

Arithmetic & Geometric Sequence Worksheet

1. Write the first three terms in the following sequences. Identify them as arithmetic or geometric.

a) $A(n + 1) = A(n) - 5$ for $n \geq 1$ and $A(1) = 9$

b) $A(n + 1) = \frac{1}{2}A(n)$ for $n \geq 1$ and $A(1) = 4$

c) $A(n + 1) = A(n) \div 10$ for $n \geq 1$ and $A(1) = 10$

2. Identify each sequence as arithmetic or geometric. Explain your answer, and write an explicit formula for the sequence.

a) 14, 11, 8, 5, ...

b) 2, 10, 50, 250, ...

c) $-\frac{1}{2}, -\frac{3}{2}, -\frac{5}{2}, -\frac{7}{2}, \dots$

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a) $A(n + 1) = A(n) - 5$ for $n \geq 1$ and $A(1) = 9$

9, 4, -1 *Arithmetic*

b) $A(n + 1) = \frac{1}{2}A(n)$ for $n \geq 1$ and $A(1) = 4$

4, 2, 1 *Geometric*

c) $A(n + 1) = A(n) \div 10$ for $n \geq 1$ and $A(1) = 10$

10, 1, $\frac{1}{10}$ or 10, 1, 0.1 *Geometric*

2. Identify each sequence as arithmetic or geometric. Explain your answer, and write an explicit formula for the sequence.

a) 14, 11, 8, 5, ...

Arithmetic *-3 pattern* $17 - 3n$, where n starts at 1

b) 2, 10, 50, 250, ...

Geometric $\times 5$ pattern $2(5^{n-1})$, where n starts at 1

c) $-\frac{1}{2}, -\frac{3}{2}, -\frac{5}{2}, -\frac{7}{2}, \dots$

Arithmetic *-1 pattern* $\frac{1}{2} - n$, where n starts at 1

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