1. Here are some patterns made using sticks.

Pattern number 1 Pattern number 2 Pattern number 3

(a) In the space below, complete Pattern number 4.

Pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of sticks	4	7	10		

(1)

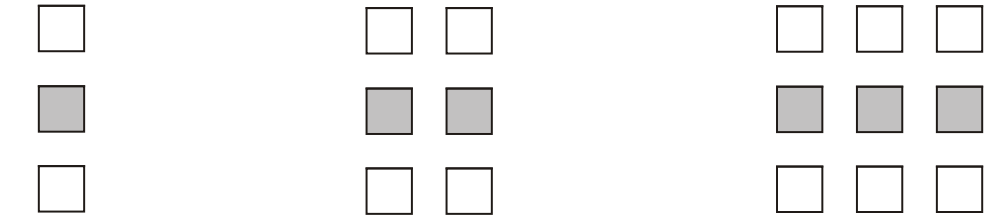
(c) How many sticks are used in Pattern number 10?

.....

(1)

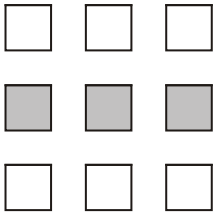
(Total 3 marks)

2. Here is a sequence of patterns made from grey squares and white squares.



Pattern Number 1 | Pattern Number 2 | Pattern Number 3

(a) Complete Pattern Number 4



Pattern Number 4

(1)

(b) Complete the table.

Pattern Number	1	2	3	4	5
Total number of squares	3	6	9		

(1)

One of the patterns in the sequence has 10 grey squares.

(c) How many white squares does this pattern have?

……...

(1)

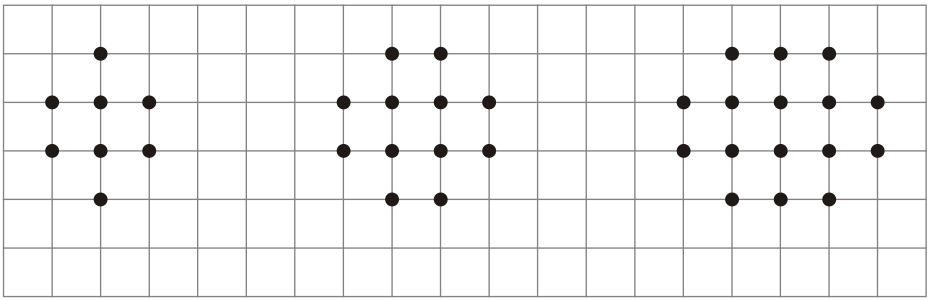
Another pattern in the sequence has a total of 18 squares.

(d) How many grey squares does the pattern have?

……...

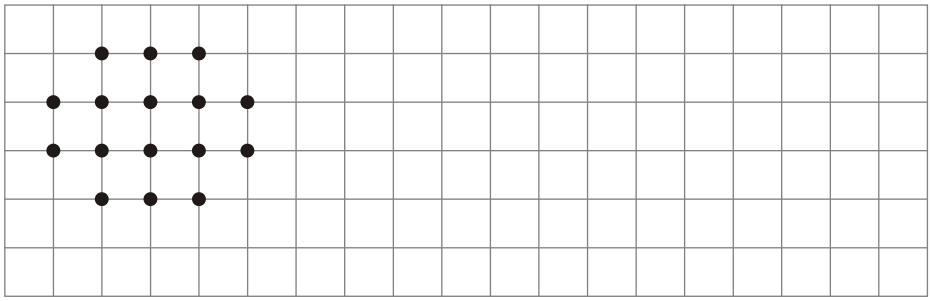
(1)
(Total 4 marks)

3. Here are some patterns made with dots.



Pattern number 1 Pattern number 2 Pattern number 3

(a) In the space below, complete Pattern number 4



Pattern number 4

(1)

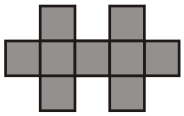
(b) Complete the table.

Pattern number	1	2	3	4	5
Number of dots	8	12	16		

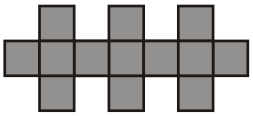
(2)
(Total 3 marks)

4. Here are some patterns made from squares.

Pattern number 1

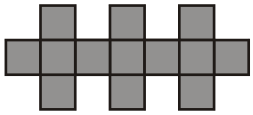


Pattern number 2



Pattern number 3

(a) The diagram below shows part of Pattern number 4
Complete the diagram for Pattern number 4



Pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of squares	5	9	13		

(1)

(c) Find the number of squares used for Pattern number 10

.....

(1)
(Total 3 marks)

5. The first even number is 2

(a) Write down the 3rd even number.

.....

(1)

Here are some patterns made from sticks.

Pattern number 1 Pattern number 2 Pattern number 3

(b) Complete Pattern number 4

Pattern number 4

(1)

(c) Complete the table.

Pattern number	1	2	3	4	5
Number of sticks	3	6	9		

(2)

Jenny wants to find the number of sticks in Pattern number 100

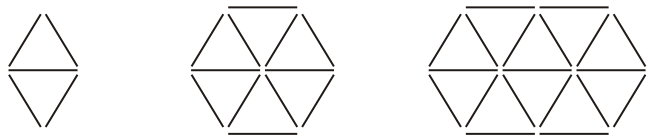
(d) Write down a method she could use.

.....

.....

(1)
(Total 5 marks)

6. Here is a sequence of patterns made from sticks.



Pattern 1 Pattern 2 Pattern 3

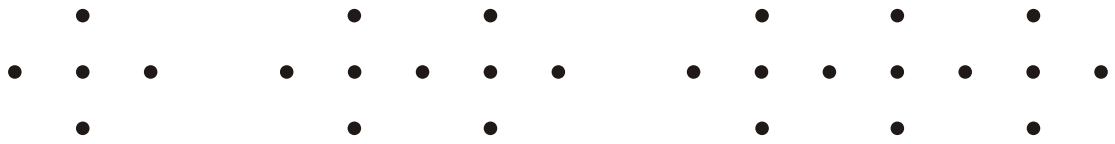
Pattern	1	2	3
Number of sticks	5	12	19

What is the number of sticks needed for Pattern 4?

26	33	24	27	25
A	**B**	**C**	**D**	**E**

(Total 1 mark)

7. This is a sequence of patterns made from dots.



Pattern 1 Pattern 2 Pattern 3

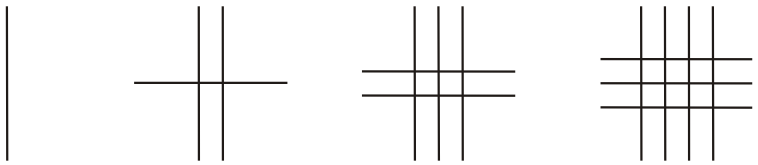
Pattern	1	2	3
Number of dots	5	9	13

How many dots are there in Pattern 4?

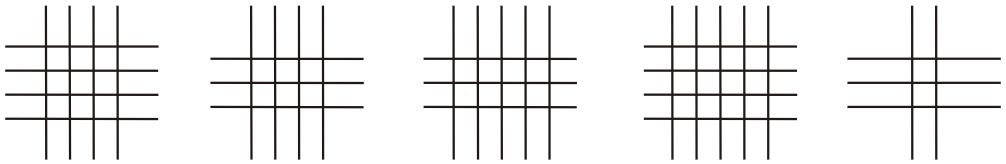
19	21	17	14	16
A	**B**	**C**	**D**	**E**

(Total 1 mark)

8. Here is a sequence of patterns made of sticks.



What is the next pattern in the sequence?



A **B** **C** **D** **E**

(Total 1 mark)

1. (a) Diagram 1

B1 cao

(b) 13, 16 1

B1 cao

(c) 31 1

B1 cao

[3]

2. (a) Diagram 1

B1 cao

(b) 12, 15 1

B1 cao

(c) 20 1

B1 cao

(d) 6 1

B1 cao

[4]

3. (a) Diagram 1

B1 cao

(b) 20, 24 2

B1 for 20 or ft from drawing in (a)
B1 for 24 or ft from "20"+4

[3]

4. (a) Correct diagram 1

B1 for correct diagram, accept squares drawn at either end shaded or unshaded. Ignore internal lines.

(b) 17, 21 1

B1 cao

(c) 41 1

B1 cao

[3]

5. (a) 6 1

B1 for 6 cao

(b) I I I I
diagram 1

B1 for correct diagram (4 vertical sticks and 8 horizontal sticks)

(c) 12, 15 2

B2 for 12 and 15
(B1 for either 12 or 15 or '12' + 3

(d) reason 1

B1 eg for '100 multiplied by 3' or '100 × 3' or '× 3' or 3n (but not 3n + a number) or 'keep adding 3' oe, as long as "3" is mentioned.

[5]

6. A

[1]

7. C

[1]

8. D

[1]

1. Approximately 92% of the candidates completed part (a) of this question correctly. Of those candidates who were not successful, most added an extra vertical stick to the pattern.

In part (b) about 93% were able to complete the table correctly. Not surprisingly, part (c) was correctly answered by a much smaller proportion (about 45%) of candidates. Many candidates assumed that to get the number of sticks used in Pattern number 10 they could double the number in Pattern number 5 and so gave the answer 32.

2. It was encouraging to see many attempts at this question being awarded full marks. However, some candidates did not attempt part (a) of the question and examiners were left thinking that they may not have read the question carefully. Some candidates spoiled their answer to part (a) by adding on squares to their diagram, perhaps in a bid to find answers for subsequent parts of the question. The table in part (b) was completed correctly by nearly all candidates. In part (d) common incorrect answers seen included 9 and 36.

3. The majority of candidates scored well on this question. Incorrect diagrams sometimes scored marks when used to obtain the numbers in the table. Frequently candidates ignored their diagrams and used the "+4" rule to obtain the numbers in the table, which was also credited.

4. In part (a) of this question the diagram was usually correct with the most common error being the addition of 5 squares (in a cross formation) or 3 squares. Some candidates did not answer this question. It appears that they may not have read the question with enough care. The two entries in the table were usually correct and there was only a small minority of candidates who made arithmetic errors here. Part (c) was correct in 59% of cases. Many candidates doubled the number of squares in pattern 5 to obtain the number of squares in pattern 10. Others made careless arithmetic errors.

5. A well answered question in which the only mark lost was usually in part (d). In this part it was the quality of the explanations on which the mark was awarded. Failure to mention the significance of the "3" usually rendered the explanation incomplete.

6. No Report available for this question.

7. No Report available for this question.

8. No Report available for this question.