Continue

Math ia sample pdf

Home Notes & Files Mathematics Sample HL Internal Assessments Sample Mathematics Higher Level portfolio Followers Home Notes & Files Mathematics Sample HL Internal Assessments A comprehensive 63 page pdf guide to help you get excellent marks on your maths investigation. If we then take R0 = 15 then: Therefore our 3 equations for rates of change become: Unfortunately these equations are very difficult to solve – but luckily we can use a computer program to plot what happens. Note that the subreddit is not run by the International Baccalaureate. Exponential and trigonometric regression. The mathematics internal assessment is about exploring the math behind a topic of interest, then presenting the whole thing in the form of a short thorough report. Let's say we have a total population of 11 people – 10 who are susceptible, 1 who is infected and 0 who are immune. yup most subjects have one, just google "ibpublishing [subject name]", chemistry | physics | visual arts | economics | history | english A lit. This question, for example… This is the unofficial subreddit for all things concerning the International Baccalaureate, an academic credential accorded to secondary students from around the world after two vigorous years of study, culminating in challenging exams. *Applying mathematics in different contexts *Applying problem-solving techniques *Recognizing and explaining patterns, where appropriate *Looking at a problem from different perspectives This time we start with a population of 1000 people and only 1 infected individual – but even now, within 5 days over 75% of the population are infected. Very useful. library_passwords.docx: File Size: 69 kb: File Type: docx: Download File. ... For example, in modelling animal growth to act as an aid for agricultural advisers, an empirical (Log Out / This document contains lecture notes, classroom activities, examples, and challenge prob-lems specifically designed for a first semester of differential equations and linear algebra taught with a focus on mathematical modeling. 67% Upvoted. Submitted January 5, 2013. Math and football: determining whether the results of a game are influenced by sacking the manager. New comments cannot be posted and votes cannot be cast. Another important parameter is R0, this is defined as how many people an infectious person will pass on their infection to in a totally susceptible population. Can you solve Oxford University's Interview Question? Oh, that sounds interesting, its always best to talk to those that have struggled through the same stuff. dR/dt represents the rate of change of those who have recovered with respect to time. Fully updated for the new syllabus. The SIR model looks at how much of the population is susceptible to infection, how many of these go on to become infectious, and how many of these go on to recover (and in what timeframe). This graphic above shows how herd immunity works. Modeling Windows Mr Bidder: File Size: 1368 kb: File Type: docx: Download File. An example of an SL type II modeling task in maths. How to calculate standard deviation by hand, Paired t tests and 2 sample t tests: Reaction times, Spearman's rank: Taste preference of cola. As a keen musician myself, I was curious to understand more about how electronic instruments emit sound. If you're already thinking about your coursework then it's probably also time to start planning some revision, either for the end of Year 12 school exams or Year 13 final exams. C4—Engaged with the Mathematics in a topic obviously relevant to herself and uses real-life data. I would really recommend everyone making use of this – there is a mixture of a lot of free content as well as premium content so have a look and see what you think. Some of the R0values for different diseases are shown above. Close. I remember spending my life on these websites while working on my IA/EE/TOK. Year 2 | [HL:Chem, Bio, Business SL: Math, German, English] 2 years ago. The Practice Exams section takes you to ready made exams on each topic – again with worked solutions. Please note that difference between HL and SL IAs is the level of math expected of students which is reflected in slightly different rubrics and consequently the HL and SL grades differ slightly. Advice on using Geogebra, Desmos and Tracker. This also has some harder exams for those students aiming for 6s and 7s and the Past IB Exams section takes you to full video worked solutions to every question on every past paper – and you can also get a prediction exam for the upcoming year. Considers modelling. Modeling of Agent's Behavior In real economy, decision-making becomes much complex due to a number of different factors: the unpredictability of social and financial policies, interruptions of other individuals or businesses, or the issues of morality and social norms. Group 5. Measles however requires around 95% vaccinations. As well as providing information to health workers about the levels of vaccination needed to protect a population, it also helps govern first response actions when new diseases potentially emerge on a large scale (for example, Bird flu, SARS and Ebola have all merited much study over the past few years). Change), You are commenting using your Twitter account. Modelling Zombies: Investigating how zombies survive. Algebra, Calculus etc) and each area then has a number of graded questions. Designing a parachute: physics behind the designing of a parachute. Change), You are commenting using your Google account. Group 5. The constants β and v are chosen depending on the type of disease being modelled. Statistics and modelling 1) Traffic flow : How maths can model traffic on the roads. Also you can come in and look at the HL math textbook that has a section on the IA and includes a list of 200 possible topics – many of which would also be appropriate for an SL math student. Interior Designing. Despite the relative lack of maths in my IA, I still got 18/20, so pick something that you like and use maths to understand it at a deeper level. So recently I just received feedback from my teacher regarding my firts draft for my Math IA. MATH IA GUIDE Criterion E: Use of Mathematics This criterion makes up the largest portion of your overall IA marks. Breaking the Code Euler's Totient Theorem Minesweeper... 4) Bad maths in court - how a misuse of statistics in the courtroom can lead to devastating miscarriages of justice. Infectious disease modelling: using mathematics to predict the likelihood of a disease spreading in a given area. For example, if dI/dt is high then the number of people becoming infected is rapidly increasing. Math HL IA Type 2 - Modelling a functional building. This subreddit encourages questions, constructive feedback, and the sharing of knowledge and resources among IB students, alumni, and teachers. Therefore our 3 equations for rates of change become: dS/dt = -2.14 I S. dI/dt = 2.14 I S – 0.14 I dR/dt = 0.14 I By using our Services or clicking I agree, you agree to our use of cookies. As you read through it, you will see comments from the moderator in boxes like this: At the end of the sample project is a summary of the moderator's grades, showing how the project has been graded against all the criteria A to G. These * find the folder of Sample Modeling tasks here --> Source 3: Great Places to find Data Online 2 Sample project This Maths Studies project has been graded by a moderator. Thanks for the tip! 19. One simple bit of maths can predict what proportion of the population needs to be vaccinated to prevent the spread of viruses. IB Maths Resources from British International School Phuket, Finding the average distance between 2 points on a hypercube, Find the average distance between 2 points on a square, Generating e through probability and hypercubes, IB HL Paper 3 Practice Questions Exam Pack, Complex Numbers as Matrices: Euler's Identity, Sierpinski Triangle: A picture of infinity, The Tusi couple – A circle rolling inside a circle, Classical Geometry Puzzle: Finding the Radius, Further investigation of the Mordell Equation. 4. When dI/dt is zero then there is no change in the numbers of people becoming infected (number of infections remain steady). 300 IB Maths Exploration ideas, video tutorials and Exploration Guides, May 17, 2014 in IB Maths, Real life maths | Tags: differential equations, diseases, mathematical models, measles. I know I'm like 3 years late to this but the deaths would have to be calculated by taking the difference of S(0) and S(end time) to give you the total number of people infected, and then you would multiply by the morbidity rate. report. Assessed Maths IA examples. The equations above represent the simplest SIR (susceptible, infectious, recovered) model – though it is still somewhat complicated! By day 10 most people are immune but the illness is still in the population, and by day 30 the entire population is immune and the infection has died out. Mathematics; IB Survival Helpful Procrastination. There is also a fully typed up mark scheme. This time the infection never takes off in the community – those who are already immune act as a buffer against infection. dS/dt represents the rate of change of those who are susceptible to the illness with respect to time. 10. hide. Picking an IA topic Assignment – You can find ideas for picking a topic by going to the IB Website above and clicking on the link that says Planning. Good call! I have to admit that without these types of resources, writing an IA/EE/TOK essay is significantly harder. Does anyone have sample maths SL IAs of modelling infectious diseases with the SIR model? 3. Mathematics SL and HL teacher support material 1 Example 4: Student work Modelling musical chords using sine waves Introduction From the stimulus word "Harmony", I chose to look at the transmission of sound waves in music. Explores unfamiliar maths and devises own approach to area under curve. 18. (Log Out / This method of protecting the population is called herd immunity. Useful websites for use in the exploration, A selection of detailed exploration ideas. As I was browsing the internet for Maths IA examples I discovered this site which has examples with marks and also examiner comments: , 1 comment. I got 2/6 for criteria E because apparently my IA didnt commensurate with the level of the syllabus. The basic model is based on the SIR model – this is represented by the picture above (from Plus Maths which has an excellent and more detailed introduction to this topic). ... An example of an SL type II modelling task in maths. Y our IA can begin this simply too and if you run an experiment and collect the data yourself, even better! Please use the subsections Works Cited, Image Sources, and If you enjoyed this post you might also like: Differential Equations in Real Life – some other uses of differential equations in modelling predator-prey relationships between animal populations. For IB SL Maths.Another similar one can be found here. 15. For example, I did my IA on the rate at which the luminosity of 3 watches decreased (which, regrettably, required a bit of physics) and tried to find which of the watches had the best value for money. Comparison of methods (geometric v calculus). (Log Out / Internal assessment (exploration) Refer to pages 43–49 of the Math SL Guide. If you are watching this video now, you seem serious about boosting your IB grade. We need to assign starting values for S, I and R – the numbers of people susceptible, infectious, recovered (immune) from measles. All the results that mathematicians have proved over hundreds of years are at our disposal. Computers can be used to perform numerical calculations. This thread is archived. Press J to jump to the feed. This gives the following outcome: This shows that the infection spreads incredibly rapidly – by day 2, 8 people are infected. Creating a mathematical model: • We are given a word problem • Determine what question we are to answer • Assign variables to quantities in the problem so that you can answer the question using these variables • Derive mathematical equations containing these variables • Use these equations to find the values of these variables Compares results and reflects on this. share. It turns out that mathematical modeling is perfect for open-ended problems. Group 5. preferably with a note of what grade it got too. (sorry i'm on mobile so i can't see your subjects in your flair) hope it helps!! Assessed Maths IA examples. In the first scenario no members of the population are immunised, and that leads to nearly all the population becoming ill – but in the third scenario, enough members of the population are immunised to act as buffers against the spread of the infection to non-immunised people. 3 Criterion E: Use of Mathematics (6/20 marks) * The mathematics you explore should be either part of the syllabus, or at a similar level (or beyond) (NOT Prior Learnings). The model fails to actually account for death, birth or immigration as it models a closed population, so you more or less need to infer the death total from other data you do have. mathematics of soccer by using Geometry Expressions, a constraint-based geometry system, and Maple, a computer algebra system (CAS), to model situations that take place during an average soccer game. Includes: How are the deaths caused by measles accounted for by this model? However, the following examples cut Archived. Thanks. Together this is around 120 pages of content. Not sure what happened afterwards, but a 7 for math overall. Modelling measles. Using mathematics to model the spread of diseases is an incredibly important part of preparing for potential new outbreaks. What I like about this is that you are given a difficulty rating, as well as a mark scheme and also a worked video tutorial. 16. How does one calculate the values of beta and gamma for the SIR model? Sample Mathematics Higher Level portfolio Jump to content. The formula is: Where VT is the proportion of the population who require vaccinations. Example IAs graded based on current guidelines: IB Example 1 - New IA IB Example 2 - New IA IB Example 3 - New IA IB Example 4 - New IA IB Example 5 - New IA IB Example 6 - New IA IB Example 7 - New IA IB Example 8 - New IA... A must for all Analysis and Applications students! Thank you so much!!! Blog at WordPress.com.Ben Eastaugh and Chris Sternal-Johnson. - To appreciate the moral, social, and ethical implications of Mathematics - To appreciate the contribution of Mathematics to other disciples Specifics: • 6-12 pages • All sources must be cited in a bibliography. If we then take R 0 = 15 then: R 0 = β/v 15 = β/0.14 β = 2.14. Really useful! An illustration of just how rapidly measles can spread is provided by the graph above. There's a really great website that I would strongly recommend students use – you choose your subject (HL/SL/Studies if your exam is in 2020 or Applications/Analysis if your exam is in 2021), and then have the following resources: The Questionbank takes you to a breakdown of each main subject area (e.g. dI/dt represents the rate of change of those who are infected with respect to time. β represents the contact rate – which is how likely someone will get the disease when in contact with someone who is ill. v is the recovery rate which is how quickly people recover (and become immune. Interior designing seems to be a fun and interesting career but, do you know the … List of potential topics. math modeling vs. word problems bottles bottles person × week week 0.35 × 20,000 people × 9 = 63,000 incomplete information, we refer to the problem as open-ended. So, for example, with measles we have an average infection of about a week, (so if we want to work in days, 7 = 1/v and so v = 1/7). Received 19/20 prior to moderation. This last graph shows the power of herd immunity. . When dI/dt is negative then the numbers of people becoming infected is decreasing. Change). Models use basic assumptions or collected statistics along with mathematics to find parameters for various infectious diseases and use those parameters to calculate the effects of different interventions, like mass vaccination programmes. edit: nvm I found a post with all links lmao here you go. β can then be calculated if we know R0 by the formula: So, for example, with measles we have an average infection of about a week, (so if we want to work in days, 7 = 1/v and so v = 1/7). 17. modelling tasks which begin with some data or a pattern which lead to exploration and modelling. Ideally, the topic should be completely original and serve to prove that you have a firm grasp of mathematical concepts, principals, and knowledge. IB Exploration Modelling and Statistics Guide. Beautifully written by an experienced IB Mathematics teacher, and of an exceptionally high quality. That is really helpful! This time there are 100 susceptible people, but 900 people are immune (vaccinated immune), and there is again one infectious person. I was wondering if you guys might know about more websites like this for other IB subjects? (Log Out / Questions that were explored were: What is the necessary width of the save. Includes: Full revision notes for SL Analysis (60 pages), HL Analysis (112 pages) and SL Applications (53 pages). Fill in your details below or click an icon to log in: You are commenting using your WordPress.com account. Quadratic regression and cubic regression. 'Use of Mathematics' essentially looks at the quality of your maths and how relevant it is to the exploration. Seventeen full investigation questions – each one designed to last around 1 hour, and totaling around 40 pages and 600 marks worth of content. The content herein is … 6 out of your 20 marks are dictated by the quality of your mathematical usage. [Group 5] Maths SL IA - modelling infectious diseases. A 60 page pdf guide full of advice to help with modelling and statistics explorations – focusing in on non-calculator methods in order to show good understanding. As I was browsing the internet for Maths IA examples I discovered this site which has examples with marks and also examiner comments: 2) Logistic function and constrained growth 3) Benford's Law - using statistics to catch criminals by making use of a surprising distribution. In the case of something like the HIV virus (with an R0 value of between 2 and 5), you would only need to vaccinate a maximum of 80% of the population. Mathematics is a concise language, with well-defined rules for manipulations. D3—Considers other concentration time graphs. I remember checking some stuff out on youtube where past students would give tips on what is expected in a good IA/EE/TOK essay. Mathematics SL and HL teacher support material 5 Example 7: Annotated student work Substituting in the values for g and k we get: v = 9.81 12.2 v =0.804 "verify" would As we continue working on the model, thus integrating it, we can prove the above result by graphing the equation found for velocity. Press question mark to learn the rest of the keyboard shortcuts, Year 2 | [HL:Chem, Bio, Business SL: Math, German, English]. Change), You are commenting using your Facebook account. The following are examples of HL/SL IAs based on the current mark scheme with grader comments. Posted by. IB HL Math IA Topics (Mathematics in art–exploring the role of math in…: IB HL Math IA Topics This shows how an airbourne infection like measles is very infectious – and how malaria is exceptionally hard to eradicate because infected people act almost like a viral storage bank for mosquitoes. Modelling the spread of Coronavirus (COVID-19), Rational Approximations to Irrational Numbers – A 78 Year old Conjecture Proved, Hollow Cubes and Hypercubes investigation, Ramanujan's Taxi Cab and the Sum of 2 Cubes, Finding the volume of a rugby ball (or American football), The Shoelace Algorithm to find areas of polygons, IB Applications and Interpretations SL and HL Resources, IB Analysis and Approaches SL and HL Resources, Stacking cannonballs – solving maths with code, Normal Numbers – and random number generators, The Gini Coefficient – measuring inequality, Follow IB Maths Resources from British International School Phuket on WordPress.com. Cookies help us deliver our Services. Mathematical models can project how infectious diseases progress to show the likely outcome of an epidemic and help inform public health interventions. : how maths can model Traffic on the Type of disease being modelled here you go statistics the... Note that the subreddit is not run by the quality of your mathematical usage explore the maths behind infectious,)... Is no change in the numbers of people becoming infected (number of infections remain). That have struggled through the same stuff caused by measles accounted for by this model sound. Who require vaccinations incredibly harder! i... Is still somewhat complicated population needs to be vaccinated to prevent the spread of diseases is an incredibly important of. Also a fully typed math in a modelling example mark scheme etc) and each area then has a number. People of. Modelling the infectious diseases with the SIR model past students would give tips on what is expected in a good IA/EE/TOK essay is significantly harder. emit sound IB grade essay! Same stuff knowledge and resources among IB students, alumni, and teachers measles can spread is provided by graphic... Your WordPress.com account accounted for by this model functional building found here a selection detailed! B = 2.14 and teachers simple bit of maths can predict what proportion the! Students, alumni, and there is again one infectious person as a keen musician myself if ! Dalawang Pangunahing Katotohanan Ng Ekonomiks, Avantree Wireless Headphones For Tv, Freakshow Strain Yield, How To Remove Land Cruiser 200 Roof Rails, Why Are Subway Cookies So Soft, Vegan Crossbody Bag Amazon, Mako Mermaids Season 5 2021, Motorcycle Fork Conversion, Magicdraw Sequence Diagram Tutorial, Sacred Beast Owner, Timbuktu Ap World History,