

# WRITING IN AND ABOUT MATHEMATICS

WESLEY CALVERT

## 1. EXPECTATIONS ON CONTENT

The guidelines for the particular assignment will always define a task in mathematics to be accomplished. This task is the critical one for the paper.

Your written product should be thoroughly self-contained, and should give all explanations necessary to explain your subject. It should have mathematical content that you understand, and should effectively convey that content to the reader.

I can help you locate resources that may be helpful to you. Talking with me about your project, how it's going, and what you wish you could find for it is a good idea.

Be adventuresome, where possible, in your choice of topics and opinions. I'd dearly love to learn something I don't already know. Some papers will be more demanding than others, but the grade has some built-in factors to reward those who take risks by stretching their abilities.

## 2. EXPECTATIONS ON FORM

Write well. Can you imagine anything more deadly to read than a badly-written math paper? Use standard grammar, etc. (unless you have good reason not to — Andrea Dworkin would fail most state high school writing assessments). Give the paper some structure. It should not only have an enlightening introduction and conclusion, but should move smoothly from one place to another in between.

I still believe in the advice of Strunk and White (*Elements of Style*, 4ed):

Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts. This requires not that the writer make all sentences short, or avoid all detail and treat subjects only in outline, but that every word tell.

Your writing should be professional in tone. In formal writing, the third person is usually preferred over the second, and slightly over the first, but avoiding artificial language is more important. Also, the active voice is usually preferred over the passive, but again, good expression is paramount. For instance, I could not figure out an equally honest and expressive way to write the last two sentences in the active voice. It is also sometimes tempting to think that formal, literate language means using fancy words. Here, the advice of Strunk and White helps again: "Avoid the elaborate, the pretentious, the coy, and the cute. Do not be tempted by a twenty-dollar word when there is a ten-center handy, ready, and able." While over-used, under-specific words are generally less desirable, one distinguishing mark

I have seen in the best-educated people I know is that they can, when they wish, talk more plainly than anyone else.

Be judicious in your use of sources. With rare exceptions, sources have authors (and no, “http://www.wwwww.ww...” is not an author), who have (one hopes) qualifications. In citing sources, use whatever format you wish, but it should, at minimum, include the author, title, publisher (if applicable), and date of each source. In your use of the material you should take account of any relevant qualifications the author has — not so that you can be obsequious, but so that you can know if the author is a hack. In particular, be careful of internet sources. In print, reputable publishers serve (often) as an effective screen to guarantee a certain level of, if not authority, at least worthiness to be considered in learned discussion. Any fool can write a web page, blog, or Wikipedia entry, and can publish it straight to your computer without any such vetting. Let the reader beware — and all the more, let the *writers* beware who give their own voice to another’s ideas. Make sure the ideas are worthy of your voice.

Be aware of your obligation as a scholar (not to mention the course and university academic honesty policies) to give proper credit for everything. If a wording, or even an idea, doesn’t come from you, you should be sure to give proper credit for it. Rewording a sentence that you took from a book isn’t enough to make it your own. I shouldn’t have to say anything about borrowing the wording directly without credit.

The paper should be suitable for presentation as your scholarly work. It should be typed and cleanly presented. You should turn in something that won’t embarrass you if you run for high office one day and your opponent gets a copy of your paper.

Students often ask me about how long the paper should be. It is extremely important that it be of the right length. However, it’s hard to say globally just what this length will be. Some projects will have more pictures or require more words to explain the same depth of understanding, and others less. Hence, the criterion is this: neither too long (that is, not inflated by senseless fluff, needless repetition, or extraneous analysis) nor too short (that is, not too brief to properly support its analysis).

Occasionally, a particular writing assignment will have form requirements that differ from the above. In the case of any conflict, follow the particular assignment rather than this.

### 3. CRITERIA FOR GRADING

I will grade each writing assignment by first making notes on the following issues, in addition to any others identified for the particular assignment:

- (1) Content Questions
  - (a) Is the mathematical content correct?
  - (b) Do the explanations make sense? Do they show understanding of the work and of the literature cited?
  - (c) Is the project ambitious? Is it original? Does the author show interest?
- (2) Form Questions
  - (a) Are any sources authoritative and properly cited? Is some effort made, where appropriate, to assess their credibility and describe it in the paper and/or oral presentation?

- (b) Does the report exhibit a clear structure? Does it restate the facts sufficiently to be self-contained (readable by someone who has read none of the background material)? Is the report of the right length (neither too brief to properly support its analysis nor inflated by senseless fluff, needless repetition, or extraneous analysis)?
- (c) Is the report typed and cleanly presented, in clear, readable prose? Are the tone and language appropriate to the audience and occasion?

For the ideal project, I will be able to answer all of these questions with a resounding yes. If any of the answers are no, the grade will be adjusted downward according to the severity of the problem. On each assignment, the content questions (including any additional items for the particular assignment) will count for 80% of the grade, and the form questions (including any additional items for the particular assignment) will count for 20%.