Algebra 1

9. Arithmetic Sequences

9.1 Recognizing Arithmetic Sequences

Exercises

Find all solutions to exercises via https://mathleaks.com/study/recognizing_arithmetic_sequences or scan the QR code

1.1 Given that the sequence -16, -12, -8, -4, $\ldots$ is arithmetic, find its common difference.

1.2 Plot the following arithmetic sequence: -1, -3, -5, -7, $\ldots$

1.3 Given that the sequence 175, 150, 125, 100, $\ldots$ is arithmetic, find its common difference.

1.4 Given that the first term of an arithmetic sequence is 2 and the common difference is 13, find the next three terms of the sequence.

1.5 Is the sequence 4, 9, 14, 19, $\ldots$ arithmetic? If so, find the common difference.

1.6 Given that the first term of an arithmetic sequence is 18 and the common difference is -6, find the next three terms of the sequence.

1.7 Is the sequence 10, 8, 6, 4, $\ldots$ arithmetic? If so, find the common difference.

1.8 Given that the sequence 21, 19, 17, 15, $\ldots$ is arithmetic, find its next three terms.

1.9 Is the sequence 4, 4.4, 4.44, 4.444, $\ldots$ arithmetic? If so, find the common difference.

1.10 Elina rolls a dice four times. She writes down the sum of the numbers shown each time.

Roll	1	2	3	4
Sum of numbers	2	5	8	11

Find a sequence that represents the sum after each roll and determine if it's arithmetic or not.

1.11 Is the sequence $18, 16, 15, 13, \ldots$ arithmetic? If so, find the common difference.

1.12 Plot the following arithmetic sequence: $4, 12, 20, 28, \ldots$

1.13 Given the arithmetic sequence: $-\frac{1}{2}, 0, \frac{1}{2}, 1, \ldots$, find the next three of its terms.

1.14 Determine if the common difference of the arithmetic sequence

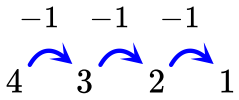
$$25, 19, 13, 7,$$

is 6 or -6?

1.15 Given the sequence: $10, 4, -2, -8, \ldots$, find the pattern describing it and write the next two of its terms.

1.16 Given the sequence: $1.1, 2.2, 3.3, 4.4, \ldots$, find the pattern describing it and write the next two of its terms.

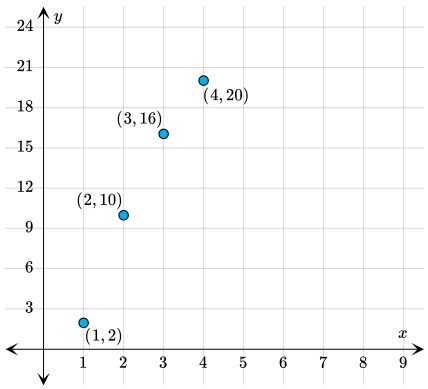
2.1 Ron-Jon tried to find the common difference of the arithmetic sequence.



Common difference: 1

However, something is not correct... Please, help Ron-Jon identify and correct the error.

2.2 Determine if the graph represent an arithmetic sequence.



2.3 You are catching a train to New York. The train starts in Philadelphia at 06.00 AM and stops every 12 minutes. You arrive at your station 07.29 AM. How long do you have to wait for the train?

2.4 **A** The table represents an arithmetic sequence. Fill out the empty slots.

x	y
1	5
2	8
3	
4	

B Graph the values from the table as points.

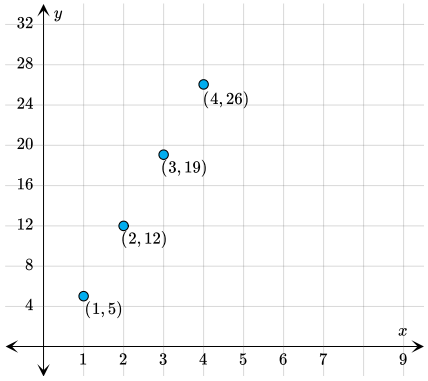
C Connect the points with a line. What can you tell about it?

2.5 A sunflower in Karen's backyard is 30 in. tall the first week she measures it. Then, it grows 6 in. per week. Make a table of the height of the sunflower each week. How high is it week 6?

2.6 In the arithmetic sequence $A(n)$ the fourth term are $a_4 = 8$ and the common difference is 2. Find a_1.

2.7 Logan borrows $\$350$ from his friend. He pays $\$25$ back each week. When will the whole loan be settled?

2.8 Determine if the graph represent an arithmetic sequence.



2.9 Given an arithmetic sequence with first term 3 and a common difference of 1.5. Find the next three terms and graph the sequence.

3.1 An arithmetic sequence has the first the terms:

$$a+b+c, \quad 4a+3b+c, \quad 7a+5b+c.$$

Find the expression for the fourth term.

3.2 Ron-Jon tells Len-Jon that the range of an arithmetic sequence only contains integers since the domain does. Is he correct?

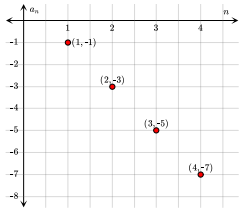
3.3 Determine if the domain and range of an arithmetic sequence are discrete or continuous.

3.4 Find one similarity between the graphs of linear functions and arithmetic sequences. Then, determine one difference.

Answers

9.1 Recognizing Arithmetic Sequences

1.1 4

1.2 

1.3 -25

1.4 $15, 28, 41$

1.5 Yes. The common difference: 5.

1.6 $12,\ 6,\ 0$

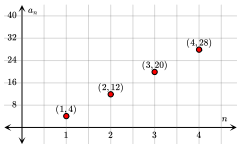
1.7 Yes. The common difference: -2.

1.8 $13, 11$ and 9

1.9 No

1.10 **Sequence:** $2, 5, 8, 11$
Is the sequence arithmetic: Yes.

1.11 No.

1.12 

1.13 $1\frac{1}{2}$, 2 and $2\frac{1}{2}$

1.14 -6

1.15 **Pattern:** Subtract 6 from the previous term.
Next two terms: -14 and -20

1.16 **Pattern:** Add 1.1 to the previous term.
Next two terms: 5.5 and 6.6

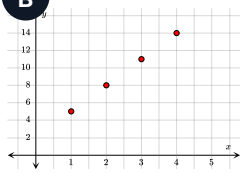
2.1 **Error:** Common difference was not named correctly.
Correct solution: $d = $ -1.

2.2 **Arithmetic Sequence?** No.

2.3 7 minutes

2.4 **A**

x	y
1	5
2	8
3	11
4	14

B 

C All points lie on the same line.

2.5 $30, 36, 42, 48, 54, 60$. After 6 weeks have passed, the bamboo has a height of 60 in.

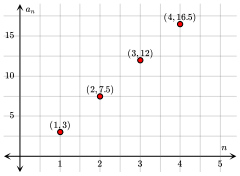
2.6 $a_1 = 2$

2.7 After 15 weeks.

2.8 **Arithmetic Sequence?** Yes.

2.9 **Next three:** $\{7.5, 12, 16.5\}$

Graph:



3.1 $10a + 7b + c$

3.2 No

3.3 **Domain:** Discrete
Range: Discrete

3.4 **Similar:** The graphs of arithmetic sequences and linear functions are similar, as the terms of the sequence lay on a straight line that is a graph of a linear equation.
Difference: The graph of a linear function is a straight line and the graph of an arithmetic sequence is a set of points on the coordinate plane.