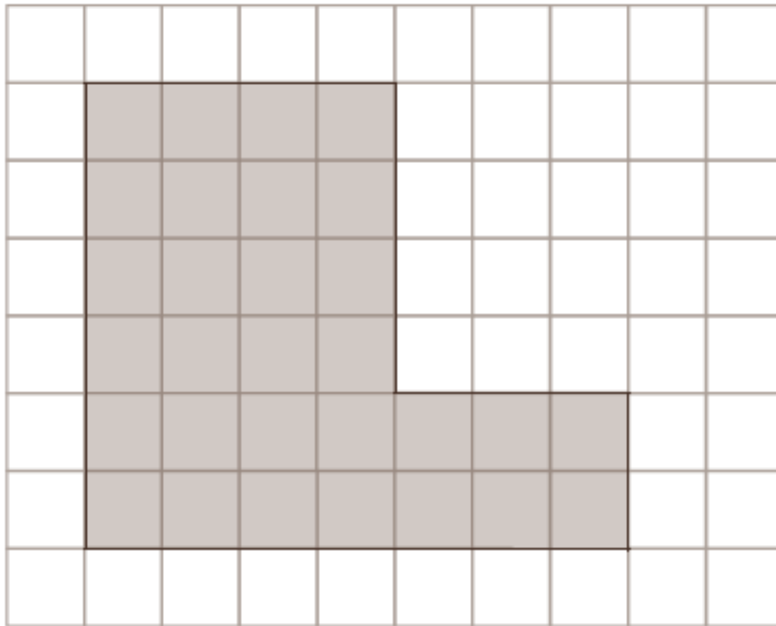
A shaded shape is shown on the grid of centimetre squares.

(a)　Find the perimeter of the shaded shape.

.......................cm

(1)

(b)　Find the area of the shaded shape.

.......................cm^2

(1)

(Total 2 marks)

19.   Here is a rectangle.

3 cm

4 cm
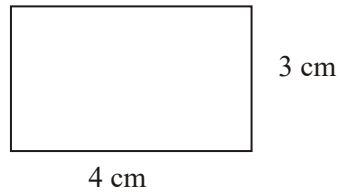
Diagram **NOT** accurately drawn

The perimeter of the rectangle is

12 cm	49 cm	6 cm	14 cm	7 cm
A	**B**	**C**	**D**	**E**

(Total 1 mark)

20.   A shaded shape is drawn on a centimetre grid.
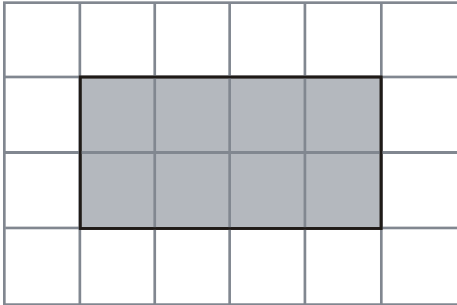
(a)   Find the perimeter of the shaded shape.

.... cm

(1)

(b)   Find the area of the shaded shape.

.... cm^2

(1)
(Total 2 marks)

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

(a)   Find the perimeter of the shaded shape.

.... cm

(1)
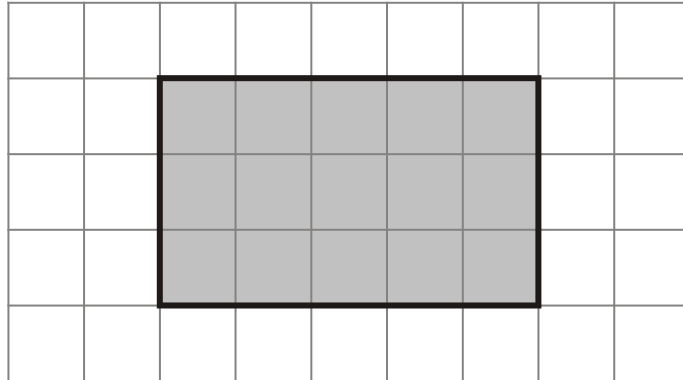
(b)   Find the area of the shaded shape.

.... cm2

(1)

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

....
(1)
(Total 3 marks)

22.   Here is a shaded shape on a grid of centimetre squares.
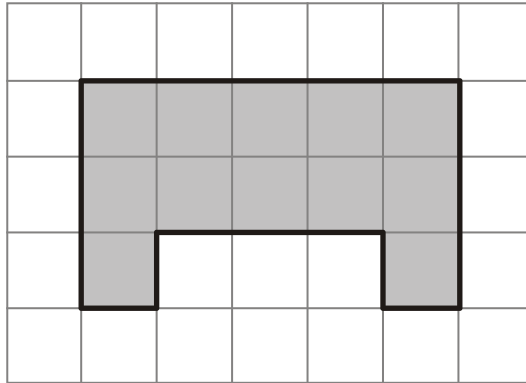
What is the perimeter of the shaded shape?

18 cm	17 cm	19 cm	16 cm	12 cm
A	**B**	**C**	**D**	**E**

(Total 1 mark)

23.   A shaded shape has been drawn on the centimetre grid.
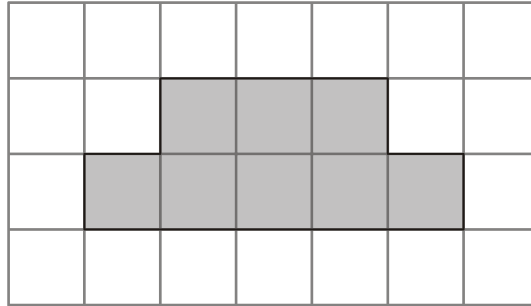
What is the perimeter of the shaded shape?

15 cm	20 cm	14 cm	8 cm	12 cm
A	**B**	**C**	**D**	**E**

(Total 1 mark)

1.   (a)   14   1
                          B1 cao

        (b)   6   1
                          B1 cao

        (c)   Correct reflection   2
                          B2 fully correct
                          (B1 correct reflection in a line parallel to the mirror line or
                          condoning 1 block error in shape or position of shape)

                                                                                                          [4]

2.   (a)   (i)   4   1
                              B1 cao

              (ii)   10   1
                              B1 cao

        (b)   28   2
                          B2 for 28
                          (B1 for 29 or 14 × 2)

                                                                                                          [4]

3.   (a)   16 cm^2 2
                          B1 for 16
                          B1 (indep) for cm^2

        (b)   18   1
                          B1 cao

        (c)   10   2
                          B2 for 10
                          (B1 for 9 or 11 or 5 × 2 or evidence of length × width height eg
                          2 × 3 × 1, 2 × 3 × 2)

                                                                                                          [5]

4.   4.5 × 2.5
        11.25   2
                          M1 for 4.5 × 2.5 or of digits 1125
                          A1 for 11.25

        √324
        18   2
                          M1 for √324
                          A1 for 18

                                                                                                          [4]

5. (a)   8   1

B1 cao

(b)   14   2

B2 for 14 (B1 for 13 or 15)

(c)   16   2

B2 for 16 (B1 for 15, 17 or 8)

[5]

6. (a)   18   1

B1 cao

(b)   14   1

B1 cao

(c)   27   2

B2 for 27
(B1 for 26, 28, or 17 or 9)

[4]

7. (a)   24   1

B1 cao

(b)   15   1

B1 cao

(c)   20   2

B2 cao
(B1 for 10 or 16 or 15)

[4]

8. (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

[4]

9. (a)   14   1

B1 cao

(b)   6   1

B1 cao

(c)   (Reflection)   1

B1 cao

(d)   12   1

B1 cao

[4]

10.   (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]

                                                                        [5]

11.   (a)   18 cm   2

                     B1 for 18
                     B1 (indep) for cm

   (b)   3

                     B3 for fully correct answer
                     (B2 for correct enlargement in wrong position)
                     (B1 for any 3 correctly enlarged lines)

                                                                         [5]

12.   32   2

      $12 \times 2 + 4 \times 2$

                     M1 for $12 \times 2 + 4 \times 2$ oe
                     A1

                                                                          [2]

13.   (a)   11   1

                     B1 for 11

   (b)   18 cm   2

                     B1 for 18
                     B1 (indep) for cm

                                                                         [3]

14.   (a)   18 cm   2

                     B1 for 18
                     B1 (indep) for cm

   (b)   12   2

                     B2 for 12
                     (B1 for 4×3 or $11 \leq Answer \leq 13$)

                                                                          [4]

15.   (a) 4×3
                 12   2

                     M1 for 4×3 or rectangle divided into 4 by 3 grid
                     A1

	(b)	14	1
		B1	

[3]

16.	(a)	14	1
		B1 cao	
	(b)	7.5	2
		B2 for 7.5 oe *(B1 for 7 ≤ answer ≤ 8)*	

[3]

17.	(a)	16	1
		B1 cao	
	(b)	12	1
		B1 cao	

[2]

18.	(a)	26	1
		B1 cao	
	(b)	30	1
		B1 cao	

[2]

19.	D		

[1]

20.	(a)	12	1
		B1 cao	
	(b)	8	1
		B1 cao *[If no answer on the answer line, check the diagram]*	

[2]

21.	(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*	

[3]

22.	A		

[1]

23.   C

                                                                                                      [1]

1.   This question was well understood by all candidates and about 50% of candidates were generally successful and scored full marks. The correct reflection was nearly always seen. The confusion between perimeter and area still exists and answers to part (a) and (b) were often transposed.

2.   Although both parts of this question were reasonably well answered, confusion between area and perimeter was evident in part (a) with the reversal of the two answers and answers of 4 to part (ii). In part (b), 40 ($4 \times 5 \times 2$) was the most popular wrong answer.

3.   Even though candidates were clearly told to state the units of their answer, many failed to write any units, whilst others just wrote cm. It was disappointing to find that candidates are still confusing area with perimeter, with over 60% of the candidates not able to provide the correct perimeter. Part (c) required candidates to find the volume of the prism with counting the cubes being the simplest method. Around a third of the candidates were successful in this task.

4.   **Foundation Tier**

Foundation tier candidates often mistake perimeter and area. This question was no exception. Only 30% of candidates were able to correctly find the area of the rectangle. The majority of candidates gave the answer of 14, the perimeter! In part (b) where they had to square root the area to find the length of one side only 3% of candidates gave the correct answer of 18. Mostly they divided 324 by 4 to get 81.

Intermediate Tier

About 85% of candidates worked out the area of the rectangle correctly in part (a). The most common mistake was to calculate the perimeter rather than the area. In part (b) it was more common to see an answer of 81 (obtained by dividing 324 by 4) rather than the correct answer of 18. Some of those who were successful used trial and improvement to determine which number squared to make 324 rather than find the square root of 324.

5.   Fewer candidates than in the past are getting confused between area and perimeter. Whilst the first part of this question was completed successfully by over 60% of candidates, answers to parts (b) and (c) were more susceptible to careless mistakes. Just under a half of the marks were earned in these two parts.

6.   **Foundation Tier**

This question was understood by candidates but caused the usual problems when candidates misunderstood the difference between perimeter and area. Candidates gained most success with find the volume by counting cubes, though they sometimes forgot the hidden ones.

Intermediate Tier

Part (a) was answered very well. Errors usually arose from candidates making a mistake when adding 5 or from giving a term in the sequence other than the 10th term. The most common incorrect answers were 42, 52 and 44 (obtained by doubling the 5th term). Finding the nth term of a sequence continues to cause problems at this level and in part (b) less than 20% of candidates answered (i) correctly. The most common incorrect answer was $n + 3$. Those who did find $3n$ sometimes either stopped or failed to find -7 correctly. $3n - 1$ was quite a common

answer. It was apparent that many candidates did not read the question properly in (ii) because far too many gave only one number as the answer. This answer was usually a correct term, which showed some understanding but gained no marks.

7.   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.

8.   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.

9.   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 ($2 \times 2 \times 2$).

10.   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 $3 \times 3 \times 3$ (= 27) or mistakes in counting methods leading to answers of 13 and 14, which gained 1 mark, and sometimes 12 which gained no credit.

11.   14 was the most common response to (a). An indication of the units being used was rarely indicated.
An enlargement by a scale factor of two was dealt with successfully by most candidates but the idea of using point *A* as the centre of enlargement was rarely understood. Many interpreted the centre *A* as being the point where the bottom left hand corner of the enlarged shape was to be placed.

12.   Use of the formula was generally well handled. Often the two parts (length $\times$ 2) and (width $\times$ 2) were dealt with individually and then combined together at the end of the process to get the correct answer. $12 \times 2 + 4 \times 4$ was often seen leading to no marks.

13.   This type of question, namely asking for an area and a perimeter, has appeared in a number of past papers yet it still leads to confusion in distinguishing between them. There were many correct area results (75% of candidates) achieved by simply counting the squares in the diagram. The perimeter might have been dealt with in a similar way by totalling the edges. However some resorted to more complex methods often leading to an incorrect answer. Fewer than half the candidates were able to correctly write down the correct perimeter of the shape. Over 80% of the candidates lost a mark by omitting the unit required in (b). Others lost the mark as cm^2 put in a regular appearance.

14.   Fewer than 14% of the candidates wrote any units for their answer to part (a) thereby not scoring this available mark. Only 12% of candidates scored both available marks for part (a). The most common incorrect responses were 20 (the area of shape A) and 22 (possibly from counting the 4 corners too). There was more success in part (b) where nearly 60% of the candidates scored both marks, generally by counting the squares.

15.   Working out the area of the '4 by 3' rectangle should have been a straight forward calculation but it proved to be otherwise with less than half obtaining the correct result. Various inking of '4' and '3' were suggested with '4 + 3 + 4 + 3 ' being the most common. There is still considerable confusion between area and perimeter as demonstrated by the answer to the second part of the question, with just under 60% obtaining the correct answer of 14. Perhaps a thorough revision of the topic prior to the examination might prove to be beneficial and help to distinguish between the two types of calculation involved.

16.   Fewer than half the candidates were able to correctly provide the perimeter of the shape in part (a). The most common incorrect response was to provide the area giving 9 as the answer. In part (b) there was more success in finding the area of the shape with over half the candidates able to successfully cope with the half squares.

17.   Only half the candidates were able to provide the correct perimeter of the shaded shape but 68% could work out its area accurately. The most common error was to mix up the two concepts.

18.   An answer of 30 cm was a common error for the perimeter in part (a). It was not clear if this was a result of confusing perimeter with area or the result of counting the actual squares surrounding the perimeter of the shaded region. Other errors generally related to careless counting. Candidates were generally more successful in answering part (b).

19. No Report available for this question.

20.   In part (a), the most common errors were 16 (the sum of the squares around the outside of the given rectangle) and 8 (the area) although the great majority gained the mark.

Part (b) was answered better with only a few candidates confusing area and perimeter and giving an answer of 12.

21.   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.

22. No Report available for this question.

23. No Report available for this question.