

Algebra 2 - Arithmetic and Geometric Sequences and Series - Quiz

Common Core F-BF.A.2, A-SSE.B.4, F-IF.A.3 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Answer ten multiple-choice questions on arithmetic and geometric sequences and series. Choose one option for each question, then read the explanation to see why the correct choice works and which mistake, such as mixing up the arithmetic and geometric formulas, each wrong choice shows.

Algebra 2 · Common Core State Standards: **F-BF.A.2, A-SSE.B.4, F-IF.A.3**

Questions

Question 1

What is the common difference of 9, 5, 1, -3, ...?

- A. 4
- B. -3
- C. 5
- D. -4

Question 2

What is the common ratio of 2, 10, 50, 250?

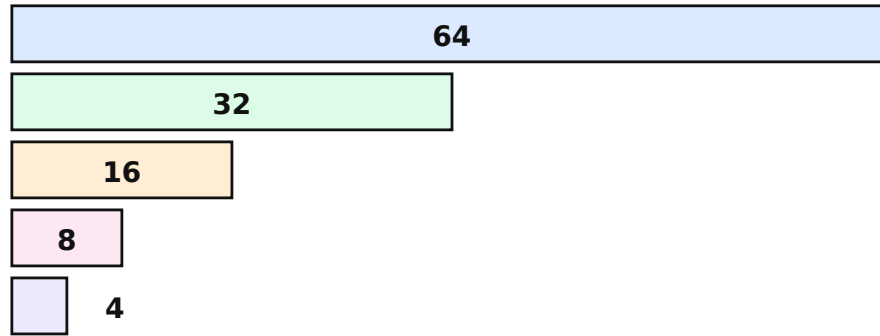
- A. 8
- B. 4
- C. 5
- D. 2

Question 3

What is the 10th term of an arithmetic sequence with $a_1 = 3$ and $d = 4$?

- A. 39
- B. 43
- C. 40
- D. 34

Question 4



A geometric sequence with ratio $\frac{1}{2}$: each bar is half the one above.

What is the common ratio of the sequence shown in the bar diagram?

- A. $\frac{1}{2}$
- B. 2
- C. -32
- D. $\frac{1}{32}$

Question 5

What is $1+2+3+\dots+50$?

- A. 1,250
- B. 1,275
- C. 2,550
- D. 1,300

Question 6

What is the sum of the first 5 terms of 1,3,9,27,81?

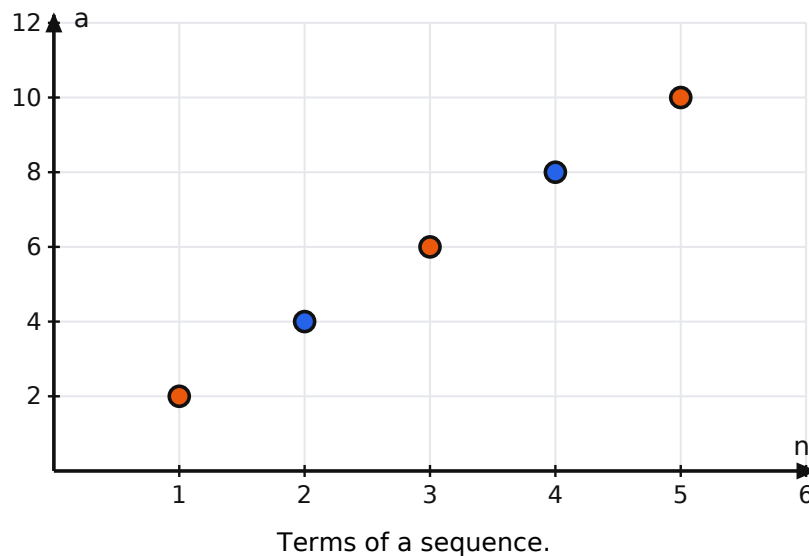
- A. 243
- B. 121
- C. 120
- D. 81

Question 7

Which is a recursive formula for 4,8,16,32,...?

- A. $a_1 = 4, a_n = a_{n-1} + 4$
- B. $a_1 = 2, a_n = 4a_{n-1}$
- C. $a_1 = 4, a_n = 2a_{n-1}$
- D. $a_n = 4n$

Question 8



The points of the sequence lie on a line. What kind of sequence is it?

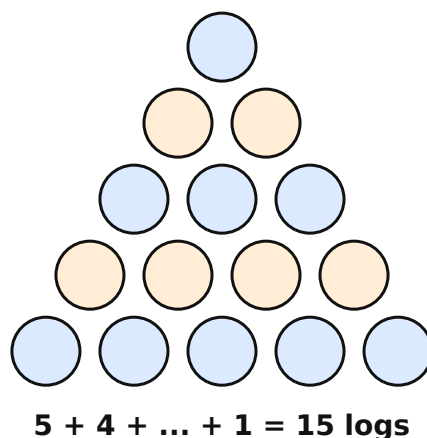
- A. Geometric
- B. Neither
- C. Both
- D. Arithmetic

Question 9

What is the domain of a sequence as a function?

- A. All real numbers
- B. The positive integers
- C. The nonnegative real numbers
- D. The integers

Question 10



A stack of logs with 5 in the bottom row.

How many logs are in the stack with rows of 5, 4, 3, 2, and 1?

- A. 15
- B. 10
- C. 20
- D. 25

Answers

1. **D** - Each term is 4 less than the previous one: $5 - 9 = -4$.
2. **C** - $10 \div 2 = 5$ and $50 \div 10 = 5$.
3. **A** - $a_{10} = 3 + 9(4) = 39$. Using 10 instead of $n - 1$ would give 43.
4. **A** - Each bar is half of the one above, so $r = 1/2$.
5. **B** - $S = 50(1 + 50)/2 = 1,275$.
6. **B** - $S_5 = (1 - 3^5)/(1 - 3) = (-242)/(-2) = 121$.
7. **C** - Each term is double the previous term, so multiply by 2.
8. **D** - Equal steps in n add the same amount, so the graph is linear and the sequence is arithmetic.
9. **B** - The terms are labeled by their position $n = 1, 2, 3$, and so on.
10. **A** - $5 + 4 + 3 + 2 + 1 = 15 = 5(5 + 1)/2$.

Remember

- A sequence is a function whose domain is the positive integers.
- Arithmetic: $a_n = a_1 + (n - 1)d$; geometric: $a_n = a_1 \cdot r^{(n-1)}$.
- Recursive formulas build each term from the previous one.
- Arithmetic sum: $S_n = n(a_1 + a_n)/2$.
- Geometric sum: $S_n = a_1(1 - r^n)/(1 - r)$, $r \neq 1$.