Math Exploration
(Internal Assessment)

Name _______________________________________________________

Topic _______________________________________________________

Title of Math Exploration ______________________________________

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<tr>
<th>Item</th>
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<td>3 Possible topics with Aim and Rationale</td>
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<td>5pts</td>
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<td>Outline with 5 sources</td>
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<td>Rough Draft</td>
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Important Due Date for the Internal Assessment

** Please note: Once your topic has been approved through your outline you may NOT change your topic! **

**IB Evaluation:**

COMMUNICATION ________/4 marks

MATHEMATICAL PRESENTATION ________/3 marks

PERSONAL ENGAGEMENT ________/4 marks

REFLECTION ________/3 marks

USE OF MATHEMATICS ________/6 marks

FINAL SCORE ________/20 marks
The INTERNAL ASSESSMENT

What: A written paper that explores the math behind a personal interest of your choice

Why:
- To apply and transfer skills to alternate situations, to other areas of knowledge, and to future developments
- To appreciate the moral, social, and ethical implications of Mathematics
- To appreciate the international dimensions & universality of Mathematics
- Appreciate the contribution of Mathematics to other disciples

Specifics:
- 6-12 pages
- All sources must be cited in a bibliography. Please use the subsections Works Cited, Image Sources, and Definition Sources.
- Not a regurgitation of facts or a historical essay.
- The target audience is your peers. Not expected to be a formal dissertation using ostentatious vocabulary.
- Use of mathematical technology or software is strictly encouraged.
- You are not expected to use any mathematics outside the level of this course, but you may if it is commensurate with the level of the course.
- 20% of your IB mark

Technology:
- GeoGebra: Software for working with graphs, diagrams, functions, spreadsheets, statistics and more.
- Desmos: Software for graphing points, functions and tables.
- Equation Editor: Found in Microsoft Word and Googledocs. Used for writing equations and other mathematical notation. (You may need to install this feature)
- WolframAlpha/Mathematica: Computation software
IB MATH SL IA EVALUATION CRITERION

A: COMMUNICATION (4 marks)
- Includes Introduction, rationale (Why did you choose this topic? Why is this topic of interest to you?), aim (What do you hope your reader will learn?), and conclusion
- Expressing ideas clearly
- Identifying a clear aim for the exploration
- Focusing on the aim and avoiding irrelevancy
- Structuring ideas in a logical manner
- Editing the exploration so that it is easy to follow
- Citing references where appropriate
- Graphs, tables and diagrams should accompany the work in the appropriate place and not be attached as appendices to the document.

B: MATHEMATICAL PRESENTATION (3 marks)
- Using appropriate mathematical language and representation (notation, symbols, terminology)
- Defining key terms, where required
- Selecting appropriate mathematical tools & technology (such as graphic display calculators, screenshots, graphing software, spreadsheets, databases, drawing & word-processing software, etc)
- Expressing results to an appropriate degree of accuracy
- Use multiple forms of mathematical representation, such as formulae, diagrams, tables, charts, graphs and models, where appropriate.

C: PERSONAL ENGAGEMENT (4 marks)
- Thinking independently and/or creatively
- Asking questions, making conjectures, and investigating mathematical ideas
- Researching areas of interest
- Looking for and creating mathematical models for real-world situations
- Considering historical and global perspectives
- Demonstrating that you have “made the exploration their own”
- Expressing ideas in an individual way
- Addressing personal interest
- Presenting mathematical ideas in their own way.
- Asking and answering questions: “I wonder if…”, “What would happen if…” “Why does that happen…

D: REFLECTION (3 marks)
- Reviewing, analysing and evaluating the exploration.
- Discussing the implications of results
- Considering the significance of the exploration
- Looking at possible limitations and/or extensions
- Making links to different fields and/or areas of mathematics
- Making connections to TOK

E: USE OF MATHEMATICS (6 marks)
- Demonstrating knowledge and understanding
- Producing work that is within the level of the course.
- Applying mathematics in different contexts
- Applying problem-solving techniques
- Recognizing and explaining patterns, where appropriate
- Looking at a problem from different perspectives
- Error-free mathematics
- Mathematical sophistication
IB MATH SL IA OUTLINE WORKSHEET

Name: _________________________________________

Stimuli: ________________________________________

Specific Topic: _____________________________________

My research question is:
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________

My Aim is:
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________

My Rationale is:
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________

My 5 Sources are (at least 2 non-internet sources):
1. ______________________________________________________
2. ______________________________________________________
3. ______________________________________________________
4. ______________________________________________________
5. ______________________________________________________

What are the math connections (syllabus topics) to your area of interest?

What are some things that you may have to research in order to answer your research question?

What are the definitions you will need to define for people not familiar with this topic?

What are some possible visual representations (graphs, tables, diagrams,…) that you might want to include?
Three Possible Topics

1. Topic 1: _______________________________________
   Research Question:
   Rationale:

2. Topic 2: ________________________________________
   Research Question:
   Rationale:

3. Topic 3: ________________________________________
   Research Question:
   Rationale: