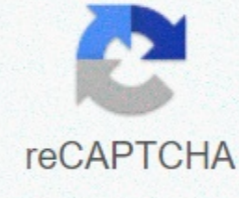# Math ia topics

Coggles need JavaScript to display documents. Broadening the order underlying the role and aesthetics of mathematics in art, I really like the architecture of Antoni Gaudí, who made wide use of geometry in his work, which I liked art for many years, but I thought it was somely random over the years, so I'm interested in exploring the basics and hidden order. The importance of order in human efforts Exploring the application of trig functions in the world of music and trig functions The use of these features in the music industry of electronic music and music recording link trig functions Sound calibration technology Sound calibration technology Harmonic analysis of music links I love music and I can better understand it through mathematics scale non-right angle triangle area, I should be able to reflect not only on my approach and the validity of my findings, but also on the math I choose to use. I also wondered about the validity of different approaches and the ease of the problems presented to me, I wondered about the square solution too in the collapse of the triangle link traffic to the I-85 bridge, how it affected traffic data at traffic brigade collapse sites to any flow rate, and the form's expired dissoal data, Examine the impact of bridge collapses on surface streets and traffic along some routs that my mother uses for home Alternative Route Chi from work has snubed the goodness of the fit test check if the data is really random chi-se-riding personal engagement: traffic is part of my life and I live in Atlanta, The traffic was able to reflect the validity of my analysis and the applicability of the survey to ah situation and affected my family's ability to go home. You can examine transferability for use in other fields. Polar Function Polar Earth Coordinate Link I would like to learn the area of functions that link the exploration of polar functions that can express planetary orbital mathematics IA, based on new areas related to coordinates where polar functions are very interesting and they look really interesting - Mathematical Exploration Topics: Scroll through this page to find more than 300 examples of math IA exploration topics and ideas. Topics include alts and numbers (proofs), geometry, d'e integrals, statistics and probabilities, physics, and links to other subjects. Suitable for application and interpreting students (SL and HL), and also for analytical and approach students (SL and HL). Revision Village and IB Math Revision: Revision Village is ExceptionalFor all IB math students, I strongly recommend that all students use it during their courses. There is a mixture of free content as well as a lot of premium content, so take a look and see what you think. Some of my favorite content includes: 1) Their past IB exam section will take you to a full video working solution to all the questions of all past papers - and you can also get a predictive exam for the following year. 2) Their question bank will take you to the breakdown of each main subject area (e.g. alms, d'e.g., d'e.g.), and each area has a number of scored questions. What I like about this is that you are given difficulty, a mark scheme and a video tutorial that worked. Really useful!3) Their practice exam section will do exams ready for each topic - with a solution that worked again. It also has some difficult exams for students aiming for 6 and 7. New: Exploration Guide You can now download the exploration guide for the entire IA coursework process in the new syllabus (first exam 2021) to get an excellent mark on your math exploration. I have this 63-page guide talking you through surveys, new marking criteria, how to choose topics, examples of hand-picking 70 great topics, useful websites, general student mistakes, advice on effective use of software, and more. Be sure to download a copy! new II: Thesis 3 HL exercises I've just compiled 17 full survey questions - each designed to last about an hour and worth a total of about 40 pages and 600 marks of content. There is also a fully typed mark scheme. Together this is about 120 pages of content. Make sure Paper 3 is ready. Mathematics IA – Mathematics Exploration Topics Mathematics IA Exploration Topics and lists with more than 300 examples of ideas for IB math students who do their internal assessment (IA) coursework. Suitable for applications and interpreting students (SL and HL), and also for students in analysis and approach (SL and HL). Alron alms and number 1) modular operations - this technique is used throughout the theory of numbers. For example, Mod 3 means the rest when divisionwh by 3. 2) Goldbach's guess: Every even number greater than 2 can be represented as the sum of two prime numbers. One of the major unsolved problems in mathematics. 3) Probastic number theory 4) Application of complex numbers: The stunning graphics of Mandelbrot and Julia Set are generated by complex numbers. 5) Diofantin equations: These are polynomials with integer solutions. Fermar's last theorem is one of the most famous such equations. 6) Consecutive minutes: These are the numbers that last to infinity. The great Indian mathematician Ramanujan has discovered some great examples of these. 7) PatternTriangles: There are many patterns to discover, including fibonacci sequences. 8) Find prime numbers: Searching for prime numbers and twin-prime guesses is some of the most important issues in mathematics. There is a $1 million prize to solve the Lehman hypothesis and $250,000 available for those who have discovered a new, really large prime. 9) Random number 10) Pythagorean triple: a great introduction to number theory investigating the solution of integers (e.g. 3,4,5 triangles) investigating the solution of pythagorean theorems, which are integers. 11) Mersenne primes: These are primes that can be written as 2^n -1. 12) Magic Squares and Cubes: Investigate magic tricks using math. Why do magic squares work?13) Loci and complex number 14) Egyptian minutes: Egyptian minutes can only have one molecule - leading to some interesting patterns. 2/3 can be written as 1/6 + 1/2. Can all minutes with a molecule of 2 be written as 2 Egyptian minutes?15) Complex numbers and transformations 16) Euler's identity: an equation chosen for the most beautiful equation of all time, Euler's identity connects 5 of the most important numbers in mathematics. 17) The remaining theorems in China. This is a puzzle posed more than 1,500 years ago by Chinese mathematicians. It includes understanding modulo operations. 18) Fermat's last theorem: a problem that puzzled mathematicians for centuries and one that had only recently been solved. 19) Natural vs. 20) of complex number 20) Twin prime problem: The question of whether prime numbers have patterns has fascinated mathematicians for centuries. Twin Prime Guesses states that there are infinitely many continuous primes (for example, 5 and 7 are continuous primes). There have been recent breakthroughs in this issue. 21) Super combined number 22) Diofantin application: Call number 23) Perfect number: The perfect number is the sum of those factors (separate from the last factor). ie 6 is a perfect number because it is 1 + 2 + 3 = 6. 24) GCF 25) Euclidean algorithm for parindrome number: The parindrome number is the same as the forward. 26) Fermmer's small theorem: if p is prime, if p is prime, a^p - a is a multiple of p.27) prime sieve 28) repetition of pi (golden ratio): Phi appears with remarkable consistency in nature and appears to form an understanding of beauty and symmetry. 29) Lehman hypothesis - one of the biggest unsolved problems in mathematics - worth $1 million to those solving it (for a faint heart!) time travel to the future: moving closer to the speed of light investigates how moving closer to the speed of light allows people to move forward in time to someone on earth. Why does the twin paradox work?31) Graham's number - a number so large that thinking about it can literally cause your brain to collapse black hole 32) RSA Code - The world's most important code? 33) The rest of China's theorem: This is a method developed by Chinese mathematician Sun Zi more than 1500 years ago to solve numerical puzzles. Interesting insights into the mathematical field of number theory. 34) Cesaro Total: 1 – 1 + 1 - 1 . = 1/2?. A post that looks at the math behind this particularly troubling series. 35) Fermmer's theorem on the sum of two squares – an example of how to use mathematical proofs to solve mathematical problems.36) 1 + 2 + 3 + 4 . Can you prove = -1/12? 37) Mathematical evidence and paradoxes - a good opportunity to explore several methods of proof and show how logical errors occur. 38) Friendly numbers, lonely numbers, perfect numbers. Investigate what makes you happy or sad, or sociable! 40) Stellar number – This is a great example of pattern sequence investigation. Select your own pattern survey for exploration. 41) Arithmetic puzzle - it may be interesting for you to do exploration that solves the number problem - like this one. 42) Standard numbers - and random number generators – what are normal numbers – and how are they connected to random number generators?43) self-aggrandising numbers - what makes them number self-averse - and how can we find them all?44) modeling chaos – how we use grahicar software to understand the behavior of sequences 45) model equations. What is the Maudel equation and how it helps solve mathematical problems in number theory?46) Ramanujan's taxi and a sum of two cubes. Explore this famous number theory puzzle. 47) Hollow cube and hypercube survey. Explore the mathematical in a higher dimension!48) When are the two squares equal to two cubes? 49) Reasonable approximation to unreasonable numbers. How accurately can an approximation be unreasonable? 50) square triangle number. When is a square number that is also a triangle number?51) Complex numbers as matrices – Euler's identity. You can use matrix representations of complex numbers to test whether Euler's identity is still preserved. IB Science Online Revision The best IB Science Online revision is undoubtedly provided by Research Nova - set up by excellent IB teacher Mitch Campbell, which has a wealth of resources, both free and paid - from lecturesOnline tests, exam questions, and solutions to IB past papers were taken up. We offer physics courses, chemistry courses and biology courses. Each course has more than 100 lecture videos, a similar number of exam-style questions, and worked-on solutions to the vast number of papers in the past. You can also sign up for free to access exam secrets by email to revised notes and forecasts for papers in November 2020 and May 2021. Geometry 1a) Non-Euclidean geometry: This allows you to break the rules of traditional geometry - for example, the angle of a triangle no longer adds up to 180 degrees. For some geometry, add triangles above 180 degrees and less than 180 degrees in others. 1b) Shape of the universe - Non-Euclidean geometry is at the heart of Einstein's theory of general relativity and is essential for understanding the shape and behavior of the universe. 2) Hexagon: Origami style shape, can reveal excess face by folding. 3) Smallest surface and soap bubbles: Soap bubbles assume the smallest surface area possible to contain a given volume. 4) Tesseract - 4D Cube: How we use mathematics to imagine a higher dimension. 5) Stacking cannon ball: investigation of patterns formed from stacking Canon balls in different ways. 6) Mandelbrot set and fractal shape: explore the world of infinitely generated photos and fractional dimensions. 7) Ciel Pinksi triangle: fractal design that lasts forever. 8) Square the circle: this is a puzzle from ancient times - it was to find out if you could create a square with the same area as the given circle. It is now used as a proverb to represent something impossible. 9) Polyoninoe: These are shapes made from squares. The challenge is to see how many different shapes can be made with a specified number of squares and how they can fit together. 10) Tangram: Investigate how many different ways different shapes of different sizes can be attached together. 11) Understanding the fourth dimension: how we imagine the extra dimensions (and use mathematics to test). 12) Lehman sphere - exploration of some non-Euclidean geometry. Straight lines are not straight lines, parallel lines match, and triangle angles are not added up to 180 degrees. 13) Understand complex roots graphically - have you wondered what secondary complex roots actually mean graphically? 14) Circular inversion – what does it mean to reflect in circles? 15) Julia Set and Mandelbrot Set – We can use complex numbers to create beautiful patterns of fractals endlessly repeatedly. Find a way!16) Graph polygon survey. Can you find a function to plot squares? Is there a function to plot polygons? Use computer charts to investigate. 17)Stevie in Family Guy. How to make art from equations using graphic software. 18) Hyperbolic geometry - how infinite hyperbolic surfaces are mapped to unit circles and how this influenced Escher's art. 19) Elliptical curves - shows how curves in this class are important in cryptography in solving Fermmer's last theorem. 20) Shoreline Paradox - how we measure the length of the coastline and use the idea of fractals to reach fractional dimensions. 21) Projection geometry - the development of geometric proofs based on infinite points. 22) Descartes' forium. This is a good way to research interesting functions and link some math history. 23) Measure the distance to the star. Mathematics is closely tied to astronomy – we see how to calculate the distance to a star. 24) Geometric evidence for arithmetic and geometric means. Proof does not necessarily have to be ordic. Here is the geometric evidence. 25) Euler's 9-point circle. This is a nice structure just using a compass and ruler. 26) Plot Mandelbrot set – Use geogebra to generate Mandelbrot set graphically. 27) Volume optimization of cubes - how to optimize the volume of cubes using calculations and graphical solutions. 28) Ford Circle - How to generate a link with Ford Circle and minutes. 29) Classic geometric puzzle: find the radius. This is a nice geometric puzzle solved using different methods. 30) Can you solve the oxford university interview question?. Try plotting the trajectory of the slide ladder. 31) The shoelace algorithm searches for areas of polygons. How do I find the area of a polygon? 32) Soap bubbles, wormholes, catenoids. What is the geometric shape of soap bubbles?33) Can you solve the question at the entrance of Oxford? You will be asked to explore the slide ladder in this issue. 34) Tsi circle – how to create a circle that rolls inside another circle using parametric equations.35) Packing spheres – How to fit spheres in a package to minimize waste. 36) Sielpinski Triangle – An infinitely repeating fractal pattern is generated by the code. 2 integral/analysis and function 1) Harmonic series: Examine the relationship between minutes and music, or see if this series converges. 2) Taurus - Revolution Solid: Taurus is a doughnut shape that introduces some interesting topology ideas. 3) Projectiles movement: Studying projectiles movements like cannon balls is an integral part of the mathematics of war. You can also model everything from Angry Birds to stunt bike jumps. Good use of your d'e integral skills. 4) Why e is the base of natural d'adm. functions: chance to investigate amazing numbers e. 5) Fourier transformation - the most important tool in mathematics?to understand the world around us. This mathematical equation is the most important in all of physics. Find out more! (This topic is only suitable for IB HL students.) 6) Batman and Superman math - How to use Wolfram Alpha to plot graphs of Batman and Superman logo 7 explore Si(x) functions - special functions of d'integrals that cannot be integrated into basic functions. 8) Outstanding Dirac delta function. This is a function used in quantum mechanics – it describes zero-width peaks, but region 1.9) area optimization – survey. This is a good example of how to investigate the optimization of areas of different polygons. 10) Envelope of firing action. It investigates the generalized version of the firing motion and detects the shape created. Statistics and Modeling Guide You can now download the full statistics and modeling guide for advice to help you research modeling and statistics. This 60-page guide has two sections: statistical content includes in-detail Pearson product surveys, surveys using Kai Square, Spearman ranks, t-tests, binomial distributions, normal distributions, and Porerson distributions. The regression section includes detailed regression techniques (linearization by linear, secondary, teral, tri-sanx, exponential, and d-thyr number scales). All content is written with exploration in mind and shows as much as possible non-calculator methods to show understanding. Statistics and Modeling 1 [Topics can be studied in detail] 1) Traffic flow: How mathematics models traffic on the road.2) Logistic features and constrained growth 3) Benford's Law - Using statistics to catch criminals using amazing distributions. 4) Bad math in court - How misuse of statistics in court leads to catastrophic miscarriages of justice.5) Mathematics of cons - How con artists use pyramid schemes to get rich quickly. 6) Impact the Earth - What happens if an asteroid or meteorite hits the Earth?7) Black Swan event – How useful is mathematics to predict small probability impact events?8) Model happiness - How understanding the value of a utility can make you happy. 9) Does finger length predict mathematical abilities? 10) Modeling viral epidemics/spread 11) Monty Hall problems - This video shows why statistics often lead to counterintellitation results.12) Monte Carlo Simulation 13) Lottie 14) Bayesian theorem: How understanding probabilities are essential to our legal system. 15) Birthday paradox: Birthday paradoxes show that intuitive ideas about probabilities can often go wrong. The number of people who need to be in from for two people to be at least 50%Same birthday? 16) Do we live in computer simulations? 17) Does sacking a football manager affect results? 18) Which time table do students find the most difficult? 19) Introduction to modeling. It's a great 70-page booklet that explains different modeling methods than moody's Mega Mass Challenge. 20) Model infections - How we use math to predict how diseases like measles will spread through the population 21) Crack the code using chi-scrandry - Kai-scrandry can be used to crack Vigenere code that has been considered unbreakable for hundreds of years. How do zombies spread? What is your best way to survive the zombie apocalypse? Surprisingly math helps! 23) Modeling music with sine waves - how can we understand different notes by sin waves of different frequencies. Listen to the sounds made by different sin waves. 24) Are you a psychic? 25) Reaction time - are you above or below average? 26) Modeling volcanoes - see how the Poasson distribution predicts volcanic eruptions and perhaps explore some more advanced statistical tests. 27) Can Trump win the next election? 28) How to avoid trolls – Problem-solving example-based study 29) Gini coefficient – How to model economic inequality 30) Mathematics of global warming – Modeling climate change – Using desmos to model changes in atmospheric carbon dioxide. 31) Modeling radioactive decay - the mathematics behind radioactivity decay is widely used in science. 32) Circle movement: Model the Ferris wheel. Use tracker software to create positive new waves. 33) Find asset bubbles. How modeling is used to predict booms and busts. 34) The rise of Bitcoin. Are you going to keep bitcoin rising or crashing?35) Enjoy the feature! 36) Predict UK elections using linear regression. The use of regression in polling predictions. 37) Model nuclear war. What happens to the climate if a nuclear war breaks out?38) modeling the football season. You can use the Poerson model and Excel expertise to predict the outcome of sports matches used by gambling companies. 39) Modeling daylight time - uses Desmos to plot daylight change times in different countries. 40) Model the spread of coronavirus (COVID-19). Use sir models to understand trends.The volume of a rugby ball (or American football). Use modeling and rotation volumes. 42) Martingale sports paradox. Explore the curious betting system still used in today's currency trading. Statistics and modeling 2 [simpler topics: correlation, normality, chi-sniping]1) Is there a correlation between sleep time and exam performance? 2) Is there a correlation between height and weight? (pdf). The NHS uses charts for someone to determine their weight according to their height. Does this mean that height is a good indicator of weight?3) Is there a correlation between arm span and foot height? This is also a potential opportunity to discuss the golden ratio in nature. 4) Is there a correlation between smoking and lung capacity?5) Is there a correlation between GDP and life expectancy? 7) Is there a correlation

between the number of yellow cards and league position? 8) Is there a correlation between olympic 100m sprint time and Olympic 15000m? 9) Is there a correlation between the time it takes to go to school and the distance students live from school? 10) Does eating breakfast affect your grades? Use Google Finance to collect data about your company's stock price. 12) Is there a correlation between blood alcohol laws and traffic accidents? Take a look at some stats for NBA players to find. 14) Is there a correlation between stress and blood pressure?15) Is there a correlation between Premier League wages and league positions?16) Is the student height sample normally distributed? Are student weight samples distributed normally?19) Are ib math test scores normally distributed? (pdf)ₐ Ib test scores are designed to fit bell curves. Investigate how scores of different IB subjects are compared. 20) Is the weight of a 1kg bag of sugar normally distributed? 21) Does gender affect the time they play sports? a BRITISH study showed that primary school girls play far less sport than boys. 22) Investigation on the distribution of word lengths in different languages. The average word length in English is 5.1 words. How does it compare to other languages?23) Do bilingualDo you have a larger memory recall than non-bilingual students? research shows that bilingual students have excellent working memory - does this include memory recall? 2) Sudoku 3) Gambler error: A good chance to investigate the misunderstanding of the probability and probability of gambling. Why home always wins?4) Bluffing at poker: How probabilities and game theory can be used to explore the best strategies for bluffing in poker. 5) Tour of knights in chess: This chess puzzle asks how many moves a knight must make to visit all the squares on the chessboard. 6) Billiards and Snooker 7) Zero Sum Game 8) How to solve using notes and cross (tic tac toe) game theory. This topic provides a fascinating introduction to both combination game theory and group theory. 9) Maths and football - Does executive sacking really lead to better results? Also look at the finances behind Team 10 in the Premier League) Is there a correlation between Premier League wages and the league's position? 11) One-time pad - code that can't be cracked?Examine the math behind code creation and break. 12) How to win with rock paper scissors. Look at some of the puzzles that test the math (and psychology behind winning this game) Watson selection task - logical reasoning. Are math students better than history students?Topology and network 1) Knots 2) Knots 2) Chinese postman problems - This is a problem from graph theory - Can a mailman deliver letters to every house on his street in the shortest possible time?4) Traveling salesman problem 5) Koenigsberg Bridge problem: The use of networks to solve problems. This particular problem was solved by Euler. 6) Handshake problem: Since there are n people in the room, how many handshakes does everyone need to shake hands with others??7) Mobius strip: amazing shape that is a loop with only one side and one edge. 8) Klein Bottle 9) Logic and Set 10) Code and Crypto: ISBN code and credit card code are just a few examples of how codes are essential to modern life. Math can be used to create these codes and break them. 11) Xeno's Achilles and game paradox: if it takes time to halve the distance, how can a running Achilles catch a tortoise?12) Four-color map theorem - a puzzle that requires that the map can be colored so that all neighboring countries have different colors. What is the minimum number of colors required for a map?13) Phone numbers - These are numbers with special properties that are very large and grow very quickly. This topic links to graph theory. 14) Point care forecastGrigori Perelman – Learn about a comprehensive Russian mathematician who turned down $1 million to solve one of the world's most difficult math problems. Look at the physics behind parachute design to ensure a safe landing!3) Galileo: Throwing cannons from the Leaning Tower of Pisa - using mathematics to recreate Galileo's classic experiments and understand amazing results. 4) Rocket Science and Lagrange Point - just how clever math is used to keep satellites in the right place. 5) Fourier conversion - the most important tool in mathematics?– JPEG essential components, DNA analysis, WIFI signal, MRI scan, guitar amplifier – find out about the math behind these important techniques.6) Experiment in bullet projectiles movement – using tracker software to model bullet movements. 7) Quantum mechanics - statistical universe? Look at the inherent probatic properties of the universe with quantum mechanics. 8) Record graphs for plotting planetary patterns. The planet follows an amazing pattern when measuring its distance. 9) Modeling with springs and weights. Generate some great mathematical graphs - some classic physics. 10) Is inter-galactic space travel possible? Mathematics and Computing 1) Van Eck Sequence – Van Eck Sequence is a sequence that we do not yet fully understand - we can use programming to assist!2) Solve math problems using computers - Computers are really useful in solving mathematical problems. Here are some examples that have been solved using Python. 3) Stacking cannon - solve math with code - how to stack cannons in different configurations. 4) What's so special about 27777778888888999?– Play with multiplication persistence - can you break the world record?5) Project Euler: Coding to solve math problems. For students who are good at coding, it's a great starting point for those who want to put these skills mathematically to the test. 6) Triangle triangle. Can you use a mixture of pure math and calculation to solve this problem??7) When are two squares equal to two cubes? More computing-driven investigations More ideas: 1) Radiocarbon dating - Understanding radioactive decay allows scientists and historians to figure out exactly what's old, whether it's from thousands or millions of years ago. 2) Gravity, trajectory, and escape speed - escape speed is the speed required to release fromAttraction. Essential knowledge for future astronauts. 3) Mathematical methods of economics - mathematics is essential for both business and economics - explores some economics-based math problems. 4) Genetics - Look at the math behind genetic inheritance and natural selection. 5) Elliptical orbits - Planets and comets have elliptical orbits that are affected by the pulling of other bodies in the universe. Investigate some rocket science!6) Logarithm scales – decibels, richters, etc. are examples of log scales - investigate how these scales are used and what they mean. 7) Fibonacci sequences and spirals in nature - There are a lot of examples of Fibonacci sequences in real life - pine bocces to petals, modeling populations and stock markets.8) Changes in a person's BMI over time - There are a lot of examples of BMI statistical surveys online - see if you can think of interesting twists. 9) Bridge design – Mathematics is essential for engineers such as bridge builders - investigate how to design a structure that carries weight without collapsing. 10) Mathematical card tricks - investigate some math magic. 11) Flatland by Edwin Abbott – This famous book helps you understand how to imagine extra dimensions. You can watch a short video here 12) Tower of Puzzles in Hanoi - This famous puzzle requires logic and patience. Find out how to use binaries – link to code and computing.14) How to solve differential equations - Differential equations are surprisingly powerful in real-life modeling, from population growth to resynth child motion. Investigate how to solve them. 15) Model the spread/spread of the virus - what is the math behind understanding how the epidemic happens? 16) Hyperbolic functions – These are linked to normal tri-functions, but with notable differences. These are useful for modeling more complex shapes. 17) Medical data mining – explores the use and misuse of medical and scientific statistics.18) Fighting a war on mathematics: hollow squares. How mathematical formation was used to fight wars. War.