



THIRD SPACE
LEARNING

GCSE Exam Questions

Quadratic Sequences | Algebra

GCSE Exam Questions: Quadratic Sequences

- 1) (a) Write down the next two terms in the following quadratic sequence:

11, 15, 21, 29, ...

(1)

- (b) By determining the second difference, write an expression for the n^{th} term.

(3)

(4 marks)

- 2) Which of these sequences is a quadratic sequence. Circle your answer.

4, 5, 9, 14, 23, ...

-6, -11, -16, -21, -26, ...

7, 13, 23, 37, 55, ...

8, 4, 2, 1, 0.5, ...

(1 mark)

- 3) (a) The n^{th} term of a sequence is $n^2 + 4n - 1$.

Work out the 8^{th} term of the sequence.

(1)

- (b) What value for n in the sequence above has a term value of 44?

Do not use trial and improvement.

(3)

(4 marks)

GCSE Exam Questions: Quadratic Sequences

4) The n^{th} term of a sequence is $2n - n^2$

(a) Calculate the difference between the 5^{th} and 8^{th} term.

(3)

(b) Which term of the sequence is equal to -35?

(3)

(c) Which term of the sequence is equal to 0?

(2)

(8 marks)

5) Work out the formula for the n^{th} term of the sequence:

19, 15, 9, 1, ...

Write your answer in the form $an^2 + bn + c$ where a , b , and c are constants.

(4 marks)

GCSE Exam Questions: Quadratic Sequences Answers

	Question	Answer	Marks
1) (a)	Write down the next two terms in the following quadratic sequence: 11, 15, 21, 29, ...	39, 51	(1)
(b)	By determining the second difference, write an expression for the n^{th} term.	n^2 $n + 9$ $n^2 + n + 9$	(1) (1) (1)
2)	Which of these sequences is a quadratic sequence. Circle your answer. 4, 5, 9, 14, 23, ... -6, -11, -16, -21, -26, ... 7, 13, 23, 37, 55, ... 8, 4, 2, 1, 0.5, ...	7, 13, 23, 37, 55	(1)
3) (a)	The n^{th} term of a sequence is $n^2 + 4n - 1$. Work out the 8th term of the sequence.	95	(1)
(b)	What value for n in the sequence above has a term value of 44? Do not use trial and improvement.	$n^2 + 4n - 1 = 44$ $n^2 + 4n - 45 = 0$ $(n + 9)(n - 5) = 0$ so $n = 5$ only.	(1) (1) (1)
4) (a)	The n^{th} term of a sequence is $2n - n^2$. Calculate the difference between the 5 th and 8 th term.	5th term = -15 8th term = -48 5th term - 8th term = 33	(1) (1) (1)
(b)	Which term of the sequence is equal to -35?	$2n - n^2 = -35$ $n^2 - 2n - 35 = 0$ $(n - 7)(n + 5) = 0$ so $n = 7$ only.	(1) (1) (1)
(c)	Which term of the sequence is equal to 0?	$n(2 - n) = 0$ $n = 2$ only. Or using substitution of $n = 1$ and $n = 2$ into the n^{th} term $n = 2$.	(1) (1) (1) (1)

GCSE Exam Questions: Quadratic Sequences Answers

	Question	Answer	Marks
5)	Work out the formula for the n th term of the sequence: 19, 15, 9, 1, ...	Second difference = -2 $-n^2 = -1, -4, -9, -16, -25,$	(1)
	Write your answer in the form $an^2 + bn + c$ where a , b , and c are constants.	20, 19, 18, 17, 16, (= $21 - n$ or $-n + 21$)	(1)
		n^{th} term = $-n^2 - n + 21$	(1)
		$a = -1, b = -1, c = 21$	(1)

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