

Level 3 Algebra - Arithmetic Series

June 2013 - Question 16

Jan 2014 - Question 16

Jan 2015 - Question 14

June 2015 - Question 11

Jan 2016 - Question 12

June 2016 - Question 13

Jan 2017 - Question 10

June 2017 - Question 16

Jan 2018 - Question 14

June 2018 - Question 15

Jan 2019 - Question 7

June 2019 - Question 21

Jan 2020 - Question 11

Jan 2021 - Question 16

Jan 2022 - Question 11

June 2022 - Question 11

Jan 2023 - Question 9

June 2023 - Question 14

Jan 2024 - Question 11

16 Here are the first five terms of an arithmetic series.

2 10 18 26 34

(a) (i) Write down the common difference of this series.

.....

(ii) Work out the sum of the first 26 terms of this series.

.....

(3)

The second term of a different arithmetic series is 40

The sixth term of this series is 12

(b) Work out the 15th term of this series.

.....

(3)

(Total for Question 16 is 6 marks)



16 The n th term of an arithmetic series is $5n - 3$

(a) (i) Find the first term of this series.

(ii) Find the common difference of this series.

(2)

(b) Find an expression, in terms of n , for the sum of the first n terms of this series.

(2)

(Total for Question 16 is 4 marks)



14 Here are the first five terms of an arithmetic series.

3 5.5 8 10.5 13

(a) Write down an expression, in terms of n , for the n th term of this series.

.....
(1)

100.5 is a term in this series.

(b) Work out the sum of all the terms in this series up to and including 100.5

.....
(3)

(Total for Question 14 is 4 marks)



11 The first term of an arithmetic series is 7
The common difference is 4

(a) Find the 60th term of this series.

.....
(2)

The first term of a different arithmetic series is 3
The sum of the first 30 terms of this series is -780

(b) Work out the common difference of this series.

.....
(3)

(Total for Question 11 is 5 marks)



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12 (a) The first term of an arithmetic series is 100
The common difference of the series is -4

Find an expression, in terms of n , for the n th term of this series.
Give your answer in its simplest form.

.....
(2)

(b) The common difference of a different arithmetic series is 3
The sum of the first 50 terms of this series is 2500

Find the first term of this series.

.....
(3)

(Total for Question 12 is 5 marks)



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13 The sum of the first three terms of an arithmetic series is 39
The ninth term of this series is 41

(a) Find the first term of the series and the common difference of the series.

first term

common difference

(3)

The n th term of a different arithmetic series is $13n - 6$

(b) Find an expression, in terms of n , for the sum of the first n terms of this series.
Give your answer in its simplest form.

.....
(3)

(Total for Question 13 is 6 marks)



10 (a) Here are the first five terms of an arithmetic series.

10 13 16 19 22

Find an expression, in terms of n , for the n th term of this series.
Give your answer in its simplest form.

.....
(2)

- (b) The first term of a different arithmetic series is 4
The common difference of this series is 8
The sum of the first n terms of this series is greater than 1000
Find the smallest possible value of n .

.....
(3)

(Total for Question 10 is 5 marks)



16 Here are the first 4 terms of an arithmetic series.

4.5 6 7.5 9

(a) Find the 25th term of this series.

.....
(2)

The n th term of a different arithmetic series is $7n - 3$

(b) Find the sum of the first 40 terms of this series.

.....
(3)

(Total for Question 16 is 5 marks)



14 The first term of an arithmetic series is 200
The common difference of the same series is -2.5

(a) Work out the 51st term of this series.

.....
(2)

The common difference of a different arithmetic series is 10
The sum of the first 80 terms of this arithmetic series is 40 000

(b) Work out the first term of this series.

.....
(3)

(Total for Question 14 is 5 marks)



15 The 15th term of an arithmetic series is 338
The 25th term of the same series is 208

(a) Work out the common difference of the series and the first term of the series.

common difference

first term

(4)

(b) Find the sum of the first 25 terms of this series.

.....

(2)

(Total for Question 15 is 6 marks)



7 Here are the first 4 terms of an arithmetic series.

24 19 14 9

(a) Find the 100th term of this series.

.....
(2)

(b) Find the sum of the first 200 terms of this series.

.....
(2)

(Total for Question 7 is 4 marks)

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21 (a) Here are the first two terms of an arithmetic sequence

$$7 - k \quad 10 + k$$

where k is a constant.

Find an expression, in terms of k , for the 10th term of this sequence.

Give your answer in the form $ak + b$ where a and b are integers.

.....
(3)

(b) Calculate the sum of all the even numbers from 4 to 102

.....
(3)

(Total for Question 21 is 6 marks)

TOTAL FOR PAPER IS 90 MARKS

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11 Here are the first five terms of an arithmetic series.

25 35 45 55 65

(a) Find the sum of the first 120 terms of this series.

.....
(2)

The p th term of this series is the first term to be greater than 1000

(b) Find the value of p .

.....
(3)

(Total for Question 11 is 5 marks)

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16 The first term of an arithmetic series is 6
The common difference of the series is 12

(a) Work out the 10th term of the series.

.....
(2)

The n th term of a different arithmetic series is $9n - 11$

(b) Work out the sum of the first 20 terms of this series.

.....
(3)

(Total for Question 16 is 5 marks)



11 Here are the first five terms of an arithmetic series.

-2 -6 -10 -14 -18

(a) Find the 51st term of this series.

.....
(2)

(b) Find the sum of the first 51 terms of this series.

.....
(3)

(Total for Question 11 is 5 marks)



11 The first term of an arithmetic series is 4
The common difference of the series is 7

- (a) Find an expression, in terms of n , for the n th term of the series.
Give your answer in its simplest form.

.....
(2)

The p th term of the series is 102

- (b) Work out the value of p .

.....
(1)

- (c) Find the sum of the first 100 terms of this series.

.....
(2)

(Total for Question 11 is 5 marks)



- 9 The first term of an arithmetic series is 4
The common difference of this series is 10

(a) Work out the 100th term of this series.

.....
(2)

(b) Work out the sum of the first 100 terms of this series.

.....
(2)

The first term of a different arithmetic series is 3
The 10th term is 102

(c) Work out the common difference of this series.

.....
(2)

(Total for Question 9 is 6 marks)



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14 The first term of an arithmetic series is -50
The common difference of the same series is 20

(a) Work out the 51st term of this series.

.....
(2)

The common difference of a different arithmetic series is 2
The sum of the first 200 terms of this arithmetic series is $42\,800$

(b) Work out the first term of this series.

.....
(3)

(Total for Question 14 is 5 marks)



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11 The first term of an arithmetic series is 6
The common difference of the series is 5

- (a) Find an expression, in terms of n , for the n th term of the series.
Give your answer in its simplest form.

.....
(2)

The p th term of the series is 121

- (b) Work out the value of p .

.....
(1)

- (c) Find the sum of the first 101 terms of this series.

.....
(2)

(Total for Question 11 is 5 marks)

