

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Arithmetic and Geometric Sequences Practice Homework**

For each Sequence, Pattern, Table, or Story below identify whether it is Arithmetic or Geometric, find the common difference or common ratio, write an Explicit Formula, then use your formulas to find the given term.

Representation	Arithmetic or Geometric	Common Difference or Ratio	Explicit Formula	Given Term
1. -6, 12, -24, ...				$a_{10}$
2. 1, 3, 9, 27, ...				$a_5$
3. -10, -8, -6, -4, ...				$a_{56}$
4. 72, 48, 24, ...				$a_5$
5. -31, -23, -15, ...				$a_{32}$
6. -4, -12, -36, ...				$a_3$
7. -2, -10, -50, ...				$a_7$
8. 5, 11, 17, ...				$a_{15}$
9. 4, 24, 144, ...				$a_8$
10. 21, 16, 11, ...				$a_{11}$

## Comparing Arithmetic and Geometric Sequences

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

1) 1, 3, 6, 10, 15, ...

2) 40, 43, 46, 49, 52, ...

3)  $4, \frac{13}{3}, \frac{14}{3}, 5, \frac{16}{3}, \dots$

4) -4, 12, -36, 108, -324, ...

5) 4, 16, 36, 64, 100, ...

6) -29, -34, -39, -44, -49, ...

7) 1, 5, 25, 125, 625, ...

8) 1, 4, 9, 16, 25, ...

9) -34, -26, -18, -10, -2, ...

10) 0, 3, 8, 15, 24, ...

11)  $a_n = -163 + 200n$

12)  $a_n = 16 + 3n$

13)  $a_n = -4 \cdot (-3)^{n-1}$

14)  $a_n = -\frac{3}{4} + \frac{3}{2}n$

## Introduction to Sequences

**Find the next three terms in each sequence.**

1) 1, -3, 9, -27, 81, ...

2) 9, 109, 209, 309, 409, ...

3) 0, 3, 8, 15, 24, ...

4)  $\frac{1}{2}, \frac{1}{2}, \frac{3}{8}, \frac{1}{4}, \frac{5}{32}, \dots$

5) 4, 16, 36, 64, 100, ...

6) 14, 34, 54, 74, 94, ...

7)  $5, \frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \frac{5}{16}, \dots$

8) -9, 101, -999, 10001, -99999, ...

**Find the tenth term in each sequence.**

9)  $-1, \frac{2}{3}, \frac{7}{3}, 4, \frac{17}{3}, \dots$

10) 7, 9, 12, 16, 21, ...

11) -2, -6, -18, -54, -162, ...

12) -23, -18, -13, -8, -3, ...

13) -4, 12, -36, 108, -324, ...

14) -6, -2, 0, 1,  $\frac{3}{2}, \dots$

15) -28, 172, 372, 572, 772, ...

16) 37, 46, 55, 64, 73, ...

**Find the first four terms in each sequence.**

17)  $a_n = \frac{2n+1}{n^3}$

18)  $a_n = 3^{n-1}$

19)  $a_n = n^2 + 1$

20)  $a_n = \frac{n^3}{2n+1}$

**Find the tenth term in each sequence.**

$$21) a_n = \frac{2n + 1}{n^3}$$

$$22) a_n = 4^{n-1}$$

$$23) a_n = (2n)^2$$

$$24) a_n = (2n - 1)^2$$

**Find the first four terms in each sequence.**

$$25) a_n = a_{n-1} + 10 \\ a_1 = 29$$

$$26) a_n = a_{n-1} \cdot 2 \\ a_1 = -1$$

$$27) a_n = a_{n-1} + n \\ a_1 = -4$$

$$28) a_n = \frac{2 + a_{n-1}}{2} \\ a_1 = 10$$

**Find the tenth term in each sequence.**

$$29) a_n = na_{n-1} \\ a_1 = -1$$

$$30) a_n = a_{n-1} + 10 \\ a_1 = 11$$

$$31) a_n = a_{n-1} \cdot 3 \\ a_1 = -3$$

$$32) a_n = \frac{2 + a_{n-1}}{2} \\ a_1 = -14$$

**Write the explicit formula for each sequence.**

$$33) -12, -9, -6, -3, 0, \dots$$

$$34) -6, -3, -2, -\frac{3}{2}, -\frac{6}{5}, \dots$$

**Write the recursive formula for each sequence.**

$$35) 2, 4, 7, 11, 16, \dots$$

$$36) 15, 215, 415, 615, 815, \dots$$