π Mathematical Investigations

These projects are eligible for entry into the Maths Talent Quest

What to do

1. Choose a topic for your investigation
2. Collect the necessary background information and clearly state a problem with a real life context to investigate
3. Use mathematical approaches to solve the problem
4. Present a report to tell others what you did and what you found out. Include any references and acknowledge the assistance you receive.

Projects can be on any mathematical topic and may be presented in a variety of forms such as:

- Written report
- Written as a booklet, brochure or poster
- Powerpoint presentation
- Video

What makes a winning entry?

- **The topic** of the investigation should be relevant, original and creative It should address an issue of significance that may be of a social, local or personal nature.
- **The approach** should be original, creative and resourceful and integrate a range of mathematical concepts and processes.
- Present the investigation in a legible, logical and appealing manner
- **The report** should include:
  - Clear questions/aims for investigation and predicts results and/or describes a hypotheses to be tested
  - Explanation of the how and why the topic was chosen and the approach to the investigation
  - Details of the materials used and the procedure lists the mathematical strategies and content that have been used in the investigation
  - Description of the mathematical content and strategies used to achieve the results
  - Evidence of replication of results (if appropriate), accuracy and thoroughness
  - Analysis of findings and publishing these appropriately including results, observations, measurements, graphics and text which uses accurate mathematical skills
  - Discussion of the results referring to the aims
  - Explanation of errors, anomalies and analysis of mathematical connections within the investigation
  - Use of critical and creative thinking to explore mathematics within the investigation
  - Reasonable conclusion
  - Suggestions for further research
  - Appropriately acknowledge any assistance. Clarify which aspects of the project were devised and carried out alone and which aspects were not and what sort of assistance was provided.
- 3-5 min video (hosted externally with link provided). All video should be clearly audible and easy to watch. The film technique will not judged, judges need to gain an understanding of your project

Prizes in this cateogory are pponsored by

Queensland Association of Mathematics Teachers

MTQ MATHS TALENT QUEST

The focus of the Maths Talent Quest is on the process of mathematical investigations. Open to all primary and secondary students, the Maths Talent Quest aims to promote interest in mathematics and foster positive attitudes amongst students, teachers and parents. Looking at real life situations and finding that mathematics is everywhere helps capture the imagination of both teachers and students alike.
The Maths Talent Quest allows students to investigate mathematics on an individual, group or class basis with the opportunity to have fun exploring mathematics in real life situations.
Assessment through a rubric helps to evaluate students‘ progression through the process strands.

Please see the principals of AI use in the terms and conditions which is compulsory for MTQ entries

Some Ideas to get you started

- **Investigate a particular theme following normal class lessons in a particular area.**
- **An excursion to the Zoo, museum, or historical village could provide a useful source of ideas and motivation for projects.**
- **Current events or special celebrations such as the current *International year of*...**
- **Investigate the mathematical content of a specific interest eg. maths in basketball, budgeting for a holiday, climate modelling...**

Judging Criteria

What the judges are looking for :

1. A clear aim/hypothesis for their investigation including a rationale for why the topic was chosen.
2. Description of the investigation process, including a justification of the choices made during the investigation.
3. Reflection throughout the investigation process on findings, communicating how thinking developed and evolved, and a clear conclusion that summarises findings and relates back to the investigation aim/hypothesis.
4. Selection and use of a range of appropriate mathematical strategies and tools, clearly describing why and how they have been used.
5. Investigation and application of sophisticated mathematical concepts.
6. Consistent and accurate use of mathematical language, symbols and representations.
7. Correctly evaluated and clearly presented mathematical calculations.
8. Originality and personal insight into the investigation topic and approach, demonstrating critical and creative thought.
9. Thoughtful, thorough and reasoned analysis of the investigation topic.
10. Meaningful connections from their investigation to existing knowledge and prior learning, within and across mathematical concepts and to the real world.
11. Reflection on the mathematical learning achieved in the investigation.
12. Clear, effective, engaging, interesting and appealing communication of approach and findings.