YEAR 13 – MATHEMATICS (Week 4)

Subject	Mathematics
Class/ Section	Year 13 – Batch A, B and C
Week	19 th September to 23 rd September 2021
Work send to students by	Group email / Google classroom / Zoom
Total number of lessons per week	3
Units	Pure Mathematics – Year 2 Chapter 3 – Sequences and Series
Lessons 1 –Live Zoom lesson	3.3 – Geometric Sequences 3.4 – Geometric Series
	Learning objective – To find the <i>n</i> th term of a geometric sequence and to prove and use the formula for the sum of a finite geometric series. Intended Learning Outcomes Students will be able to understand that a geometric sequence has a common ratio between consecutive terms and how to find the formula for the n th term of a geometric sequence. Students will be able to understand that a geometric series is the sum of the terms of a geometric sequence and how to find the formula for the sum of the first n terms of a geometric series.
Tasks/Activities	The Teacher would recall Geometric sequences and will make students to understand about the Geometric series. Students will explore more examples and the implementation of Geometric series in real life.
Lessons 2 –Live Zoom lesson	3.5 – Sum to Infinity 3.6 – Sigma Notation Learning objective – To prove and use the formula for the sum to infinity of a convergent geometric series and to use sigma notation to describe series. Intended Learning Outcomes Students will be able to work out the sum of n terms of geometric series.
	As n tends to infinity, the sum of the series is called the sum to infinity. Students will understand that as a series getting bigger, as n tends to infinity, S_n also tends to infinity and this series is called divergent series. As a series gets smaller, as n tends to infinity, S_n gets closer and closer to a finite value, $S_{infinity}$ and this is called convergent series. Students will be made to understand that the Greek capital letter sigma is used to signify a sum. We write the limits on top and bottom to show which terms you are summing.
Tasks/Activities	The Teacher would introduce the concept of convergent and divergent series and will make students to understand about the sum to infinity. Students will explore more examples and the implementation of sum to infinity and sigma sign in real life.

Lessons 3 –Live Zoom lesson

- 3.7 Recurrence relations
- 3.8 Modelling with Series

<u>Learning objective</u> – To generate sequences from recurrence relations and model real life situations with sequences and series.

Intended Learning Outcomes

--Students will be able to understand, if you know the rule to get from one term to the next in a sequence you can write a recurrence relation. A recurrence relation of the form $u_{n+1} = f(u_n)$ defines each term of a sequence as a function of the previous term. Introduce that a sequence is increasing if $u_{n+1} > u_n$, for all $n \in N$, a sequence is decreasing if $u_{n+1} < u_n$, for all $n \in N$, a sequence is periodic if the terms repeat in a cycle. For a periodic sequence there is an integer k such that $u_{n+k} = u_n$ for all $n \in N$. The value of k is called the order of the sequence. Students will be able to understand that geometric sequence and series can be related to real life situations. For example if a person's salary increases by the same percentage every year, their salaried each year would form a geometric sequence and the amount they had been paid in total over n years would be modelled by the corresponding geometric series.

Tasks/Activities

The Teacher would introduce the concept of recurrence relations and will make students to understand about the sum to periodic sequence. Students will explore more examples and the implementation of geometric sequence and series in real life.

Assessment Criteria/ Essential questions

To complete the questions assigned from the Textbook (pdf) in their notebook. Students will be put in break out rooms during Zoom lesson to encourage collaborative learning.

Essential Question that are according to the Pearson Edexcel specification

C2 old specification June 2010 - Question 9

C2 old specification Jan 2010 - Question 6

C2 old specification Jan 2011 - Question 3

C2 old specification Jan 2007 - Question 10

For example, assessment objectives expected by the board with respect to the above question is listed below.

AO1: select and correctly carry out routine procedures

AO2: use mathematical language and notation correctly

AO3: translate problems in mathematical and non-mathematical contexts into mathematical processes

- 1. Power point presentation
- 2. Pure Mathematics Year 2
- 3. https://www.physicsandmathstutor.com/
- **4.** https://www.drfrostmaths.com/
- **5.** https://www.examsolutions.net/

Resources