

# A Sample Note for MATHEMATICS MAGAZINE

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This document is meant to help you prepare a Note for submission to MATHEMATICS MAGAZINE. Of course, editorial decisions depend entirely on what you say and how you say it. Nonetheless, we will all save time if you exercise some care in how you first present the paper to us.

Now that I have caught your attention with an interesting introductory paragraph, here is what you will find: specific information about the style of Notes in the MAGAZINE and a description of the L<sup>A</sup>T<sub>E</sub>X code we prefer that you use to prepare your manuscript.

Since this section is very clearly an introduction, I thought that labeling it “Introduction” would add nothing. Note that I am willing to use the first person in an Article and you might be as well. Another equally respectable choice is “we,” even when there is only one author; this can create an author-reader partnership to work through the mathematics together. Whatever voice you choose, consistency is important.

You may be looking at this document in a variety of ways: the .pdf or .ps files are meant to be viewed on a screen or printed, while the .tex file

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<sup>1</sup>Supported by the National Science Foundation.

<sup>2</sup>Note that authors are in alphabetical order unless there is an extraordinary reason to do otherwise. Also, the author address includes a department *only* if the department is *not* mathematics. We use as few footnotes as possible in the *Magazine*. This one, for instance, contains information that really belongs in the body of the paper. The previous footnote probably belongs among the Acknowledgments at the end.

contains the codes used to create those viewable versions via the program  $\LaTeX$ . Even if you are a novice with  $\TeX$ , there may be enough here to teach you what you need to know. And if you are an ace with  $\TeX$ , we have a warning: please do not overload your document with special kludges and tricks that will only be removed later by our compositor.

This document is prepared with extremely simple  $\LaTeX$  formatting, using the unadorned `article` template. It is designed for simplicity and ease of handling—not to imitate the *MAGAZINE*'s final, typeset style in every detail. For authors less familiar with  $\LaTeX$ , we offer a brief lesson, showing how certain common elements of mathematical style are typeset using this program. For hardcore technical specifications, please see the Electronic Publication Guidelines [7].

**Notes on writing a Note** Notes in the *MAGAZINE* tend to be shorter than Articles, usually because they focus on one particular mathematical gem that can be explained clearly in a few pages. For this reason, they do not need much sectioning, and we use the `\paragraph*` command to create run-in titles for these sections. Sections are not usually numbered; this is what the `*` in `\paragraph*` accomplishes.

To judge the length of your piece, you might consider that this document prints to six pages with the current code, but would run about four pages in the *MAGAZINE*. The current settings produce a document that is generously spaced in consideration of referees' eyesight.

Few pieces of mathematical writing are entirely self-contained, although we try to make Notes reasonably so. Define enough terms to enable an eager undergraduate student to read your piece without having to consult too many references. Experts may know that a *cyclic quadrilateral* is a quadrilateral that can be inscribed in a circle, but many readers need to be told. Besides, it only takes a few words. Note that we use italics for terms being defined.

For readers intrigued by your exposition, you should provide friendly references. Bibliographies may contain suggested reading along with sources

actually referenced. In all cases, cite sources that are currently and readily available.

L<sup>A</sup>T<sub>E</sub>X has a way to keep track of references automatically, but for a Note, a simple list might be easiest, as illustrated in the code that ends this file. To refer to Halmos [3], you have to know Halmos is the third reference in the list, because L<sup>A</sup>T<sub>E</sub>X is not keeping track. (The template for Articles shows how to use the more sophisticated format.) The simple code given causes a minor error that you can see at the end of the document after L<sup>A</sup>T<sub>E</sub>X has run: each reference is indented. However, this is irrelevant for the purpose of submission, and the things you might do to fix it would probably have to be undone later.

Please follow our bibliographic format carefully, based on the examples below. Entries may appear either in alphabetical order or in order of citation (but choose one order and stick to it). Journal titles are abbreviated as in *Mathematical Reviews*, for instance, *Amer. Math. Monthly*; volume numbers of journals are set in **bold**. Authors names are not inverted: Frank A. Farris, not Farris, Frank A. [2]. The abbreviation pp. is used for books, but not journal articles. Note the slightly different style for citing articles in the MAGAZINE.

**How to do things in L<sup>A</sup>T<sub>E</sub>X** Roman letters used as variables will be correctly italicized if enclosed with \$s in your code, as in “functions *f*, *g*, and *h*.” This makes for typing lots of \$s when writing in T<sub>E</sub>X. Other popular fonts are  $\mathcal{A}$ , for sets and the like, and  $\mathbb{Z}$  for the integers, etc.

This last symbol, the “blackboard”  $\mathbb{Z}$ , actually is not part of basic L<sup>A</sup>T<sub>E</sub>X. If you look in the *preamble* of this document, the part before the `\begin{document}` command, you will see the instruction `\usepackage{amssymb}`. This enables you to use the blackboard font, as well as certain special symbols:

$[ , ] , [ , ] ,$  and so on.

If you do not have this package, you are welcome to mark these symbols in by

hand. While we are talking about packages, please do not use any package that redefines major environments, such as the theorem environment.

$\LaTeX$  is able to number theorems automatically, using what is called a theorem *environment*. This is usually overkill for pieces in the `MAGAZINE`; the following example shows a simple method for displaying theorems; the theorem need not even be numbered unless you refer to it by number later.

**THEOREM 1.** *Let  $a$  be any real number. Then  $a^2 > -1$ .*

*Proof.* The result follows from well-known properties of flabby sheaf cohomology over algebraically closed fields. This parody of a proof, the likes of which you would not see in the `MAGAZINE`, ends here, but you don't need to insert an end-of-proof marker. You could put a comment in the file to mark the end of the proof.

A remarkable result that has been the target of many proofs in the `MAGAZINE` is the Pythagorean theorem. If  $a$ ,  $b$ , and  $c$  are the sides of a right triangle, then

$$a^2 + b^2 = c^2. \tag{1}$$

The equation above is called a *displayed equation*. The reference number was added using the equation environment (enclosing the code for the equation between `\begin{equation}` and `\end{equation}`). You should give numbers only to those equations that you cite by number later; to refer to this equation without having to remember which number it had, we gave it a descriptive label, `Pythagoras`, whose use is shown in the code below. The sentence ended with the equation, so we used a period.

It can be shown from equation `??`, by means of a routine calculation, that  $b^2 + a^2 = c^2$ . Indeed, many related equations can be derived, such as these:

$$\begin{aligned} a^2 - c^2 &= -b^2 \\ b^2 - c^2 &= -a^2. \end{aligned}$$

This is an example of a  $\LaTeX$  environment that you may find useful; it aligns the equations on the equals sign. The asterisk in the code `\begin{eqnarray*}`

suppresses numbering. To display a single equation without numbering it, enclose the code in a pair of double `$$`, as shown below.

Another useful environment is `tabular`. Note that environments must have `begin` and `end` markers. The code that makes the brace shows how  $\text{\LaTeX}$  uses the commands `\left` and `\right` to resize delimiters automatically. This also demonstrates the `\center` environment.

$$\left( \begin{array}{lll} \text{This text} & \text{is arranged} & \text{in a table} \\ \text{with an ampersand \&} & \text{to delimit} & \text{columns} \\ \text{and double} & \text{backslashes} & \text{to end rows.} \end{array} \right)$$

The main point of your interesting Note might be illustrated by something like `FIGURE 1`, which I did not include in this template, partly because it's fictional, but also because I would have had to provide an additional electronic file for you to download (presumably in *encapsulated PostScript* format, `eps`). Figures should have brief explanatory captions, like `Figure 1 Worth 1000 words`, without a period at the end. Figures may be included in the printed output, using a package such as `epsfig`. The simplest alternative is to put the figures at the end, and note: **FIGURE 1 GOES NEAR HERE.**

In the previous paragraph, a portion of the text hangs out into the right margin.  $\text{\TeX}$  did not know how to hyphenate the verbose text string. In preparing your manuscript, you do not need to worry about things like this. The line breaks will all change later anyway. There is much to say about producing figures that will look good in print. Before you invest a great deal of time creating figures, please read the detailed Electronic Production Guidelines [7]. Here, suffice it to say that we strongly prefer PostScript formats for figures. Programs such as *Maple* and *Mathematica* give you the option of saving pictures this way. *Geometer's Sketchpad* does not, but our compositor knows how to handle this type of file.

**Conclusion** Now replace all the text in this file with a crackling exposition of some interesting mathematics,  $\text{\TeX}$  it up, and send three hard copies to:

Frank A. Farris, Editor, MATHEMATICS MAGAZINE, Santa Clara University,  
500 El Camino Real, Santa Clara, CA 95053-0373

Electronic submission is possible in limited circumstances; ultimately, we need two hard copies to send to referees and one to retain. To request that we do this printing for you, please inquire at [mathmag@scu.edu](mailto:mathmag@scu.edu) or 408-554-4122.

**Acknowledgment** We thank our spouses, the anonymous referees, granting agencies, and our moms for everything they've done for us. If the editor helped, that's fine, but we don't thank him here since he's only doing his job.

## References

1. R.P. Boas, Can we make mathematics intelligible? *Amer. Math. Monthly* **88** (1981), 727–731.
2. Frank Farris, A MATHEMATICS MAGAZINE *Retrospective*, this MAGAZINE, **79** (2006), 1-88.
3. Paul Halmos, How to write mathematics, *Enseign. Math.* **16** (1970), 123–152. Reprinted in Halmos, *Selecta, expository writings*, Vol. 2, Springer, New York, 1983, 157–186.
4. Andrew Hwang, Writing in the age of Latex, *AMS Notices* **42** (1995), 878–882.
5. D.E. Knuth, T. Larrabee, and P.M. Roberts, *Mathematical Writing*, MAA Notes #14, 1989.
6. Steven G. Krantz, *A Primer of Mathematical Writing*, American Mathematical Society, 1997.
7. Mathematical Association of America, *Electronic Production Guidelines*, <http://www.maa.org/pubs/bev.html> .
8. N. David Mermin, *Boojums All the Way Through*, Cambridge Univ. Pr., Cambridge, UK, 1990.