

Arithmetic & Geometric Sequences

Date _____ Period _____

For each sequence, state if it is arithmetic, geometric, or neither.

1) 3, 11, 19, 27, 35, ...

2) 16, 8, 4, 2, 1, ...

3) $16, 8, \frac{16}{3}, 4, \frac{16}{5}, \dots$

4) $-17, 83, 183, 283, 383, \dots$

For the following arithmetic sequences, find the common difference, the 52nd term, the explicit formula, and the recursive formula.

5) 35, 45, 55, 65, ...

6) 10, 2, -6, -14, ...

Common Difference: _____

Common Difference: _____

Find a_{52} _____Find a_{52} _____

Explicit Formula: _____

Explicit Formula: _____

Recursive Formula _____

Recursive Formula _____

7) 22, -78, -178, -278, ...

8) -2, -102, -202, -302, ...

Common Difference: _____

Common Difference: _____

Find a_{52} _____Find a_{52} _____

Explicit Formula: _____

Explicit Formula: _____

Recursive Formula _____

Recursive Formula _____

9) -14, -22, -30, -38, ...

10) -27, -29, -31, -33, ...

Common Difference: _____

Common Difference: _____

Find a_{52} _____Find a_{52} _____

Explicit Formula: _____

Explicit Formula: _____

Recursive Formula _____

Recursive Formula _____

11) -39, -32, -25, -18, ...

12) 17, 22, 27, 32, ...

Common Difference: _____

Common Difference: _____

Find a_{52} _____Find a_{52} _____

Explicit Formula: _____

Explicit Formula: _____

Recursive Formula _____

Recursive Formula _____

For the following geometric sequences, find the common ratio, the 8th term, and the explicit formula.

13) 3, -9, 27, -81, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

14) -4, -8, -16, -32, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

15) -1, -3, -9, -27, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

16) 4, 12, 36, 108, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

17) 2, 4, 8, 16, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

18) 1, -4, 16, -64, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

19) -2, -4, -8, -16, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

20) 4, -12, 36, -108, ...

Common Ratio: _____

Find a_8 _____

Explicit Formula: _____

Find the missing term or terms in each ARITHMETIC sequence.

21) ..., 15, ____, 7, ...

22) ..., 25, ____, 45, ...

23) ..., 36, ____, ____, 636, ...

24) ..., 26, ____, ____, 38, ...

25) ..., 0, ____, ____, ____, -16, ...

26) ..., -29, ____, ____, ____, -21, ...

Find the missing term or terms in each GEOMETRIC sequence.

27) ..., -1, ____, -4, ...

28) ..., 1, ____, 36, ...

29) ..., -1, ____, -16, ...

30) ..., -4, ____, ____, ____, -324, ...

31) ..., 1, ____, ____, ____, 625, ...

32) ..., -1, ____, ____, ____, -625, ...

Answers to Arithmetic & Geometric Sequences (ID: 1)

- 1) Arithmetic 3) Neither 5) Common Difference: $d = 10$
 $a_{52} = 545$
 Explicit: $a_n = 35 + 10(n - 1)$
 Recursive: $a_n = a_{n-1} + 10$
 $a_1 = 35$
- 7) Common Difference: $d = -100$
 $a_{52} = -5078$
 Explicit: $a_n = 22 - 100(n - 1)$
 Recursive: $a_n = a_{n-1} - 100$
 $a_1 = 22$
- 9) Common Difference: $d = -8$
 $a_{52} = -422$
 Explicit: $a_n = -14 - 8(n - 1)$
 Recursive: $a_n = a_{n-1} - 8$
 $a_1 = -14$
- 11) Common Difference: $d = 7$ 13) Common Ratio: $r = -3$ 15) Common Ratio: $r = 3$
 $a_{52} = 318$ $a_8 = -6561$ $a_8 = -2187$
 Explicit: $a_n = -39 + 7(n - 1)$ Explicit: $a_n = 3 \cdot (-3)^{n-1}$ Explicit: $a_n = -3^{n-1}$
 Recursive: $a_n = a_{n-1} + 7$
 $a_1 = -39$
- 17) Common Ratio: $r = 2$ 19) Common Ratio: $r = 2$ 21) 11
 $a_8 = 256$ $a_8 = -256$
 Explicit: $a_n = 2 \cdot 2^{n-1}$ Explicit: $a_n = -2 \cdot 2^{n-1}$
- 23) 236, 436 25) -4, -8, -12 27) -2 29) -4
- 31) 5, 25, 125