

Algebra 1 · Arithmetic and Geometric Sequences · Test

Common Core F-IF.A.3, F-BF.A.2, F-LE.A.2 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This test covers arithmetic and geometric sequences: identifying the type, writing explicit and recursive formulas, finding terms from tables, graphs and two known terms, and modeling. It has nine questions worth 20 points. Show your work and write formulas clearly. A calculator is allowed for arithmetic only.

Test information

- **Grade:** Algebra 1
- **Chapter:** Arithmetic and Geometric Sequences
- **Common Core:** F-IF.A.3, F-BF.A.2, F-LE.A.2
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 3 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 2 pts)

Question 1: Identify the sequence (2 points)

Classify each sequence as arithmetic or geometric and give the next term.

- a. 12,19,26,33 (1 point)
- b. 3,−6,12,−24 (1 point)

Question 2: Arithmetic formula (2 points)

Consider the sequence 9,5,1,−3.

- a. Write an explicit formula for a_n . (1 point)
- b. Find a_{12} . (1 point)

Question 3: Geometric formula (2 points)

Consider the sequence 7,14,28,56.

- Write an explicit formula for a_n . (1 point)
- Find a_9 . (1 point)

Question 4: Recursive formulas (2 points)

- Write a recursive formula for the sequence 100,85,70,55. (1 point)
- A sequence has $a_1 = 2$ and $a_n = 5 \cdot a_{n-1}$. Find a_4 . (1 point)

Question 5: Sequence from a table (3 points)

The table shows the first four terms of an arithmetic sequence.

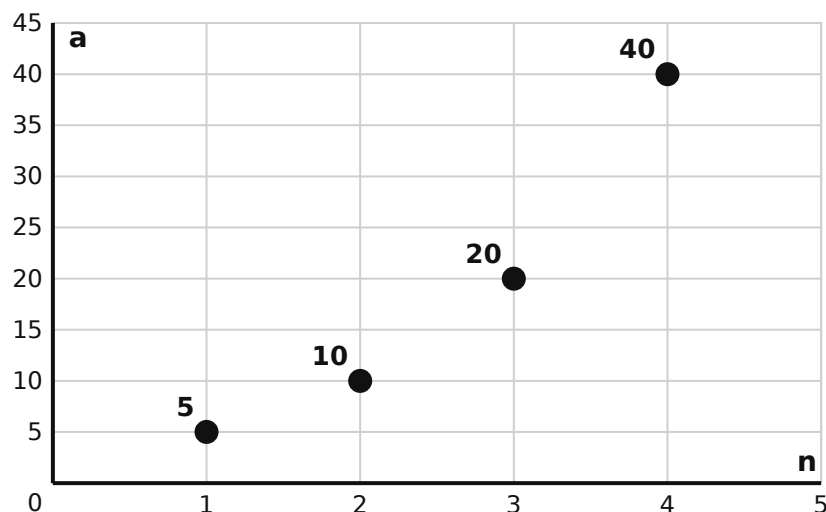
n	1	2	3	4
a_n	14	23	32	41

An arithmetic sequence.

- Find the common difference. (1 point)
- Write an explicit formula for a_n . (1 point)
- Which term of the sequence equals 140? (1 point)

Question 6: Sequence from a graph (3 points)

The graph shows the first four terms of a geometric sequence.



A geometric sequence.

- Find the common ratio. (1 point)
- Write an explicit formula for a_n . (1 point)
- Find a_7 . (1 point)

Question 7: Arithmetic from two terms (2 points)

An arithmetic sequence has $a_4 = 19$ and $a_9 = 44$.

- a. Find the common difference. (1 point)
- b. Write an explicit formula for a_n . (1 point)

Question 8: Geometric from two terms (2 points)

A geometric sequence has a positive common ratio, $a_2 = 12$ and $a_4 = 48$.

a_1 ?	a_2 12	a_3 ?	a_4 48
------------	-------------	------------	-------------

Two known terms.

- a. Find the common ratio. (1 point)
- b. Find a_6 . (1 point)

Question 9: Growing plant (2 points)

Noah's plant is 4 inches tall in week 1 and grows 1.5 inches each week. Let a_n be its height in week n .

- a. Write an explicit formula and find the height in week 9. (1 point)
- b. In which week is the plant first taller than 30 inches? (1 point)