

## YEAR 12 – MATHEMATICS (Week 26)

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| <b>Subject</b>                          | Mathematics (Pure Math & Stats)   |
| <b>Class/ Section</b>                   | Year 12 – Batch 1, 2 and 3  |
| <b>Week</b>                             | 21st February – 25th February 2021  |
| <b>Work send to students by</b>         | Group email / Google classroom / Zoom   |
| <b>Total number of lessons per week</b> | 6   |
| <b>Units</b>                            | <p><b>PURE MATH- Ch12(Differentiation)</b><br/> <b>12.4 ( Differentiating quadratics)</b><br/> <b>12.5(Differentiating functions with two or more terms)</b><br/> <b>12.6 (Gradient ,tangents and normals)</b><br/> <b>12.7 (increasing and decreasing functions)</b><br/> <b>12.8( Second derivatives )</b></p> <p><b>STATISTICS – Book 2 – Ch 1</b></p>   |
| <b>Lessons 1 –Live Zoom lesson</b>      | <p><b>PURE MATH- Ch12(Differentiation)</b><br/> <b>12.4 ( Differentiating quadratics)</b><br/> <b>12.5(Differentiating functions with two or more terms)</b></p> <p><b><u>Learning objective</u></b> : To find the derivative ,<math>f'(x)</math>,or <math>d y/d x</math>, of a simple function. Use the derivative to solve problems involving gradients, tangents and normals.</p> <p><b><u>Intended Learning Outcomes</u></b> - Students will be able differentiate quadratics. Students will be able to differentiating functions with two or more terms .</p> <p>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.</p> |
| <b>Tasks</b>                            |   |
| <b>Resources</b>                        | <ol style="list-style-type: none"> <li>1. Power point presentation</li> <li>2. Pure Mathematics Year 1 / AS</li> <li>3. <a href="https://www.physicsandmathstutor.com/">https://www.physicsandmathstutor.com/</a></li> <li>4. <a href="https://www.drfrstmaths.com/">https://www.drfrstmaths.com/</a></li> <li>5. <a href="https://www.examsolutions.net/">https://www.examsolutions.net/</a></li> </ol>  |

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| <p><b>Lesson 2 - Live Zoom lesson</b></p> <p><b>Tasks</b></p> <p><b>Resources</b></p> | <p><b>PURE MATHS- Ch12(Differentiation)<br/>12.6 (Gradient ,tangents and normals)</b></p> <p><b><u>Learning objective</u></b> - To find the derivative ,<math>f'(x)</math>,or <math>d y/d x</math>, of a simple function. Use the derivative to solve problems involving gradients, tangents and normals.</p> <p><b><u>Intended Learning Outcomes</u></b> – Students will be able to find the equation of tangent to a curve at a given point .On the curve with equation <math>y=f(x)</math> , the gradient of the tangent at a point A with x co-ordinate a will <math>f'(a)</math>.</p> <p>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.</p> <ol style="list-style-type: none"> <li>1. Power point presentation</li> <li>2. Pure Mathematics Year 1 / AS</li> <li>3. <a href="https://www.physicsandmathstutor.com/">https://www.physicsandmathstutor.com/</a></li> <li>4. <a href="https://www.drfrostmaths.com/">https://www.drfrostmaths.com/</a></li> <li>5. <a href="https://www.examsolutions.net/">https://www.examsolutions.net/</a></li> </ol> |
| <p><b>Lessons 3 - Live Zoom lesson</b></p> <p><b>Task</b></p> <p><b>Resources</b></p> | <p><b>PURE MATHS- Ch12(Differentiation)<br/>12.7 (increasing and decreasing functions)<br/>12.8( Second derivatives )</b></p> <p><b><u>Learning objective</u></b> - To identify increasing and decreasing functions. To find the second order derivative <math>d^2 y/dx^2</math> of a simple function.</p> <p><b><u>Intended Learning Outcomes</u></b> – Students will use the derivative to determine whether a function is increasing or decreasing on a given interval. Students can find the rate of change of the gradient function by differentiating a function twice.</p> <p>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.</p> <ol style="list-style-type: none"> <li>1. Power point presentation</li> <li>2. Pure Mathematics Year 1 / AS</li> <li>3. <a href="https://www.physicsandmathstutor.com/">https://www.physicsandmathstutor.com/</a></li> <li>4. <a href="https://www.drfrostmaths.com/">https://www.drfrostmaths.com/</a></li> <li>5. <a href="https://www.examsolutions.net/">https://www.examsolutions.net/</a></li> </ol>          |
| <p><b>Lessons 4 –Live Zoom lesson</b></p>   | <p>Book 2<br/>Chapter 1: Regression, correlation and hypothesis testing.<br/>1.3: Hypothesis testing for zero correlation.</p> <p><b><u>Learning objective</u></b> – To carry out a hypothesis test for zero correlation.</p> <p><b><u>Intended Learning Outcomes</u></b></p> <p>--Students will be able use a hypothesis test to determine whether</p>  |

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| <p><b>Tasks</b></p> <p><b>Resource</b></p>   | <p>the product moment correlation coefficient, <math>r</math>, for a particular sample indicates that there is likely to be a linear relationship within the whole population. If you want to test for whether or not the population PMCC, <math>\rho</math>, is either greater than zero or less than zero you can use a one – tailed test.</p> <p>For a one – tailed test use either:<br/> <math>H_0 : \rho = 0, H_1 : \rho &gt; 0</math> or<br/> <math>H_0 : \rho = 0, H_1 : \rho &lt; 0</math> .</p> <p>If you want to use whether the population PMCC, <math>\rho</math>, is not equal to zero you need to use a two-tailed test:<br/> For a two-tailed test use:<br/> <math>H_0 : \rho = 0, H_1 : \rho \neq 0</math></p> <p>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.</p> <ol style="list-style-type: none"> <li>1. Power point presentation</li> <li>2. Statistics and Mechanics Year 2</li> <li>3. <a href="https://www.physicsandmathstutor.com/">https://www.physicsandmathstutor.com/</a></li> <li>4. <a href="https://www.drfrostmaths.com/">https://www.drfrostmaths.com/</a></li> <li>5. <a href="https://www.examsolutions.net/a-levelmaths/edexcel/edexcel-a-level-maths-past-papers/">https://www.examsolutions.net/a-levelmaths/edexcel/edexcel-a-level-maths-past-papers/</a></li> </ol>   |
| <p><b>Lessons 5 –Live Zoom lesson</b></p> <p><b>Tasks</b></p> <p><b>Resource</b></p> | <p>Book 2<br/> Chapter 2:<br/> 2.1 – Set Notation</p> <p><b><u>Learning objective</u></b> – To understand set notation in probability.</p> <p><b><u>Intended Learning Outcomes</u></b></p> <p>--Students will be able to use set notation to describe events within a sample space. This can help you abbreviate probability statements. The event A and B can be written as <math>A \cap B</math>. The ‘<math>\cap</math>’ symbol is the symbol for intersection. The symbol <math>\varepsilon</math> is used to represent the whole sample space. The intersection of A and B is written as <math>A \cap B</math>. If A and B are independent, <math>P(A \cap B) = P(A) \times P(B)</math>. The events A or B can be written as <math>A \cup B</math>. The ‘<math>\cup</math>’ symbol is the symbol of union. The union of A and B is written as <math>A \cup B</math>. If A and B are mutually exclusive then, <math>P(A \cup B) = P(A) + P(B)</math>. The event not A can be written as <math>A'</math>. This is also called the complement of A. <math>P(A') = 1 - P(A)</math>. Events A and <math>A'</math> are always mutually exclusive.</p> <p>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.</p> <ol style="list-style-type: none"> <li>1. Power point presentation</li> <li>2. Statistics and Mechanics Year 2</li> <li>3. <a href="https://www.physicsandmathstutor.com/">https://www.physicsandmathstutor.com/</a></li> <li>4. <a href="https://www.drfrostmaths.com/">https://www.drfrostmaths.com/</a></li> <li>5. <a href="https://www.examsolutions.net/a-levelmaths/edexcel/edexcel-a-level-maths-past-papers/">https://www.examsolutions.net/a-levelmaths/edexcel/edexcel-a-level-maths-past-papers/</a></li> </ol> |

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| <b>Lessons 6 –Live Zoom lesson</b> | <b>Book 2:</b><br><b>To do problems involving Regression, correlation and hypothesis testing.</b>   |
| <b>Tasks</b>                       | <b>Intended Learning Outcome:</b><br><b>By the end of the lesson students will be able to do problems from the Mixed exercise – Chapter 1. Pages 12 to 15.</b><br><b>Questions: 2, 6, 8, 10 and 12.</b> |
| <b>Resource</b>                    | <b>Work will be assigned in Google Classroom.</b><br><b>Text Book : Statistics and Mechanics Year 2</b>   |