Name: _____ Date: _____

6.5 Geometric Sequences

BLM 6–8

1. Determine the common ratio for each geometric sequence.

a) 3, 12, 48, 192, …

b) $\frac{1}{3}, -1, 3, -9, \ldots$

c) $\frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \ldots$

d) 1000, –500, 250, –125, …

2. Write the first five terms of each geometric sequence.

a) $t_1 = 2, t_2 = -6$

b) $t_1 = 40, t_2 = 20$

c) $t_n = \frac{1}{8}(4)^{n-1}$

d) $t_n = -2(-5)^{n-1}$

3. Determine the number of terms in each geometric sequence.

a) 3, 21, 147, 1029, …, 2 470 629

b) $\frac{1}{3}, \frac{2}{3}, \frac{4}{3}, \frac{8}{3}, \ldots, \frac{512}{3}$

c) 3, –9, 27, –81, …, 177, 147

d) $\frac{2}{25}, \frac{2}{5}, 2, 10, \ldots, 6250$

4. Determine whether each sequence is arithmetic, geometric, or neither. If it is arithmetic, state the values of *a* and *d*. If it is geometric, state the values of *a* and *r*.

a) $500, 125, \frac{125}{4}, \frac{125}{16}, \ldots$

b) 11, 14, 18, 23, 29, …

c) 7, 14, 28, 56, …

d) 11, 14, 17, 20, 23, …

5. Find the term number in the geometric sequence 3, 6, 12, 24, … that has a value of 1536.

6. To try to break a world record, a set of dominoes is set up such that every 10th domino that falls causes 3 dominoes to fall. As a result, after the one line that starts the fall, the 10th domino causes 3 lines to start to fall. Once each of these has progressed to their 10th domino, each of these causes 3 new lines to start to fall. How many lines will start to fall if this pattern is repeated 4 times?

7. A strain of bacteria doubles every 14 h. If there are 100 bacteria cells to start with in a colony, how many will there be after 7 days?

8. The half-life of a radioactive material is 11 years. Initially, there were 16 000 mg of the material.

a) What are the values of *a* and *r* in this sequence?

b) Write the general term of the geometric sequence.

c) Use this general term to determine how much material would remain after

i) 55 years

ii) 121 years

iii) 99 years

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