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| Teacher: TB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Date: 26/01/15                             | Class: 13TBE                                                     | Level: A2 FM                                         |
| Topic: The Ellipse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Reference to scheme of work: FP3 Chapter 4 |                                                                  |                                                      |
| <b>Big Question/s:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                            |                                                                  |                                                      |
| What is the ellipse?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |                                                                  |                                                      |
| <b>Learning objective(s):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |                                                                  |                                                      |
| Students to appreciate the importance of the ellipse and to be confident with the algebraic manipulations required to answer exam questions on this topic.                                                                                                                                                                                                                                                                                                                                                  |                                            |                                                                  |                                                      |
| <b>Learning outcomes:</b> <i>By the end of the lesson:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                            |                                                                  |                                                      |
| <b>LAPs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>MAPs</b>                                | <b>HAPs</b>                                                      |                                                      |
| Know the parametric and Cartesian equations of the ellipse and apply them in simple situations.                                                                                                                                                                                                                                                                                                                                                                                                             | Find tangents and normal to the ellipse.   | Prove geometric properties of the ellipse using their knowledge. |                                                      |
| Key words: Ellipse, focus, directrix, normal, tangent, conic section.                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                            |                                                                  |                                                      |
| Homework: Exercise 2A and 2B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Date set: 26/01/15                         | Due in: 02/02/15                                                 |                                                      |
| <b>Engagement:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                            |                                                                  | <b>Differentiation/LSA use:</b>                      |
| Students to have watched the video I made using ExplainEverything about the Ellipse<br><a href="https://www.youtube.com/watch?v=q33yZPaY7UU">https://www.youtube.com/watch?v=q33yZPaY7UU</a> Students also have access to the two Geogebra applets on my webpage:<br><a href="http://ifem.co.uk/geogebra/trammel_construction.html">http://ifem.co.uk/geogebra/trammel_construction.html</a> and<br><a href="http://ifem.co.uk/geogebra/the_ellipse.html">http://ifem.co.uk/geogebra/the_ellipse.html</a> . |                                            |                                                                  | Students can re-watch any points they are unsure on. |
| <b>Learning activities (Assessment opportunities):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                            |                                                                  |                                                      |

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| <p>09:05-09:35ish - Feedback on Mock and response to feedback.<br/>Students compare their exam with the mark scheme and read my feedback. They then work on the questions that I have selected to target the gaps in their knowledge..</p> <p>09:35 - 10:30ish - Introduction to the algebra of the ellipse.<br/>Students to work through a sequence of questions that allow them to derive various algebraic properties of the ellipse. The first few cover content from the video before moving on.</p> <p>10:30-11:05 - Foci/directrix properties.<br/>Work through the derivation of the focus-directrix property of the ellipse and derive the relation between <math>a, b</math> and the eccentricity <math>e</math> of the ellipse. Students to then prove the constant distance property mentioned in the video.</p> | <p>Students have 3 exam questions differentiated by their performance on the mock. Topics chosen for the individual.</p> <p>Differentiated sheets for the most able where intermediate steps have been removed. Extension questions with a problem solving focus for those that finish. Teacher support if necessary.</p> <p>By questioning.</p> |
| <p><b>Review of progress (Assessment opportunities):</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                  |
| <p>Group discussion towards the end of each main section of learning to review progress. Discussions with pupils throughout the lesson. Marking of homework to assess whether they have the skills to answer exam questions on this topic.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Resources:</b> Youtube video, Geogebra applets, question sheets, mock mark schemes and differentiated questions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                  |