

Exhibitions and Display Categories

For Years 6 - 10 Students

OVERALL THEME FOR 2010 – MATHS in STRUCTURES

Ideas: Mathematics of different 2D and 3D structures, mathematics in architecture – past and present, mathematics in natural structures; snowflakes, pinecones, flowers, trees etc; Fibonacci numbers in structures, golden ratio, fractals, models, mathematics in man-made structures – bridges, treehouses etc, structure of language, music, art, poetry

Note:

- There is no separate category for these exhibits. They should be entered in one of the other categories. Judges in this category consider **all exhibits** and judge them based on its theme content.
- Category entries do not have to portray this theme.

PUBLICITY MOTIF – Individual (Year 7 – 10)

The winning motif will be used as the basis of the advertising poster for Cantamath 2011. The design needs to be eye-catching and reflect the theme for 2011. Often a simple, imaginative and carefully constructed design is the most effective. Artistic merit is rewarded in this category. There are specific requirements for this category, as set out below:

Requirements:

- Use only **A4** (210mm x 297mm) paper size in vertical (**portrait**) orientation for your motif.
- Your motif may use any shapes but **must stay within the size of the A4 paper**
- You must use **red and black** only on a **white background**.
- Shading by cross-hatching is allowed
- **Technology can be used** to create the motif.
- The only words permissible are **Cantamath 2011**. (*Please note that there is no “s” on the end of Cantamath and the motif must have **next** year’s year on it.*)
- The theme for 2011 is “**Active Maths**”.

IMPORTANT: Placegetters will forfeit ownership of their motifs to the CMA. Entries are restricted to the best twelve per school.

MATHEMATICAL POSTERS – Individual (Year 7 – 10)

Ideas: Advertisements; applications of mathematics; cartoons; famous theorems; slogans; the History of Mathematics; the Mathematics of Architecture, Art, Commerce, Machines, Music, Sport, etc.

Note:

- **No computer generated work is allowed.** The judges will be considering originality when marking this section.
- Posters should convey a visual message and may contain approximately 10 - 15 words.
- A2 paper is suggested.

GEOMETRICAL DESIGN – Individual (Year 7 – 10)

Ideas: Mathematical curves; mathematical shapes in **2 dimensions**; patterns of any kind; tiling, quilting and wallpaper designs.

Note:

- **No computer generated work is allowed.**
- Designs **must not** contain any words.
- Hand made items can be entered into this section.
- The judges will be considering originality when marking this section.
- A3 or A2 paper is suggested.

MATHEMATICAL MODELS – Individual (Year 7 – 10)

Ideas: Mathematical shapes in **3 dimensions**; curve-tracing equipment; mobiles; polyhedra; working or non-working scale models (not kits) of devices employing or demonstrating some mathematical content; string designs, etc. **Models must be made to be free standing and have no loose parts that can be lost.**

Note:

- A **brief explanation must accompany each entry.** Working models must include any instructions required to enable the judges to mark the work fairly. An Excellence award will not be given to Mathematical Model entries that are not accompanied by an explanation.
- The judges will be considering **originality** when marking this section.
- Models, especially working models, are very liable to accidental or deliberate damage and therefore must be strongly made and have no loose parts that can be lost.

COMPUTER GENERATED DESIGN – Individual (Year 7 – 10)

Ideas: Mathematical curves; mathematical shapes in 2 dimensions; patterns of all kinds; tiling, quilting and wallpaper patterns.

Note:

- Designs **do not** contain any words and must be printed on paper.
- A **brief description** of the creation of the design **must be attached.** It will need to include information as to which software programmes were used and how they were used as well as referencing any templates/previously created material used in the creation of the design. An Excellence award will not be given to Computer Generated designs that are not accompanied by an explanation.

WRITTEN WORK - Individual or Small Groups (no more than 3 students) (Year 7 – 10)

Ideas: Description or investigation of some mathematics used in a branch of agriculture, commerce, science, health or daily life; a statistical investigation; a mathematical principle or idea; a story with a mathematical significance.

Note:

- The work may be either prose or poetry.
- It may include illustrations or decorations, done by hand or photocopied.
- The work may be presented as a single sheet or as a book
- A bibliography must be included, all resources including specific websites used must be included.
- No PowerPoint or other electronic presentations please

Group work needs to clearly show the full names of all participants.

CLASS PROJECT (Year 6 – 10)

This must be undertaken by a whole class or a substantial portion of a class and should include a brief description of what the class has undertaken.

Ideas: Murals with a mathematical theme; investigations of mathematical ideas; scale drawing or models; statistical survey or experiment; tape/slide presentation.

Note:

- An Excellence award will not be given to Class Projects that are not accompanied by an explanation.
- Please notify the Secretary by July 31st if a large space is required (particularly for large murals; maximum size 2m x 1.2) or power points, tape or slide presentations are being displayed.
- Performance items must be registered with the Secretary by July 31st. Items will be judged on the Wednesday morning of Cantamath, and the groups may be asked to perform during the evening.
- Entries are to be displayed as either a large piece of paper or as a booklet, not both.

CATEGORY FOR YEAR 6 ONLY

PROBLEM CHALLENGE – Individual

The idea of this section is for students to select **one** of the following challenges to investigate and explore. More **details of each of the challenges** can be found in the in the *2010 Year 6 individual challenges information* on the website or from your teachers. It is recommended that you read this information before deciding on the challenge you are going to explore.

Popcorn The Cantamath Corn Company wants to design a container that will hold approximately 2010 popped popcorn kernels. You will need to decide how much space 2010 popped popcorn kernels will take up and then design a suitable cardboard container.

Shaking Hands Six business people meet for lunch and shake hands with each other. How many handshakes are there? At the start of a meeting if everyone in the room shakes hands with every other person, how many handshakes will have happened? Investigate the number of handshakes if there are 3, 4 or 5 people in the meeting. What if there are 10 people in the meeting? Can you investigate a way of finding the number of handshakes depending on the number of people in the meeting?

Focusing on Water How much water does your family use each day? In a typical household water is used for showers, washing clothes, flushing toilets, using a dishwasher and many other activities. Using the information below design a method for investigating how much water your family uses on an average day. Water can also be wasted by dripping taps. Setup an experiment for deciding how water much is wasted by a tap dripping for a minute, an hour, a day and a year.

*Showers use up to 20 litres a minute.
Washing a full load of clothes takes 175 litres.
Together, 2 taps running use 14 litres a minute.
A full flush toilet takes 11 litres. A half-flush takes 5.5 litres.
A bath with enough water to cover you when you lie down takes 100 litres.
A fast wash on a dishwasher takes 15 litres, a medium wash 20 litres, and a heavy wash takes 25 litres.*

Note:

- The work needs to include what you have done, any calculations you have done and what you discovered.
- It may include illustrations or decorations, done by hand or photocopied.
- The work may be presented as a poster or booklet.
- You may include any models you created while working on a solution.
- No PowerPoint or other electronic presentations please.

CATEGORIES FOR YEAR 7 AND 8 ONLY

TEAM COMPETITION BANNER - *Years 7 and 8 only*

The banner is for supporting your school at the teams' competition on the appropriate night. It can only be used for one night and must be no larger than 5m x 2m. The banner can be hung over the balcony but must not interfere with the running of the team competition below.

There are two prizes in the banners competition.

- **Best Visual Appeal** – as judged by the Cantamath committee.
- **Best Supporting Crowd** – judged on the amount of noise!

GAMES AND PUZZLES - *Years 7 and 8 only.*

Individual or Small Groups (no more than 3 students)

Ideas: Calculator games; games of skill with counters; hidden-word puzzles; race games.

Note:

- Games or puzzles must be **NO** bigger than A2 in size.
- The **rules of the game must be given**, and the **mathematical principles explained**. An Excellence award will not be given to Games and Puzzles that are not accompanied by an explanation.
- Games which use counters or dice should have them in a typical playing position.
- Loose pieces can be easily lost, please tape or stick them down for the display.
- Simplicity and originality will be rewarded.

CATEGORY FOR YEAR 9 AND 10 ONLY

WEARABLE MATHS - *Year 9 and 10 only.*

Individual or Small Groups (no more than 3 students)

Ideas: Make a wearable item using anything from your knowledge of mathematics. Use a mathematical story, message, slogan, theorem or principle.

Note:

- **Wearable maths designs must be able to be worn.**
- An explanation of the mathematics involved **must** accompany the display. An Excellence award will not be given to Wearable maths designs that are not accompanied by an explanation.
- They can be made from any material available.
- Items should be able to be easily hung for display purposes.