

Sequences - Term-to-Term Rules and Patterns

For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **29**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Write down the next number in each sequence.

(a) 5 9 13 17 ...

[1 mark]

Answer _____

(b) 80 40 20 10 ...

[1 mark]

Answer _____

(c) 7 4 1 -2 ...

[1 mark]

Answer _____

2 Circle the term-to-term rule for the sequence 3 6 12 24 ...

[1 mark]

add 3

multiply by 2

add 6

multiply by 3

- 3** Each term in a sequence is 3 times the term before it.
The 2nd term of the sequence is 4.5
Work out the 1st term and the 4th term.

[3 marks]

1st term _____ 4th term _____

- 4** The numbers in this sequence go up by the same amount each time.

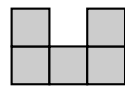
7 _____ 29

Work out the three missing numbers.

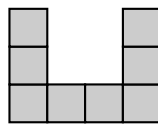
[3 marks]

Answer _____

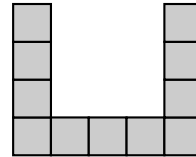
5 Here are some patterns made from tiles.



Pattern
number 1



Pattern
number 2



Pattern
number 3

(a) Draw pattern number 4 in the space below.

[1 mark]

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of tiles	5	8			

[2 marks]

(c) How many tiles are needed for pattern number 12?

[2 marks]

Answer _____

- (d) Bram has 100 tiles.
He makes the biggest pattern in this sequence that he can.
How many tiles does he have left over?

[2 marks]

Answer _____

- 6** Here are the first four terms of a sequence.

3 11 19 27

The 20th term of the sequence is 155
Work out the 23rd term.

[2 marks]

Answer _____

- 7** The first four terms of a sequence are 6 10 14 18

Is 75 a term in this sequence?

Tick a box.

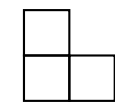
Give a reason for your answer.

[1 mark]

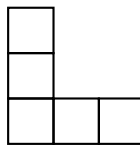
☐ Yes

☐ No

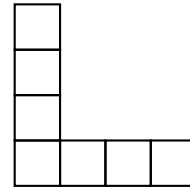
- 8 Here are some patterns made from squares.



Pattern
number 1



Pattern
number 2



Pattern
number 3

- (a) How many squares are in pattern number 5?

[1 mark]

Answer _____

- (b) Amy says,

‘Pattern number 20 has 40 squares.’

Is Amy correct? Tick a box.

Give a reason for your answer.

[1 mark]

☐ Yes

☐ No

- 9 The rule for a sequence is multiply by 2 then add 1

The 4th term of the sequence is 31

Work out the 1st term.

[3 marks]

Answer _____

- 10** (a) The 1st term of a sequence is 3.5
Each term after that is found using the rule

subtract 5 then multiply by 2

Work out the 2nd term and the 3rd term.

[2 marks]

Answer _____ and _____

- (b) Another sequence has the term-to-term rule

divide by 2 then subtract 3

The 1st term is 34

Work out the first term of this sequence that is a negative number.

[2 marks]

Answer _____