

Algebra 2 · Sequences and Series · Test

Common Core A-SSE.B.4, F-BF.A.2, F-IF.A.3 · mathovore.fr

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

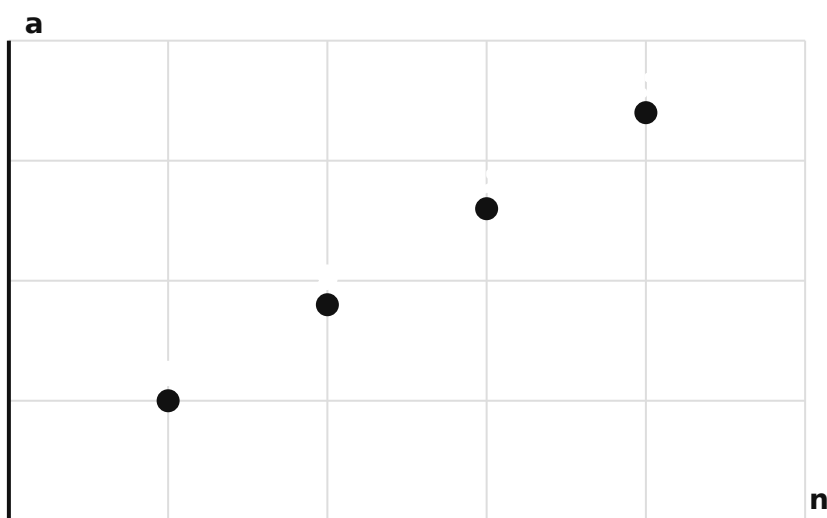
This 45-minute test has 9 questions worth 20 points on sequences, sigma notation, series sums and applications. Show all work, and round money to the nearest cent unless told otherwise. A calculator is allowed.

Test information

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

Question 1: Sequence from a graph (2 points)

The graph shows the first four terms of a sequence.



Terms a_1 to a_4 .

- Write an explicit formula for a_n . (1 point)
- Find a_{30} . (1 point)

Question 2: Alternating sequence (2 points)

A sequence begins 6, -12, 24, -48, and each term is found the same way from the one before it.

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

Question 3: Recursive to explicit (2 points)

A sequence is defined by $a_1 = 9$, $a_n = a_{n-1} - 4$.

- List the first four terms. (1 point)
- Write an explicit formula and find a_{25} . (1 point)

Question 4: Sigma evaluation (2 points)

Consider $\sum_{k=1}^6 (2k+3)$.

- Write out all the terms. (1 point)
- Find the sum. (1 point)

Question 5: Lecture hall (2 points)

A lecture hall has 20 rows. Row 1 has 12 seats and every row has 3 more seats than the row before it.

Row 1	○○○○○○○○○○○○○○	12
Row 2	○○○○○○○○○○○○○○○	15
Row 3	○○○○○○○○○○○○○○○○	18
Row 4	○○○○○○○○○○○○○○○○○	21
	⋮	

The first four rows.

- How many seats are in row 20? (1 point)
- How many seats are in the hall? (1 point)

Question 6: Series with negative ratio (2 points)

Evaluate $\sum_{k=1}^8 3(-2)^{k-1}$.

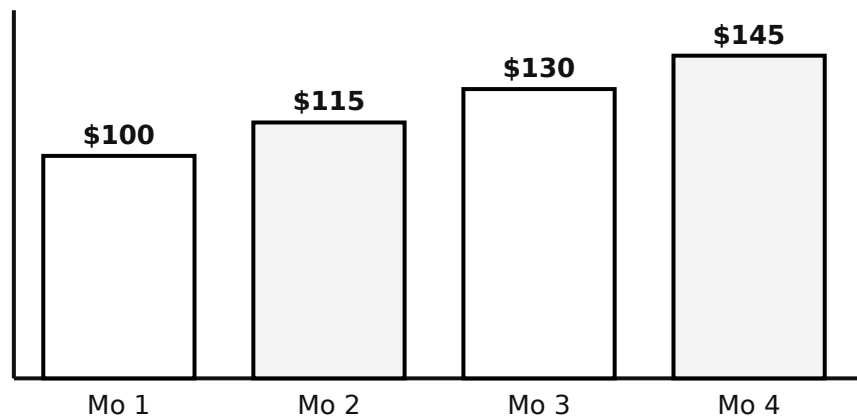
Question 7: Missing terms (2 points)

A geometric sequence of positive terms has $a_4 = 24$ and $a_6 = 96$.

- Find the common ratio and a_1 . (1 point)
- Find a_8 . (1 point)

Question 8: Growing deposits (3 points)

Aisha deposits \$100 into a savings jar in month 1 and increases the deposit by \$15 each month after that. The chart shows the first four months.



Deposits in months 1 to 4.

- Find her deposit in month 24. (1 point)
- Find the total she has deposited after 24 months. (2 points)

Question 9: Loan amount (3 points)

Liam repays a loan with 24 monthly payments of \$400. The interest rate is 0.5% per month, so a payment made k months from now is worth $400(1.005)^{-k}$ today. The amount borrowed equals the value today of all 24 payments.

- Write the amount borrowed in sigma notation. (1 point)
- Find the amount borrowed to the nearest cent. (1 point)
- Find the total interest Liam pays. (1 point)