

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

Date _____ Period _____

For each sequence, state if it is arithmetic, geometric, or neither. Write the explicit form regardless.

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.

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

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

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Explicit Expressions and Recursive Processes - Independent Practice Worksheet

Complete all the problems.

1. Write a recursive formula for the following sequences.

2, 5, 26, 677...

2. Given the recursive formula, write the explicit formula for the sequence.

$$t_1 = 0, \quad t_n = t_{n-1} - 2$$

3. Write an explicit formula for the following sequences.

20, 24, 28, 32, 36.....

4. Write an explicit formula for the following sequences.

3, 7, 11, 15, 19.....

5. Given the explicit formula, write the recursive formula for the sequence.

$$T_n = 2n - 1$$

6. Given the recursive formula, write the explicit formula for the sequence.

$$t_1 = 0$$

$$t_n = t_{n-1} - 5$$

7. Write a recursive formula for the following sequences.

2, 5, 26, 677...

8. Given the explicit formula, write the recursive formula for the sequence.

$$T_n = 5n - 1$$

9. Write an explicit formula for the following sequences.

0, -3, -6, -9.....

10. Given the recursive formula, write the explicit formula for the sequence.

$$t_1 = 0$$

$$t_n = t_{n-1} - 6$$

