11.3- Geometric Sequences and Series

NAME _____DATE _____

Exercises

Find a_n for each geometric sequence.

1) $a_1 = -10$, $r = 4$, $n = 2$

2) $a_1 = -6$, $r = -\frac{1}{2}$, $n = 8$

3) $a_3 = 9$, $r = -3$, $n = 7$

4) $a_4 = 16$, $r = 2$, $n = 10$

Write an equation for the *n*th term of each geometric sequence.

1) 500, 350, 245, ...

2) 11, -24.2, 53.24, ...

3) 17; 187; 2057; 22,627; ...

4) -53; -424; -3392; -27,136; ...

Find the sum of each geometric series.

1. $\displaystyle\sum_{k=4}^{6} 2(-3)^{k-1}$

2. $\displaystyle\sum_{k=1}^{5} (-3)(4)^{k-1}$

3. $\displaystyle\sum_{k=3}^{10} 4(-1)^{k-1}$

4. $\displaystyle\sum_{k=3}^{7} (-1)(5)^{k-1}$

Find a_1 for each geometric series described.

1) $S_n = 720$, $n = 4$, $r = 3$

2) $S_n = 29{,}127$, $n = 9$, $r = 4$

3) $S_n = -6552$, $r = 3$, $a_n = -4374$

4) $S_n = -936$, $r = 5$, $a_n = -750$

Find the geometric means of each sequence.

1) 4, __?__, __?__, __?__, 64

2) 1, __?__, __?__, __?__, 81

3) 38; 228; __?__; 8208; 49,248; ...

4) 531,441; __?__; __?__; __?__; __?__; 9; ...

BIOLOGY A culture initially contains 200 bacteria. If the number of bacteria doubles every 2 hours, how many bacteria will be in the culture at the end of 12 hours?

MOORE'S LAW Gordon Moore, co-founder of Intel, suggested that the number of transistors on a square inch of integrated circuit in a computer chip would double every 18 months. Assuming Moore's law is true, how many times as many transistors would you expect on a square inch of integrated circuit every 18 months for the next 6 years?

TEACHING A teacher teaches 8 students how to fold an origami model. Each of these students goes on to teach 8 students of their own how to fold the same model. If this teaching process goes on for *n* generations, how many people will know how to fold the origami model?