

Arithmetic Sequences - Worksheet

Skill

Group A - Continuing sequences

Write the next 3 terms of each arithmetic sequence:

1) 7, 14, 21, 28,	2) 3, 7, 11, 15,	3) 24, 21, 18, 15,
4) 5, 3, 1, - 1,	5) - 2, - 5, - 8,	6) - 20, - 17, - 14,
7) 2. 5, 2. 7, 2. 9,	8) 6.25, 6.15, 6.05,	9) - 1.5, - 3, - 4.5,

Group B - Find missing numbers

Fill in the missing numbers for each arithmetic sequence:

1) 5, 7,,, 13	2) 3, 8,,, 23	3) 19, 15,,, 3
4) 4, 1,, - 5,	5) , 5, 12, 19,	6) , - 1, 1,, 5
7) 36,, 54,, 72	8) 0.05,, 0.09,,	9) ,, - 3.4,, - 4.2

Group C - Generating sequences

Generate the first 5 terms for each arithmetic sequence:

1) 3n	2) 4n + 1	3) 5n - 3
4) 2 + n	5) 2n - 10	6) 0. 5 <i>n</i>
7) 2. 5 <i>n</i> + 1	8) 4 - n	9) 8 - 3n



Arithmetic Sequences - Worksheet

Applied

- 1) The first 5 terms in a sequence are 4, 7, 10, 13, 16.
 - (a) Show that the number 38 does not appear in the sequence.
 - (b) David says "the 10^{th} term in the sequence is 40 as $4 \times 10 = 40$ ". Is David correct? Explain your answer.
 - (c) The 100^{th} term is 301. What is the value of the 98th term?
- 2) The first term in a sequence is 2a b. The fifth term in the same sequence is 10a 5b.
 - (a) Calculate the 8^{th} term in the sequence.
 - (b) Write an expression for the sum of the first 5 terms in the sequence.
 - (c) When a = 5 and b = -2, calculate the product of the first and second terms of the sequence.
- **3)** Let T represent a sequence where T = 2n + 1.
 - (a) Complete the table for the values to generate the first 5 terms of the sequence of T.

n	1	2	3	4	5
Т					

(b) Represent the sequence T = 2n + 1 on a set of axes.



Arithmetic Sequences - Exam Questions

- 1) The n^{th} term of a sequence is 4n + 5.
 - (a) State the first 5 terms of the sequence.

(b) Is 100 a term in the sequence? Show how you calculate your answer.

.

(2)

(2) (4 marks)

Here are the first four terms of an arithmetic sequence:2, 7, 12, 17

Here are the first five terms of another arithmetic sequence: -4, -1, 2, 5, 8

Find two numbers that are in both number sequences.

(2 marks)

- **3)** The first four terms of an arithmetic sequence are: 3, 7, 11, 15. The 20^{th} term of the number sequence is 79.
 - (a) What is the sum of the 19^{th} and 21^{st} terms?

(2)



Arithmetic Sequences - Exam Questions

(b) Alma says

"the 30th term is 110 as I multiplied the third term by 10."

Is Alma correct? Yes or no? Explain your answer.

(2) (4 marks)

4) Here are the first 5 terms in a sequence:

1, - 5, - 11, - 17, - 23

Emily says,

"- 100 is not a number in this sequence".

Explain why Emily is correct.

(1 mark)

5) Here are some patterns made up of different coloured sweets.



(a) In the space below, draw Pattern 5.





Arithmetic Sequences - Exam Questions

(b) Each blue sweet is worth 20p. Each yellow sweet is worth 15p.How much would it cost to create Pattern 5 only?

(3) (4 marks)

(1)

(2)

6) A basketball match is planned to take place in a large stadium. The most expensive tickets are in the first row. The ticket price for each row forms an arithmetic series. The first four rows are shown in the following table.

Row Number	1	2	2 3			
Price Per Seat	£50	£47.50	£45	£42.50		

- (a) Write down the common difference, d.
- **(b)** Calculate the price of a ticket in the 8^{th} row.

(c) Find the total cost of buying 2 tickets on row 2 and 5 tickets on row 6.

(3) (6 marks)



	Question	Answer
	Skill Questions	
Group A	Write the next 3 terms of each arithmetic sequence:	
	1) 7, 14, 21, 28,	1) 35, 42, 49
	2) 3, 7, 11, 15,	2) 19, 23, 27
	3) 24, 21, 18, 15,	3) 12, 9, 6
	4) 5, 3, 1, - 1,	4) - 3, - 5, - 7
	5) - 2, - 5, - 8,	5) - 11, - 14, - 17
	6) - 20, - 17, - 14,	6) - 11, - 8, - 5
	7) 2. 5, 2. 7, 2. 9,	7) 3. 1, 3. 3, 3. 5
	8) 6. 25, 6. 15, 6. 05,	8) 5.95, 5.85, 5.75
	9) - 1.5, - 3, - 4.5,	9) - 6, - 7.5, - 9
Group B	Fill in the missing numbers for each arithmetic sequence:	
	1) 5, 7,, 13	1) 9, 11
	2) 3, 8,,, 23	2) 13, 18
	3) 19, 15,,, 3	3) 11, 7
	4) 4, 1,, - 5,	4) - 2, - 8
	5) , 5, 12, 19,	5) - 2, 26
	6) , - 1, 1,, 5	6) - 3, 3
	7) 36,, 54,, 72	7) 45, 63
	8) 0.05,, 0.09,,	8) 0.07, 0.11, 0.13
	9),, - 3.4,, - 4.2	9) - 2.6, - 3.0, - 3.8



Group C	Generate the first 5 terms for each arithmetic sequence:	
	1) 3n	1) 3, 6, 9, 12, 15
	2) 4n + 1	2) 5, 9, 13, 17, 21
	3) 5n - 3	3) 2, 7, 12, 17, 22
	4) 2 + n	4) 3, 4, 5, 6, 7
	5) 2n - 10	5) - 8, - 6, - 4, - 2, 0
	6) 0. 5 <i>n</i>	6) 0.5, 1, 1.5, 2, 2.5
	7) 2. 5 <i>n</i> + 1	7) 3. 5, 6, 8. 5, 11, 13. 5
	8) 4 - n	8) 3, 2, 1, 0, - 1
	9) 8 - 3n	9) 5, 2, -1, -4, -7



	Qı	uestion	Ar	nswer
	Ap	plied Questions		
1)		The first 5 terms in a sequence are 4, 7, 10, 13, 16.		
	a)	Show that the number 38 does not appear in the sequence.	a)	4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40
	b)	David says "the 10^{th} term in the sequence is 40 as 4 × 10 = 40". Is David correct? Explain your answer.	b)	40 is the 13 th term 31 is the 10 th term
	c)	The 100^{th} term is 301. What is the value of the 98^{th} term?	c)	301 - 6 = 295
2)		The first term in a sequence is $2a - b$. The fifth term in the same sequence is $10a - 5b$.		
	a)	a) Calculate the 8 th term in the sequence.		2a - b, 4a - 2b, 6a - 3b, 8a - 4b, 10a - 5b, 12a - 6b, 14a - 7b, 16a - 8b
	b)	b) Write an expression for the sum of the first 5 terms in the sequence.		30a — 15b
	c)	When $a = 5$ and $b = -2$, calculate the product of the first and second terms of the sequence.	c)	12 × 24 = 288







Arithmetic Sequences - Mark Scheme

		Question	Ar	iswer	
		Exam Questions			
1)	(a)	The n^{th} term of a sequence is $4n + 5$. State the first 5 terms of the sequence.	(a)	At least 3 terms 9, 13, 17, 21, 25	(1) (1)
	(b)	Is 100 a term in the sequence? Show how you calculate your answer.	(b)	No. 100 is an even number and the numbers in the sequence are odd (oe)	(1) (1)
2)		Here are the first four terms of an arithmetic sequence: 2, 7, 12, 17		2 17	(1) (1)
		Here are the first five terms of another arithmetic sequence: -4, -1 , 2, 5, 8			
		Find two numbers that are in both number sequences.			
3)		The first four terms of an arithmetic sequence are: 3, 7, 11, 15 The 20 th term of the number sequence is 79.			
	(a)	What is the sum of the 19 th and 21 st terms?	(a)	75 and 83 seen 75 + 83 = 158 or 79 \times 2 = 158	(1) (1)
	(b)	Alma says "the 30 th term is 110 as I multiplied the third term by 10." Is Alma correct? Yes or no? Explain your	(b)	No 30^{th} term = 119	(1) (1)
4)		Here are the first 5 terms in a sequence: 1, -5 , -11 , -17 , -23		All terms are odd	(1)
		Emily says, "- 100 is not a number in this sequence". Explain why Emily is correct.			



Arithmetic Sequences - Mark Scheme

5)	Here are some different colour Pattern 1 Pat	patter red sv	ns made veets.	up o: Patte	f ern 3		Pattern 5	
(a)	In the space be	low, c	lraw Patt	tern 5		(a)		(1)
(b)	Each blue sweet is worth 20 <i>p</i> . Each yellow sweet is worth 15 <i>p</i> . How much would it cost to create Pattern 5 only?					(b)	$8 \times 15p$ $8 \times 15p + 20p$ £1.40	(1) (1) (1)
6)	A basketball match is planned to take place in a large stadium. The most expensive tickets are in the first row. The ticket price for each row forms an arithmetic series. The first four rows are shown in the following table							
	Row Number	1	2	3	4			
	Price Per Seat	£50	£47.50	£45	£42.50			
(a)	Write down the common difference, d .			e, d.	(a)	£2.50	(1)	
(b)	Calculate the price of a ticket in the 8 th row.				e 8 th	(b)	52.5 – 2.5 £32.50	(1) (1)
(c)	Find the total c row 2 and 5 tic	ost of kets c	buying on row 6	2 tick	tets on	(c)	$2 \times 47.5 = 95$ $5 \times (52.5 - 2.5(6)) = 187.5$ $95 + 187.5 = \pounds 282.50$	(1) (1) (1)

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