

# NMCC

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## Investigation

The investigation in NMCC is a mathematical task that the class should explore carefully. It is possible to solve the problem using various methods and strategies.

The challenge for the class will be to consider the different methods and strategies, compare and contrast them and to make a progress log that documents how they worked with the task as well as a subject report that shows their mathematical findings.

Advice will also be given to the teacher about how the work might be organised so that all of the pupils can make a contribution to the work that is undertaken in the class.

Mathematical ideas and procedures can be represented in many ways. We can use casual everyday language and the formal language of mathematics – both in spoken and written forms. We can use concrete materials, models and drawings to highlight a mathematical idea.

## Criteria for assessing the specialisation

The work done by the class will be assessed by a jury consisting of teachers and mathematicians. The grounds for the assessment will be:

- I. An academic report that describes part A of the task
- II. An exhibition of part B of the task, presentable to an "external audience"
- III. An oral presentation of part B of the task, presentable to an "external audience"
- IV. A progress log that describes the work done on task A

### NOTE:

The progress log and the subject report must each be self-contained so as to give the jury full insight into the work of the class and their findings.

The exhibition and oral presentation must be self-contained so that they can be assessed by two different juries respectively.

## A Subject report

### Formal requirements

The report must be written in 12 pt Times New Roman and with 1.5 line spacing. Headings may have a different size. The page numbers should be centralised at the bottom of the pages.

The subject report must not consist of more than 15 000 characters including spacing.

The report must be submitted as a Word- or a pdf-document, preferably Word-file (\*.docx).

The report must include:

- I. Front page: Title of the task, competition name (NMCC), year, nation, name of the school and class.
- II. Table of contents with reference to page numbers.
- III. The academic content should
  - a. present to the readers your interpretation of the task
  - b. be well structured and offer the reader insight into the mathematical results obtained
  - c. present, explain and evaluate the various methods and strategies the class has used
  - d. explain the mathematics used through different representations
  - e. describe the similarities and differences of the different methods and representations
  - f. finalise with a conclusion comparing your interpretation with your work on the task and the results you have obtained

## B1 Exhibition

### Formal requirements

The content of the exhibition must be brought to the location of the competition by the students. The exhibition can consist of poster(s) and objects placed on a table in front of the wall where the poster(s) are exhibited.

The poster(s) must not be larger than 1 m<sup>2</sup> (A0 format).

The text on the posters must have a minimum height of 2 cm.

The objects must fit on a rectangular table of size 0,5 m<sup>2</sup>, usually 1 m long and 50 cm wide.

### Characteristics of a good quality exhibition

A good exhibition should

- convey both the task and its solution(s)
- highlight central aspects of the mathematics that the class has worked with
- have an appealing form that catches the attention
- make young people curious about mathematics

## B2 Presentation

The presenting pupils will have technical equipment, such as a projector, overhead, speakers that can be connected to a computer and a whiteboard or flip-over at their disposal. The organisers of the event will be responsible for providing fully functional equipment.

### Formal requirements

The participants must bring any other equipment they might need during the presentations and take responsibility that this equipment functions as it should.

Only the four pupils representing the class may take part in the work required to prepare and carry out the presentation during the finals event.

The presentation can last a maximum of 10 minutes.

### Characteristics of a good quality presentation

A good presentation should

- have a clear introduction where the pupils outline what they have been working on
- focus on the pupils and minimise the use of media such as film and recorded music
- show that the pupils can convey a mathematical message in a way that captures the attention and interest of the audience
- demonstrate that the members of the group at the stage understand the mathematics they have been working with and that they have all been participating actively
- use simple materials or accessories to highlight the message
- express the message through for example sketches, role-play, "interviews", original songs or similar. The presentation should not merely consist of reading a script.

## C Process log

A kind of diary (log) should be written throughout the work on task A. Ensure that notes are made for the process log already from the first lesson.

The process log should not consist of more than 5000 characters including spaces.

It should include a description of

- how the class started the investigation
  - Was this a familiar kind of problem that you could start working on right away?
  - Did you have to try a simpler task, learn something about different strategies for problem solving or seek different ways of expressing mathematical thoughts and ideas?
- how the work was organised and how the class worked together
- whether the teacher or others provided ideas, suggestions or challenges during the work
- what was done in each session of work on the task – which mathematical problems/questions arose and what was done to solve them
- how you would evaluate your own work with the task and the results that you have obtained based on the assessment criteria provided
- how the pupils have reflected upon their own learning

## Marks

### **Reports, maximum 24 points**

- Process log up to 6 points
- Subject report up to 18 points

Up to 3 points can be deducted from reports that do not meet the formal criteria.

### **Exhibition, maximum 8 points**

Up to 2 points can be deducted if the exhibition does not meet the formal criteria.

### **Oral presentation, maximum 8 points**

Up to 2 points can be deducted if formal criteria are not met.