**Titles to get you thinking**

Medieval Islamic Art (investigating the symmetries and designs)

Profit maximisation and its applications (using initial example of a fundraising bbq)

Olympic 1500m skating gold medal trends

Moonraker parachute stunt (looking at a stunt from a James Bond film)

Illegal financial schemes

Divine Proportion in Product Design and Marketing

Gabriel’s Horn

A comparison on the amount of daylight hours in London and Townsville

The Kochel Catalogue of Wolfgang Amadeus Mozart’s Compositions

A study on how anthropometric variables affect athlete’s endurance on an ergometer.

Mathematics of the Lottery

An exploration of the Gini Index

Real world applications of bivariate analysis - a focus on economics

Investigation on maximising the exposure of sunlight of a greenhouse

Bayes Theorem

How can the abacus perform arithmetic calculations

The historical exploration of mathematics within cryptology

How can we use mathematics to predict the flow of exchange rates

Pascal triangle - cell division

The traveler’s dilemma (about game theory)

Life insurance investigation

Celtic knots

The Galton Board

An analysis of the mathematics behind Bayes’ Theorem and its application to medical testing

The birthday paradox

The truel

The mathematics behind hexaflexagons

The Monte Carlo method of calculating Pi

The maths of kicking an AFL football

An investigation into Elliptical orbits

Investigation into how surface area of calcium chips affects reaction rate

Change in Shadow Length

Modelling the rate of photosynthesis

Correlation between Brownlow Medal winners and major statistical categories since 2000

The best way to grow your own green lentils, alfalfa sprouts and mung beans

Modeling birth rates, Australia vs Tunisia

What is the probability of landing on “Go to Jail” in the game of monopoly

The Golden Ratio

Binomial Distribution

Poisson Distribution as limiting case of the Binomial Distribution

Investigating speed of vehicles in Mauritius.

Fibonacci Numbers and the Golden Ratio

The maths behind Mr xxx’s swimming pool

Birthday Paradox

Probability of Poker

The Monty Hall Problem

To what extent does Mathematics play a role in Sudoku

American Roulette

Comparison of triangular, square and hexagonal circle packing in a building (looking at Selfridges building in Birmingham)

Understanding Demographics

An exploration into the modelling of population trends of Fiji from 1960-2012

Earthquake

An exploration of pi

Satellites

A mathematical investigation into tennis serves using projectile motion

An investigation into the relative displacements, velocities and accelerations of both horizontal and vertical components of a plane’s parabolic flight

An exploration of 4 dimensional geometry

Damping

An investigation into the probability of nationality association based on background of IB students

Relationship between Fibonacci Numbers and the Golden Ratio

Projectile Motion

Fractals and the Pythagorean Tree Set

Vectors and Trigonometry in Aviation

Calculating the Rate of Erosion of the Great Pyramid

Investigation on Premier League Football teams

The Chinese Postman’s Problem

One Dimensional Relativity.

Horizontal movement of the arrow

Mathematics behind dance steps

Sum of all natural numbers and Riemann-Zeta Function

Card counting in Black Jack

Encryption and Decryption

Statistical Study on British Premier League Injuries

The Concept and Use of Binary System of Numbers

The role of compound interest on loan and mortgage payments

Probability in Roulette

The Real Story behind Imaginary Numbers

Coordinates System

Using probabilities in a black jack game

Exploration of probability in XXXX card game

Investigating the mathematics behind the structure of the Guggenheim museum

Is it possible to predict the change in house prices over time using the Fibonacci sequence

Comparing two geometries: Cartesian plane and sphere.