Name:

Exam Style Questions

Arithmetic Progressions

Corbettmaths

Equipment needed: Pen and Calculator

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Video 374

Answers and Video Solutions

1. Here are the first four terms of a sequence

17 21 25 29

+4 +4 +4 +4

(a) Work out the next term in the sequence

33

(1)

(b) Explain how you worked out the answer to part (a).

The common difference is 4, so to find the next term, add 4 to 29.

(1)

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2. The first two terms of an arithmetic progression are 6 and 12

Work out the next term.

6 12 18

+6 +6

18

(1)

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3. An arithmetic progression begins –2, 8, ...

Work out the next three terms.

-2 8 18 28 38

+10 +10 +10 +10

18 28 38

(2)

4. Which of the following is an arithmetic progression?

Circle the correct answer.

3 6 12 24 | 3 6 9 15

3 4 6 9 | 3 5 7 9 (+2 +2 +2)

(1)

5. Which of the following is an arithmetic progression?

Circle the correct answer.

32 16 8 4 | 32 30 26 20

32 25 18 11 (-7 -7 -7) | 32 8 2 0.5

(1)

6. Here are the first five terms of an arithmetic sequence.

9 13 17 21 25

Is 68 a term in the sequence?
Explain your answer.

No, 68 is even but all the terms in the sequence are odd.

(1)

7. Edwin has the following number cards.

6	8	12	13	17	20	21

Edwin chooses 3 of the number cards to make an arithmetic progression.

Write down 3 possible number cards that he could choose.

e.g. 6 13 20

e.g 13 17 21 **(2)**

8. Here are the first four terms of an arithmetic sequence.

2 7 12 17

Find an expression, in terms of n, for the nth term of this sequence.

	2	7	12	17
5n	5	10	15	20

5n - 3

(2)

9. Here are the first four terms of an arithmetic sequence.

−14 −3 8 19

Find an expression, in terms of n, for the nth term of this sequence.

	-14	-3	8	19
11n	11	22	33	44

11n - 25

(2)

10. Here are the first four terms of an arithmetic sequence.

7 1 −5 −11

Find an expression, in terms of n, for the nth term of this sequence.

7 1 -5 -11

-6n -6 -12 -18 -24

-6n +13

(2)

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11. Here are the first four terms of an arithmetic sequence.

27 34 41 48

(a) Find an expression, in terms of n, for the nth term of this sequence.

27 34 41 48

7 14 21 28

7n +20

(2)

(b) Work out the 20th term in the sequence.

7×20 +20 = 160

160

(1)

(c) Show 380 is not a term in the sequence.

$7n + 20 = 380$

$7n = 360$

$n = 51.428...$

since 51.428... is not a whole number, 380 is not in the sequence.

(2)

12. The first two terms of an arithmetic progression are:

$5k$ $\xrightarrow{+5k}$ $10k$ $\xrightarrow{+5k}$ $15k$

Write down the next term.

$15k$

.....

(1)

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13. Yasmin attended a four year college course.

At the end of each of the 4 years, the students on the course sit an examination. The number of marks that each examination is worth, over the 4 years, form an arithmetic progression.

The examination at the end of the 1st year was worth 75 marks.
The examination at the end of the 2nd year was work 110 marks.

In order to pass the course, a student needs to obtain at least 60% of the total available marks over the four years.

Yasmin scored a total of 309 marks.

Did Yasmin pass the course?

$75 + 110 + 145 + 180 = 510$

60% of 510 = 306 (since $510 \times 0.6 = 306$)

Yes $309 > 306$

(5)

14. The first three terms of an arithmetic sequence are

$2a + b$ $3a + 6b$ $4a + 11b$ $5a + 16b$

Write down the next term in the sequence

$5a + 16b$

.....

(1)

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15. The first three terms of an arithmetic sequence are

$2k - 1$ $5k + 2$ $8k + 5$

Find, in terms of k, the 10th term of the sequence.

$2k-1$ $5k+2$ $8k+5$ $11k+8$ $14k+11$

$17k+14$ $20k+17$ $23k+20$ $26k+23$ $29k+26$

or

	2	5	8	
$3n-1$	3	6	9	

$3(10) - 1 = 29$

$29k$

	-1	2	5	
$3n-4$	3	6	9	

$3(10) - 4 = 26$

$+ 26$

$29k + 26$

.....

(4)

16. The first three terms of an arithmetic sequence are

$2k$ $\quad$ $11k$ $\quad$ $20k$

+9k $\quad$ +9k

The sum of the first six terms of the sequence is 1029

Work out the value of k.

$2k + 11k + 20k + 29k + 38k + 47k = 147k$

$147k = 1029$

$k = 7$

7

.....

(4)

17. The first three terms of an arithmetic sequence are

$x + 16$ $5x - 1$ $2x + 38$

Work out the value of x.

$(5x - 1) - (x + 16) = (2x + 38) - (5x - 1)$

$4x - 17 = -3x + 39$

$7x = 56$

$x = 8$

8

.....

(4)