

IB Mathematics Extended Essay Titles

Your extended essay will be marked out of 36. 24 marks are for general essay style and content; 12 marks are specific to the subject in which you are doing your essay.

Thus it is possible to do a maths extended essay if you are only doing Maths Standard level or Studies. You may not score so highly on the 12 Maths marks, but can still write a good essay and score over 20 marks. Likewise, if your essay is not purely Mathematical, perhaps it is really Maths with some Music or Biology or Geography - it will be marked as a Mathematics essay and may not score so highly on the maths 12 marks, but can still score well overall if it is a well written essay.

Your essay needs a clearly stated well focussed research question. You need to write an abstract of your essay which states your approach to answering the question and summarises your conclusions. This should be written last, but placed at the front of the essay. Pages should be numbered, there should be a contents page, references should be cited and a bibliography given. You should have clearly stated conclusions at the end.

Essay titles that have proved successful include: (these may give you an idea for your essay title):

1. What is the percentage return of a particular 3 reel slot machine? (Any casino-type situation gives opportunities for data collection, comparing expected results with observed data and comparing payout with probability)
2. What are alternatives to Euclidean Geometry and what practical applications do they have?
3. A comparative study of population growth models for Country X over the last n years, with future predictions. (Which model best fits the data?)
4. The sound of mathematics - investigation of geometric series in musical instruments - the position of the frets on a guitar, for example.
5. How many convex polygons can be made from the seven tangram pieces?
6. An exploration of the distortion of the truth content of a message over the course of transmission between individuals.
7. Is there a link between the golden ratio and how we perceive beauty in nature, with special emphasis on the human face and form.
8. Does athleticism affect pulse/heart rate? The role of statistics in medical research.
9. Is there a correlation between SAT results and school test scores/GPA?

10. The proof of Sophie Germain's Theorem - Sophie Germain is one of the most famous female mathematicians and she made a valuable contribution in the search for a proof of Fermat's Last Theorem.
11. Leibniz and Newton discovered calculus at about the same time, independently of each other. Compare their methods and discuss which notation is more used now.
12. What is e ? What practical implications has its discovery and use had?
13. What is the Binomial Theorem and how has it contributed to the history of humanity?
14. What is the best way to calculate π ?
15. Complex number problem solving strategies - what sorts of real life problems do complex numbers help solve?
16. Solving cubic equations.
17. Predicting the number of triangles formed when subdividing the sides of an equilateral triangle n times by applying Newton's Forward difference Formula.
18. The use of modular arithmetic and large prime numbers to achieve privacy with RSA Public Key Cryptography.
19. An investigation into the relationship between Pascal's Triangle and the Fibonacci sequence.
20. Will 'Impact' (a hypothetical comet) collide with Earth?
21. Investigating the patterns and structures in 11^n .
22. Balls and their purpose - bouncing balls, markings on balls, e.g. comparing the dimple packing on golfballs, or how well do basketballs, soccer balls etc bounce?
23. Fractional number bases. An investigation.
24. To what extent can mathematical modelling using differential equations be used in determining population growth patterns for a predator and its prey?
25. How can cell population be determined over time? Which mathematical model gives a more accurate approximation to a real experiment?
26. An investigation into Riemann Sums (i.e. standard integration to get areas) and Numerical Integration.

27. An investigation into population growth models.
28. Vedic Mathematics: investigating its efficiency and exploring its applications.
29. Euler's method for solving differential equations numerically.
30. Laplace transformations - how are they used in solving second order differential equations?
31. A statistical investigation on the effect of background music on short term memory capacity of students.
32. Analytical and geometrical formulations for the parabolic and cubic Bezier curves (used in computer graphics software).
33. Origami: solving cubic equations
34. Stress prevalence and coping mechanisms among pre-university students.
35. A mathematical study of the effectiveness of two herbs in the treatment of Impetigo skin disease.
36. Theory of probability in casinos.
37. An investigation into the nature of beats and the relative consonance of pure tone dyads.
38. Chaos and the heart
39. Exploring Vedic methods of multiplication.
40. Investigating human body proportions of 5 year olds.
41. The relationship between logical-mathematical intelligence and academic performance.
42. An investigation of the relationship between the coupon rate, yield to maturity and the clean price of a bond.
43. Applying the addition of sine curves to an analysis of the harmony in Chinese and Western music scales.
44. The relationship between students' attitude towards mathematics and their performance in mathematics.
45. How close is the Taylor Series approximation to the original function?

46. What factors affect whether the movement of workers in a construction site reaches 'equilibrium'.
47. Investigating a model for an optimum lighting system.
48. The effectiveness of an English Tuition Programme towards improving participants' English.
49. A statistical analysis of factors affecting fatal road accidents during the festive season.
50. Comparing age, standard of living and weights of students with their fast food consumption.
51. Does learning a third language have any effect on lower secondary students' short term memory retention?
52. The general health of years 10, 11, 12 students.