Algebra 2 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Series and Sequences REVIEW Per. \_\_\_\_\_\_\_\_\_\_

Determine whether each sequence is arithmetic, geometric, or neither. If it is arithmetic or geometric, determine the equation for the nth term of each sequence and find a10.

1. 1, 3, 6, 10, 15, …
2. 40, 43, 46, 49, 52, …
3. 4, $\frac{13}{3}$, $\frac{14}{3}$, 5, $\frac{16}{3}$, …
4. -4, 12, -36, 108, -324, …
5. 4, 16, 36, 64, 100, …
6. 1, 5, 25, 125, 625, …
7. -29, -34, -39, -44, -49, …
8. 1, 4, 9, 16, 25, …
9. -34, -26, -18, -10, -2, …
10. 0, 3, 8, 15, 24, …

Write a recursive formula for each sequence, then find the next three terms.

1. 2, -6, 18, -54, 162, …
2. 15, 215, 415, 615, 815, …
3. 96, 12, $\frac{3}{2}$, $\frac{3}{16}$, $\frac{3}{128}$, …
4. 9, 5, 1, -3, -7, …

Find the sum of each geometric series.

1. $\sum\_{n=1}^{8}2∙(-2)^{n-2}$
2. $\sum\_{n=1}^{10}4∙(-3)^{n-1}$
3. $\sum\_{k=1}^{8}(-6)^{k-1}$
4. $\sum\_{k=1}^{4}4^{k-1}$
5. The label on Pete’s blue jeans states that, when washed, the jeans will lose 5% of their color. How much of the original color will be left after 8 washings?
6. Todd joins a fitness club. After the first week of training, his biceps increase by 4 millimeters. The trainer says Todd can expect his biceps to continue to increase each week, but only by about 90% of the increase of the week before. How much will Todd’s biceps have increased after 8 weeks?
7. Violet looks at the table of contents in her book. She sees that each of the first 6 chapters is 2 pages longer than the preceding chapter, with the first chapter having 10 pages.
	1. How many pages are in the sixth chapter?
	2. How many pages are in the first 6 chapters?
8. Jackson usually runs 8 laps around the football field and consistently completes the first lap in 3 minutes. During one practice session, his coach notes that it take him 15% longer to complete each lap than the previous lap.
	1. How long does it take Jackson to complete the eighth lap?
	2. How long does it take Jackson to complete all eight laps?
9. A new Camry costs about $23, 000 and depreciates by a rate of 5% per year, whereas a new Fusion costs about $21, 000 and depreciates by a rate of 7% per year. After 5 years, what is the difference in the values of the Camry and Fusion?
10. To buy a new car, John took out a 5 year loan of $18,000 with a 3% annual interest rate compounded yearly from a dealership. How much will John have paid the dealership at the end of the loan? $A = P\left.\left(1 + \frac{r}{n}\right.\right)^{nt}$