7. Geometric Sequences and Series

Name:	Class:	Date:

Mark	/ 16	%

1) Is the following sequence geometric? [1]

6, 12, 18, 24, 30, 36, ...

2) Find the common ratio, r, in the following sequence [2]

a) 6, 36, 216, 1296, 7776, 46656, ...

b) -96, 48, -24, 12, -6, 3, ...

3) Find the next three terms of the following sequence [2]

a) 31104, 5184, 864, ___, ___, ___,

b) 14, 7, $\frac{7}{2}$, ___, ___, ___,

4) Find the 10th and the nth term of the following geometric sequence [1]

5, 20, 80, 320, ...

5) The nth term of a geometric sequence is $4 \times 3^{n-2}$. Find the first and the 10th terms. [1]

6) The sixth term of a geometric sequence is 1215 and the third term is 45. Find the first term and the common ratio.

[1]

7) A population of ants is growing at a rate of 8% a year. If there are 160 ants in the initial population, find the number of ants after 6 years.

[1]

8) Find which term in the geometric sequence 1, 3, 9, 27, ... is the first to exceed 7,000. [1]

9) Find the sum of the following geometric series [3]

a) $729 - 243 + 81 - 27 + \ldots$ (12 terms)

b) $7 + 14 + 28 + 56 + \ldots + 7168$

c) $\sum_{r=1}^{10} 5 \times 2^r$

10) The common ratio of a geometric sequence is 3 and the sum of the first five terms is 968. Find the value of the first term.

[1]

11) Find the sum to infinity of the following geometric series [1]

$1029 - 147 + 21 - 3 + \ldots$

12) Find the common ratio of a geometric series with a first term of 38 and a sum to infinity of 76. [1]

Solutions for the assessment 7. Geometric Sequences and Series

1) No

2) a) The common ratio is 6

b) The common ratio is $-\frac{1}{2}$

3) a) The missing terms are 144, 24, 4

b) The missing terms are $\frac{7}{4}, \frac{7}{8}, \frac{7}{16}$

4) The 10th term is 1310720 and the nth term is $5 \times 4^{n-1}$

5) The first term is $\frac{4}{3}$ and the 10th term is 26244

6) The first term is 5 and the common ratio is 3

7) Number of ants after 6 years is 254

8) The first term to exceed 7,000 is the 10th term

9) a) The sum of is 546.7

b) The sum of is 14329

c) $\sum_{r=1}^{10} 5 \times 2^r = 10230$`

10) The first term is 16

11) The sum of is $\frac{7203}{8}$

12) The common ratio is $\frac{1}{2}$