The primary basis for your assessment will be your attempts on a number of problems, but you will also be permitted to choose from a variety of other items. Within the rules below, you may submit whatever you wish from the list below, and an adequate amount of acceptable work will guarantee a grade of Pass or better. There is no pre-set “Pass Mark”. As in previous years every student who makes a serious effort in Math 106 will pass.

You may select from some or all of the following areas:

A. Mathematical Investigations (30 marks each.)
B. Other Items: Reports/Reviews 15 marks each, Miscellanea 10 marks each.
C. Original ideas (To be determined individually on their merits.)

There is no limit to the number of Investigations you may submit. Only the five best Investigations and a maximum of 3 Other Items will count towards your final grade.

Grades of High Distinction, Distinction, and Credit will be based solely on your Investigations. Many very successful students in the past have chosen not to submit any Report or Review.

Deadlines
It is compulsory for you to submit at least one investigation before the end of week 4, a second before the end of week 7, and a third before the end of week 10. Merely meeting the compulsory minimum is most unlikely to be enough to earn a pass in the unit. As indicated above, you may submit as much work as you wish, but you are strongly advised not to put quantity before quality. Tutors are reminded each year that “we know that one problem worth 25/30 is much better than two problems worth 15/30 each.” We base our assessment of your work on that fact.

Do not leave your work for a “last minute effort”. Mathematics does not lend itself to an all-night effort to meet a deadline; at any level it requires some degree of inspiration, and this cannot be turned on at will, so it is essential that you devote adequate time consistently throughout the semester.

Group Work
Discussing mathematics with other students is an invaluable way to learn the subject, especially if those students are of similar ability to yourself but have different backgrounds. For your Investigations you must work in groups of four students. The group must submit a single report, and all members of the group will be awarded the same mark for that problem. Each student in the group must certify that he or she participated actively in the exercise and must be prepared to demonstrate this by explaining the group’s work either to the tutor or to the class if required. (This does not mean you must have every detail at your fingertips; it is quite legitimate for a member of a group to convince others that a certain step in the solution is valid, and for the others to understand it well enough to be convinced that it is true even if they haven’t mastered it sufficiently to explain the detail.)

The problems are such that solo attempts will almost certainly be unsatisfactory. In particular, do not try to work independently and then try to put the pieces together. Of course you must not put your name to work you didn’t do; this is plagiarism, an extremely serious academic offence which will be treated as such. More importantly, you will learn nothing from it!

Your tutor will help you to find other students to work with on particular items if necessary, and may on occasion direct you into a particular group. To help us to make an assessment of your individual performance, under no circumstances may any pair of students work within the same group on more than two problems. If you do, your latest attempt(s) will not count.
Presentation
In mathematics a “correct answer” based on false reasoning or unsatisfactory “explanation” is completely worthless. By contrast, on the rare occasions that a carefully explained, logical argument leads to a wrong answer, it can usually be corrected with little trouble. When you present a piece of mathematics, you must write clear English sentences which explain what you have done. We will always place more emphasis on this explanation in assessing your work than we do on “the answer”.

A. Mathematical Investigations
Each problem will be awarded a maximum of 30 marks. You may attempt as many problems as you wish, but only your best 5 problems will count in your assessment. Please note the warning (under the heading of Group Work above) that you must not submit more than two problems with the same person in your group.

The problems for investigation are on a separate document. That document also contains more information on what is required in your investigations.

B. Other Items (10 or 15 marks each as listed below)
At most three items from this section may count towards your final assessment. Your report must show some grasp of mathematical ideas, and not be purely descriptive.

Reports/Reviews (15 marks each):
1. Review (up to one page) a mathematical book of your choice, or review (up to one page) a mathematical film or video held in the university library or elsewhere.
2. Prepare an annotated list of “Mathematics Books every educated person (or every teacher, if you prefer) should have read.”
3. Report on the resources available to students in the university’s Numeracy Centre (including special reference to any resources that are not available but you believe should be).
4. Identify a mathematical topic that was not discussed in class in this unit, but which you wish had been; justify your choice (a maximum of one page).
5. Discuss the mathematics contained in one chapter or article of a suitable mathematics book or other publication, or in a newspaper or magazine article which involves or refers to some non-trivial mathematics.

Miscellanea (10 marks each). You will discover the meanings of many of the words below in lectures; alternatively, you may ask your tutor.
6. Construct a set of Platonic solids.
7. Demonstrate to your tutor that you can apply the Doomsday Algorithm (mentally).
8. Construct a set of Soma Cubes and submit them arranged in the form of a 3 x 3 x 3 cube, or construct a set of Pentacubes and submit them arranged in the form of a 12 x 5 x 1 solid. (Your tutor can provide information about Soma Cubes or Pentacubes.)
9. Describe “My happiest experience in mathematics” (a maximum of 1 page).

C. Original ideas
If you have an original idea for some other assessment exercise you’d like to try, write it down, and discuss it with your tutor before you start any serious work. Your tutor will determine whether it is a suitable exercise, and if so, will determine what credit might be given for it.