Name: Guide Date: _____

Sequences Practice

(Fill in the formulas)	Explicit	Recursive
Arithmetic	$a_n = a_1 + d(n-1)$	$a_n = a_{n-1} + d$; $a_1 =$ ___
Geometric	$a_n = a_1(r)^{n-1}$	$a_n = a_{n-1}(r)$; $a_1 =$ ___

Determine if the given sequence is arithmetic, geometric, or neither.

1. 1, 3, 9, 27, ...

$\frac{3}{1}=3$ $\frac{9}{3}=3$ $\frac{27}{9}=3$

Geometric

2. 2, 5, 8, 10, ...

3. 2, 4, 6, 8 ...

$4-2=2$

$6-4=2$ Arithmetic

$8-6=2$

4. 4, 7, 10, 13, ...

Complete each statement:

8. 27 is the _____th term of:
-5, -1, 3, 7, ...

9. -10 is the 17 th term of:
14, 12.5, 11, 9.5, ...

$-10 = 14 - 1.5(n-1)$

$-10 = 14 - 1.5n + 1.5$

$-10 = -1.5n + 15.5$

$-25.5 = -1.5n$

$17 = n$

Write the rule for each geometric sequence and find the given term:

Sequence	Common Ratio (r)	Explicit Formula	Recursive Formula	Given Term (n^{th})
-4, -12, -36, -108 ...				$a_{10}=$
160, 80, 40, 20, ...	$\frac{1}{2}$	$a_n = 160(\frac{1}{2})^{n-1}$	$a_n = a_{n-1}(\frac{1}{2})$; $a_1 = 160$	$a_{12}=$ .078125 or 5/64
2, 8, 32, 128, ...				$a_{14}=$

Find the nth term for each geometric sequence. Round to 3 decimal places if necessary.

15. $a_1 = 3, r = -4, n = 6$

$a_n = a_1(r)^{n-1}$

$a_6 = 3(-4)^{6-1}$

$a_6 = -3072$

16. $a_1 = -500, r = 1/2, n = 10$

17. What are the first four terms in the sequence whose nth term is $a_n = (-2)^n + 1$

a. 3, 4, 5, 6

b. -1, 1, -1, 1

c. -1, 5, -7, 17

d. -2, 4, -8, 16

18. The 8th term of an arithmetic sequence is 36. If the common difference is 2, what is the first term in the sequence? (Hint: work backwards!!!)

a. 22

b. 24

c. 38

d. 64

19. Look at the sequence in this table. What function represents this sequence?

a	1	2	3	4	…
a_n	-1	1	3	5	…

a. arithmetic; $a_n = a_{n-1} + 1$

b. arithmetic; $a_n = a_{n-1} + 2$

c. geometric; $a_n = 2(a_{n-1})$

d. geometric; $a_n = 3(a_{n-1})$

20. Look at the sequence in this table. What function represents this sequence?

a	1	2	3	4	…
a_n	8	11	14	17	…

a. $a_n = n + 7$

b. $a_n = n + 9$

c. $a_n = 2n + 5$

d. $a_n = 3n + 5$