

Arithmetic and Geometric Sequences as Functions

Grade 9 – Algebra 1 math · Test · Standards: F-IF.A.3, F-BF.A.2, F-LE.A.2

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total. Show the common difference or ratio, write formulas with the subscript notation and give units in context problems. A calculator is allowed. Plan on about 45 minutes.

Standards: F-IF.A.3, F-BF.A.2, F-LE.A.2 · **Level:** Grade 9 Algebra 1

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Classify the sequences (2 points)

Classify each sequence and name its common difference or ratio. (a) 9, 16, 23, 30, ... (1 point)
(b) 5, 20, 80, 320, ... (1 point)

Question 2 Recursive terms (2 points)

A sequence has $a_1 = -4$ and $a_n = a_{n-1} + 9$. Write the first five terms.

Question 3 Explicit arithmetic (2 points)

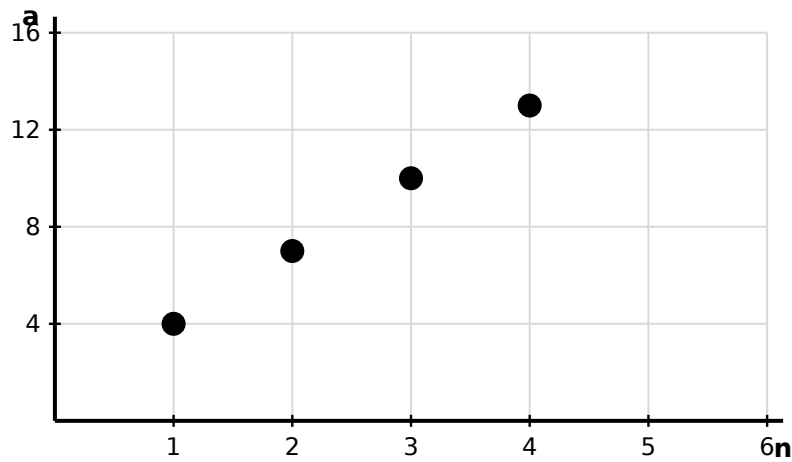
Give a rule for the n th term of 21, 17, 13, 9, ... and evaluate a_{15} .

Question 4 Explicit geometric (2 points)

Give a rule for the n th term of 2, -6, 18, -54, ... and evaluate a_6 .

Question 5 Sequence graph (3 points)

Dots on the grid mark the opening values of a sequence.



The first four terms of a sequence.

(a) Is it arithmetic or geometric? (1 point) (b) Write a formula for the n th term. (1 point) (c) Compute a_{30} . (1 point)

Question 6 Two known terms (3 points)

For an arithmetic sequence, $a_4 = 23$ and $a_9 = 58$. (a) Determine d . (1 point) (b) Determine a_1 . (1 point) (c) Write its rule for the n th term. (1 point)

Question 7 Growing fund (3 points)

A fund starts at \$2,400 in year 1 and grows by 5% each year, so $a_n = 2,400(1.05)^{n-1}$. (a) State the common ratio. (1 point) (b) Find the value in year 4 to the nearest cent. (1 point) (c) Write a recursive formula. (1 point)

Question 8 Theater seating (3 points)

The seating chart shows the start of a pattern.

Row 1: 18 seats
Row 2: 22 seats
Row 3: 26 seats

The pattern continues.

(a) Write a formula for the seats in row n . (1 point) (b) Count the seats in row 20. (1 point) (c) Which row has 70 seats? (1 point)