

UWI MATH FAIR 2023: MATH MODELLING CONTEST

*Guidelines for Submissions.*



- ❖ The Math Modelling Contest consists of **TWO** categories:
  - **Category I: Physical Model** (up to 5 participants per group of the same level)
  - **Category II: Poster** (up to 3 participants per group of the same level)
- ❖ For both categories (Physical Model, Poster), there are four levels:
  - Junior: Form 1 – 3 (Secondary school)
  - Intermediate: Form 4 – 5 (Secondary school)
  - Senior: Form 6 (Secondary school)
  - Teachers

To create your physical model/poster, choose any one of the following topics:

- **Topic 1: Design Your Dream House Using Geometric Shapes**

Draw/Build a 2D/3D version of how you want your dream house/property to look. All features must be geometric in nature and drawn/built to scale. You should add multiple geometric features and highlight any mathematical properties and the scale that was utilised in the design. e.g., tree leaves could be a triangle or a rhombus, a pentagon shaped pool.

- **Topic 2: Design a Trophy for the World Cup**

Draw/Build a 2D/3D version of a trophy for the World Cup. All features must be geometric in nature and drawn/built to scale. You should add multiple geometric features and highlight any mathematical properties and the scale that was utilised in the design.

- **Topic 3: Design an experiment**

Design and conduct a simple experiment in your class/school. Using your results, calculate and discuss at least 3 statistical concepts.

For example: In a class of 50 students, we may wish to determine the number of students who agree or disagree with a certain issue. Therefore, we can define a random variable  $X$  as the number of students who agreed with the issue out of 50 to capture the essence of the problem. Determine the  $E[X]$ ,  $\text{Var}[X]$  and the cumulative distribution function of  $X$  (graphically).

Your task is to design a similar experiment. Regression models may also be used.

## UWI Math Fair 2023- Unleashing the Mathlete in YOU

- ❖ Submissions will be accepted from **Monday 19<sup>th</sup> December, 2022 at 8 a.m.** to **Tuesday 31<sup>st</sup> January, 2023 at 11:59 p.m.** There is **no** registration fee.
- ❖ Selected participants may be asked to make a short oral presentation on their poster/model at the UWI Math Fair 2023 on Thursday 9<sup>th</sup> February, 2023.
- ❖ Please note that all entries must be submitted via the link provided on the website before the deadline. Unsuitable submissions will be denied entry into the contest. Plagiarism will not be tolerated. Submissions made for previous Math Fair events will not be accepted.
- ❖ The Judges' decisions on any matter are final. There is no obligation on the part of The Department of Mathematics and Statistics, or on the judges to provide an explanation for any decision made.
- ❖ Participants are allowed to enter **both** sections (physical model, poster) by submitting separate entries via the submission link available on the website.
- ❖ Prizes/medals for the top 3 local individual performances in each level of both categories will be awarded.
- ❖ An electronic Certificate of Participation will also be prepared for each participant and sent via email.
- ❖ Visit [www.uwimathfair.com](http://www.uwimathfair.com) for more information.
- ❖ Any enquiries about the contest and the rules should be addressed to:  
Email: [STA-UWIMathFair@sta.uwi.edu](mailto:STA-UWIMathFair@sta.uwi.edu)

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❖ Please refer to the following table for the requirements for entries in each section:

<b>Category I: Physical Model Entries</b>	<b>Category II: Poster Entries</b>
<p>This entry is a physical adaptation of a Mathematical Model / concept.</p> <ul style="list-style-type: none"> <li>• Participants are required to construct a functioning model based on the chosen topic.</li> <li>• Participants are required to submit a 3-5 minute video explaining the mathematical concept at work, documenting the creation of the model, demonstrating the operation of the model and providing application of the model. The video should also provide appropriate angles and close-ups of the piece.</li> <li>• Participants are required to submit an image of their finished physical model.</li> <li>• The videos (in MP4 format) and photo must be submitted via the link provided on the website (<a href="http://www.uwimathfair.com">www.uwimathfair.com</a>).</li> </ul>	<p>Submissions accepted in either portrait or landscape orientation and must include the following:</p> <ul style="list-style-type: none"> <li>• Title of Submission.</li> <li>• School name, group member names and level.</li> <li>• Project must reflect the selected topic.</li> <li>• Your poster presentation should address how the chosen mathematical concept can be used in modelling real-world phenomena.</li> <li>• In your discussion, you should clearly illustrate how Mathematics was used to interpret, analyse or predict in the chosen application.</li> <li>• A Conclusion must be included.</li> </ul> <p>Pictures of physical posters (made by hand) can be submitted.</p> <p>Digital posters can be created using <b>any</b> suitable online software tool (For example: Microsoft Word, Microsoft Powerpoint, Microsoft Publisher, Canva, Adobe Illustrator). Submissions should be converted to a PDF document before submitting via the link provided on the website (<a href="http://www.uwimathfair.com">www.uwimathfair.com</a>).</p>

❖ The marking rubrics for both sections have also been included:

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**UWI MATH FAIR MATH MODELLING CONTEST - MARKING RUBRIC**

Name(s): \_\_\_\_\_ Level: Junior / Intermediate / Senior / Teacher

School(s): \_\_\_\_\_ Total Score: \_\_\_\_ / 20

***Judging Criteria- Category I: Physical Model***

<b>Criteria</b>	<b>Description</b>	<b>Excellent (4 points)</b>	<b>Good (3 points)</b>	<b>Satisfactory (2 points)</b>	<b>Minimal (1 point)</b>
Mathematical Competence	The presenters demonstrated competence in the use of accurate mathematical concepts pertaining to the topic and theme.				
Mathematical Model / Engineering goals	The mathematical concept was illustrated flawlessly and enhanced audience understanding of the model.				
Relevance of the Model	The project has real-life applications which were explained.				
Visual Presentation	Model showed a high level of creativity and visual appeal.				
Oral Presentation	Presenter(s) explained the ideas and information clearly, concisely and used mathematical jargon appropriately.				

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**UWI MATH FAIR MATH MODELLING CONTEST - MARKING RUBRIC**

Name(s): \_\_\_\_\_ Level: Junior / Intermediate / Senior / Teacher

School(s): \_\_\_\_\_ Total Score: \_\_\_\_ / 20

**Judging Criteria- Category II: Poster**

<b>Criteria</b>	<b>Description</b>	<b>Excellent (4 points)</b>	<b>Good (3 points)</b>	<b>Satisfactory (2 points)</b>	<b>Minimal (1 point)</b>
Relevance of the Project to Topic	The content is directly linked to the chosen topic.				
Mathematical Competence	The presenters demonstrated competence in applying their chosen mathematical concept to the application.				
Applications of the Model	The project has real-life applications which were explained.				
Conciseness and Flow	The material is presented in a concise and logic manner and content flows.				
Visual Presentation	Project showed a high level of creativity and visual appeal.				