



AQA Qualifications

AQA Level 2 Certificate

FURTHER MATHEMATICS

Level 2 (8360)

Worksheet 11
Sequences

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M16 6EX

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11 Sequences

Question 1

A linear sequence starts

250 246 242 238

Which term is the first to have a negative value?

(4 marks)

Question 2

Work out the n th term of this quadratic sequence.

8 9 14 23 36

(4 marks)

Question 3

(a) Show that the n th term of the quadratic sequence

4 10 18 28 is $n^2 + 3n$

(3 marks)

(b) Hence, write down the n th term of these quadratic sequences.

(b) (i) 5 11 19 29

(1 mark)

(b) (ii) 5 12 21 32

(1 mark)

Question 4 (non calculator)

- (a) Write down the n th term of the linear sequence

4 7 10 13

(1 mark)

- (b) Hence, write down the n th term of the quadratic sequence.

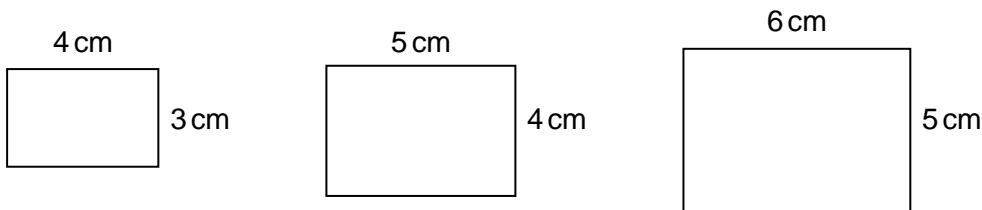
16 49 100 169

(1 mark)

- (c) For the sequence in part 4(b), show that the 30th term is equal to the product of the 2nd and 4th terms

(3 marks)

Question 5



This pattern of rectangles continues.

Show that the sequence of numbers formed by the areas of these rectangles has n th term

$$n^2 + 5n + 6$$

(4 marks)

Question 6

A linear sequence starts

$a + b$ $a + 3b$ $a + 5b$ $a + 7b$

The 5th and 8th terms have values 35 and 59.

- (a) Work out a and b . (4 marks)
- (b) Work out the n th term of the sequence. (2 marks)

Question 7

A sequence has n th term $\frac{3n + 1}{n}$

- (a) Show that the difference between the n th and $(n + 1)$ th terms is $\frac{1}{n(n + 1)}$ (3 marks)
- (b) Which are the first two consecutive terms with a difference less than 0.01? (2 marks)
- (c) Write down the limiting value of the sequence as $n \rightarrow \infty$ (1 mark)

Question 8

A sequence has n th term $\frac{5n + 2}{2n}$

Show that the limiting value of the sequence, S , as $n \rightarrow \infty$ is 2.5 (2 marks)

Question 9

Here is the sequence of odd numbers

1 3 5 7 9

A quadratic sequence is formed by multiplying consecutive odd numbers in successive pairs.

3 15 35 63

Work out the n th term of this sequence. (3 marks)

Question 10

The n th term of a sequence is $\frac{2n^2 - 1}{3n^2 + 2}$

- (a) Show that the difference between the first two terms is $\frac{3}{10}$ (3 marks)
- (b) Write down the limiting value of the sequence as $n \rightarrow \infty$ (1 mark)