Algebra 2 – Chapter 9 Review
Sequences Practice

Name: Key
Date: _____ **Per:** _____

Directions: For each sequence below, identify whether it is Arithmetic or Geometric, identify the common difference or common ratio, write the Explicit Formula, and find the Given Term.

Representation	Arithmetic or Geometric	Common Difference or Common Ratio	Explicit Formula a_n	Given Term
1. -6, 12, -24, ...	Geo	$r=-2$	$a_n=-6(-2)^{n-1}$	a_{10} $a_{10}=-6(-2)^{(10-1)}$ $a_{10}=3072$
2. 1, 3, 9, 27, ...	Geo	$r=3$	$a_n=1(3)^{n-1}$	a_{15} $a_{15}=1(3)^{(15-1)}$ $a_{15}=4,782,969$
3. -10, -8, -6, -4, ...	Arith	$d=2$	$a_n=-10+(n-1)(2)$	a_{56} $a_{56}=-10+(56-1)(2)$ $a_{56}=100$
4. 72, 48, 24, ...	Arith	$d=-24$	$a_n=72+(n-1)(-24)$	a_{15} $a_{15}=72+(15-1)(-24)$ $a_{15}=-264$
5. -31, -23, -15, ...	Arith	$d=8$	$a_n=-31+(n-1)(8)$	a_{32} $a_{32}=-31+(32-1)(8)$ $a_{32}=217$
6. -4, -12, -36, ...	Geo	$r=3$	$a_n=-4(3)^{n-1}$	a_{10} $a_{10}=-4(3)^{(10-1)}$ $a_{10}=-78,732$
7. -2, -10, -50, ...	Geo	$r=5$	$a_n=-2(5)^{n-1}$	a_9 $a_9=-2(5)^{(9-1)}$ $a_9=-781250$
8. 5, 11, 17, ...	Arith	$d=6$	$a_n=5+(n-1)(6)$	a_{15} $a_{15}=5+(15-1)(6)$ $a_{15}=89$
9. 4, 24, 144, ...	Geo	$r=6$	$a_n=4(6)^{n-1}$	a_7 $a_7=4(6)^{(7-1)}$ $a_7=186624$
10. 21, 16, 11, ...	Arith	$d=-5$	$a_n=21+(n-1)(-5)$	a_{11} $a_{11}=21+(11-1)(-5)$ $a_{11}=-29$

Series Practice

Identify each list as a *series* or a *sequence*. (Circle your answer)

1. 2, 6, 10, 14, ⋯ — 1. *series* or *sequence*

2. 1 + 4 + 7 + 10 + 13 — 2. *series* or *sequence*

3. 4, 10, 16, 22, 28 — 3. *series* or *sequence*

4. 5 + 12 + 19 + 26 + 33 — 4. *series* or *sequence*

5. 1.4 + 1.1 + 0.8 + 0.5 + ⋯ — 5. *series* or *sequence*

6. – 2 – 11 – 20 – 29 – ⋯

Find the sum of the first 12 terms of the arithmetic series.

6. 1 + 3 + 5 + ⋯ $a_{12} = 1 + (12-1)(2) = 23$

$S_{12} = \frac{12}{2}(1+23) = 144$

7. 3 + 7 + 11 + 15 + ⋯ $a_{12} = 3 + (12-1)(4) = 47$

$S_{12} = \frac{12}{2}(3+47) = 300$

Find the sum of the first 7 terms of the geometric series.

8. 2 + 6 + 18 + ...

$S_7 = \frac{2(1-3^7)}{(1-3)} = 2186$

9. 1 + 2 + 4 + 8 + ...

$S_7 = \frac{1(1-2^7)}{(1-2)} = 127$

10. Your brother is preparing for basketball season. He shot 26 baskets on the first day that he practiced. He shot 32 baskets on the second day and 38 baskets the day after that.

{26, 32, 38, ...

Arithmetic

a. If this pattern continues, how many baskets will he shoot on the 30th day?

$a_{30} = 26 + (30-1)(6) = 200$

b. How many baskets will he have shot **in total** during those 30 days?

$S_{30} = \frac{30}{2}(26+200) = 3390$

11. Your classmate is trying to cut down on the amount of time he spends watching television. In January, he spent a total of 3600 min watching television. He watched television for 3240 min in February and 2916 min in March. If this pattern continues, how many minutes of television will he watch this year?

{3600, 3240, 2916, ...

×0.9 ×0.9

$S_n = \frac{3600(1-0.9^n)}{(1-0.9)}$

month 12

$S_{12} = \frac{3600(1-.9^{12})}{(1-.9)} = 25{,}832.5$ mins