



Student No.:	Date: / /	Score:  <b>/21</b>
Student Name:		

## Revision of Geometric Sequences (I)

### Exercises

1. Determine whether each of the following sequences is a geometric sequence. If so, state the common ratio.

(a)  $7, \frac{7}{4}, \frac{7}{16}, \frac{7}{64}, \dots$

(b)  $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \dots$

(c)  $-8, 8, -8, 8, \dots$

(d)  $0, 6, 18, 54$

2. Find the sum of the terms of each of the following geometric series.

(a)  $10 + 5 + \frac{5}{2} + \dots$  to 6 terms

(b)  $8, -32, 128, -512, \dots$  to 15 terms

(c)  $-18 + 6 - 2 + \frac{2}{3} - \dots$  to 13 terms, give the

answer correct to 1 decimal place.

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3. Find the sum to infinity of each of the following geometric series.

(a)  $28 + 14 + 7 + \dots$

(b)  $\frac{3}{5} - \frac{9}{25} + \frac{27}{125} - \frac{81}{625} + \dots$

4. In a geometric sequence, the 4th term is  $\frac{1}{2}$ . The sum of the first 3 terms is  $\frac{8}{35}$  the sum of the first 6 terms. Find the first term and the common ratio, give the answers in exact value.

5. The common ratio of a geometric sequence is  $\frac{2}{3}$  and the sum of the first 5 terms is 211. Find

(a) the first term of the sequence.

(b) the sum to infinity of the associated geometric series.

6. Convert  $0.00\dot{2}\dot{4}$  into a fraction.

7. It is given that the sum of the first  $k$  terms of the geometric series  $1 + 3 + 9 + \dots$  is greater than 20000. Find the minimum value of  $k$ .
8. It is given that  $0 < \alpha < 90^\circ$ .
- (a) Find the common ratio of the following geometric sequence  $\sin^2 \alpha, \sin^2 \alpha \cos^2 \alpha, \sin^2 \alpha \cos^4 \alpha, \dots$
- (b) Find the sum to infinity of the geometric series corresponding to the above sequence.
9. A pile driver is used to drive a 10 m steel pile into the ground. On its first blow, 2 m of the pole is driven into the ground. On each successive blow, the length of the pile driven into the ground is 80% of that in the previous blow. After 6 blows,
- (a) how deep is the steel pile into the ground? Give the answer correct to 2 decimal places.
- (b) will the pile be completely driven into the ground with one more blow?

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# S6E-11A

## M.C.

1. The  $n$ th term of a geometric sequence is  $-\frac{1}{3^n}$ . Find the first term and the common ratio.

	<u>First term</u>	<u>Common ratio</u>
A.	$-\frac{1}{3}$	$-\frac{1}{3}$
B.	$-\frac{1}{3}$	$\frac{1}{3}$
C.	1	$-\frac{1}{3}$
D.	1	$\frac{1}{3}$

2. For  $-\frac{1}{2} < x < \frac{1}{2}$ ,  $1 + 2x + 4x^2 + 8x^3 + \dots =$

A.  $\frac{1}{1-2x}$ .

B.  $\frac{1}{1+2x}$ .

C.  $\frac{2x}{1-2x}$ .

D.  $\frac{2x}{1+2x}$ .

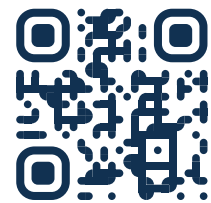
3. Which of the following could be a geometric sequence / geometric sequences?

I.  $\frac{1}{3}, \frac{1}{33}, \frac{1}{333}, \frac{1}{3333}, \dots$

II.  $0.3, 0.33, 0.333, 0.3333, \dots$

III.  $\frac{1}{3}, -\frac{1}{6}, \frac{1}{12}, -\frac{1}{24}, \dots$

- A. I only  
B. II only  
C. III only  
D. II & III only



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