YEAR 13 – MATHEMATICS (Week 6)

Subject	**Mathematics**
Class/ Section	**Year 13 – Batch A, B and C**
Week	**4th October to 8th October 2020**
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** **Chapter 4 – Binomial Expansion**
Lessons 1 –Live Zoom lesson **Tasks** **Resources**	**3.8 – Modelling with series** **Learning objective** – **To model real life situations with sequences and series.** **Intended Learning Outcomes** --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 salary 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. 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. 1 Power point presentation 2 Pure Mathematics Year 2 3 https://www.physicsandmathstutor.com/ 4 https://www.drfrostmaths.com/ 5 https://www.examsolutions.net/

Lessons 2 –Live Zoom lesson	**4.1 – Expanding $(1 + x)^n$** **4.2 – Expanding $(a + bx)^n$** **<u>Learning objective</u> – To expand $(1 + x)^n$ for any rational constant *n* and determine the range of values of *x* for which the expansion is valid. To expand $(a + bx)^n$ for any rational constant *n* and determine the range of values of *x* for which the expansion is valid.** **<u>Intended Learning Outcomes</u>** --Students will be able to understand that if n is a natural number they can find the binomial expansion for $(a+bx)^n$ using the formula: $(a+b)^n = a^n + \binom{n}{1} a^{n-1}b + \binom{n}{2} a^{n-2}b^2 + \cdots + \binom{n}{r} a^{n-r}b^r + \cdots + b^n$ If n is a fraction or a negative number students will be made to understand to use a different version of the binomial expansion. --Students will be able to understand that the binomial expansion $(1+x)^n$ can be used to expand $(a+bx)^n$ for any constants a and b, by just taking a factor of a^n out of the expression: $(a+bx)^n = \left(a\left(1+\frac{b}{a}x\right)\right)^n = a^n\left(1+\frac{b}{a}x\right)^n$. The expansion of $(a+bx)^n$, where n is negative or a fraction, is valid for $\left\|\frac{b}{a}x\right\| < 1 \; or \; |x| < \left\|\frac{a}{b}\right\|$
Tasks	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.
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Lessons 3 –Live Zoom lesson	**4.3 – Using partial fractions** **<u>Learning objective</u> – To use partial fractions to expand fractional expressions.** **<u>Intended Learning Outcomes</u>** --Students will be able to understand that partial fractions can be used to simplify the expansions of more difficult expressions. They need to understand, while finding the validity of the expansion, if two or more ranges of values of *x* are involved; they need to go for the intersection of those ranges.
Tasks	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.
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