

Grad school application advice

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This document will be updated whenever memories of the application process come back to me.

1 Introduction

This document contains advice for applying to graduate schools (for maths), entirely based on my own experiences. I hope it is beneficial especially for international students, as it can be very difficult to find information (in a digestible form) when trying to apply to schools in a different country. The document is broken into three independent sections, in order of “how useful I think my advice is”. The first section is “**Things I wish I had known earlier**”. This is probably completely useless for any domestic students, but as a clueless international student there were many things I didn’t know about that contributed to my stress during the application process. The second section concerns the **management of your applications**, as it can also be a very stressful and confusing process. I want to emphasise at this point how important it is to look after your own mental health during the overall process. Finally, I have some retrospective advice on **choosing a school**.

Even though this document may seem somewhat overwhelming as there are many “moving parts” and the whole process is very stressful, approached systematically, different aspects of the application process can be spread out over a year! If you divide all the tasks by the duration (say circa 500 days), the amount of stress per day isn’t too bad! You can definitely do it!

2 Things I wish I had known earlier

- **Statement of purpose vs personal statement.** All applications require a so-called statement of purpose. This is a very non-personal essay, which should be focused on “what I will do in your graduate programme”. Any mention of your past should read as evidence that you will achieve great things in the graduate programme and beyond.

The personal statement is where you talk about your character and explain that you’re a good fit for the programme because you’re a good person, or,

if applicable, about hardships that you have overcome. Unfortunately, personal statements are not required by most maths departments, although I personally feel that they should be an essential part of applications.

- **The GRE exams.** Almost all graduate programs require you to submit grades from a standardised exam called GRE. For maths programmes, we generally need to take **two different GREs**: a general test and a subject (maths) test. These exams cannot be taken at home! Although the subject test **may be offered up to three times a year** in some places, this may not be the case for you! In my hometown it was offered once a year. This requires planning in advance, to make sure you don't miss the exam.
- **Visas.** The process of getting a student visa to study in the United States is stressful! Generally, you will have chosen your grad school institution by the 15th of April or earlier, and your studies will start around the start of September. This gives about four months (or a little more) to sort out all of the paperwork required before you can legally study in the US. A lot of this paperwork involves "original documents" that need to be physically posted (rather than emailed etc), and this takes time.
 1. Make sure you start the visa process straight away when you choose your grad school, because four months isn't long. That is, learn about the visa application process (and what is required and when) ahead of time.
 2. On the other hand, no significant parts of the visa application process can be carried out before you have chosen your grad school.
- **Medical requirements.** Many states have medical (immunisation) requirements. For example, to be an international student in California you require the MMR vaccines, while international students on the East Coast generally require several more. You will need to collect records of your vaccinations. This can be done at any time so don't leave it to the last minute!

3 Managing the application process

- **Overall timeline.** In hindsight, this is how I think I should have approached grad school applications.
 1. As early as possible: learn about GREs, get them out of the way. (E.g. maybe even two years before grad school applications!)
 2. Start of the year (in which you are applying): choose schools to apply to. (More details in a later section.)
 3. Half a year before application deadlines: write essay drafts (Statement of purpose and personal statement.) Don't bother editing the

drafts. Try writing completely new essays a month later, and again a further month later. (You should have a good understanding of the schools you are applying to, and this should show through in your statements of purpose.) Once a few independent drafts have been written, start to combine ideas etc. and write a “serious” draft which you will edit. In the next month or two, ask friends to proof read, and proof read yourself every few weeks.

4. Two months before deadline: every graduate school has an online application portal. These usually open about two months before the application deadline. Start the application as soon as it opens, because it is generally the most reliable way to see all of the required application materials.
5. Week before deadline: try to finish every application at least a week before their deadlines, and then leave it for a week before submitting it. Proof reading it a week later will help you pick up on any mistakes (which you might miss if you proof read immediately after finishing the application.)

In reality I didn’t explicitly write a calendar of “when I should do certain tasks”, and instead I was constantly being chased by deadlines and very stressed! In other words, prepare a calendar of requirements for each school application in spreadsheet format (see below).

- **Letters of recommendation.** All of your applications will require about three letters of recommendation from other mathematicians/professionals! Your letter writers will almost certainly need time (about a month) to write their letters. Most schools have a button within their application portals which automatically requests letters from your selected letter writers. However, **in some applications you cannot request letters from your referees until after you have filled out almost all of the application.** This is why it’s vital to start each application as soon as it opens! Another important point is to send frequent reminders to your referees! Generally they will not get upset if you send them reminders to write your letters of recommendation (or whatever else you might have requested of them). Instead, they’ll just be grateful for the reminder. Don’t forget to ask your letter writers to actually write letters for you, before making the application system send emails to them!
- **Websites like mathematicsgre.com.** Avoid them. They will do terrible things to your mental health (anxiety etc.)
- **Spreadsheets etc.** There are a lot of things that need to be done! Each school you apply to will need several documents. Make spread sheets and calendars to keep track of all of your documents and application progress. Make these documents as detailed as possible so that nothing is overlooked.

4 Choosing schools

- **How I would change my application list, if I were applying for graduate schools again now.** I applied to many schools, including many “safety schools”, as well as the top six most competitive schools (Princeton, Harvard, MIT, etc.) I basically wasted money by applying to most of the latter because there was no reason I would get into them - I had no connections to them. An unfortunate reality with the current state of grad school applications is that knowing people in the department you are applying to (or having any sort of genuine network/connection) improves your chances a lot. In my case, I had a connection to Stanford via my undergrad advisor, which helped my application. On the other hand, I also applied to too many “safety schools” because I was worried I wouldn’t get into any! In reality, I should have spent much more time thinking/learning about individual mathematicians, and applying to schools where the research emphases fitted my desires rather than thinking about school rankings too much.
- **Look at research.** There are many different aspects of schools to be compared and contrasted when deciding where to apply to. On the mathematical side, there are many different things you can do:
 1. Look at overall rankings
 2. Look at subject rankings (e.g. geometry rankings, algebra rankings)
 3. Look at individual faculty members and their research
 4. Word of mouth/public reputation.

The most important by far is individual faculty members and their research. Try to read some papers (just abstracts is fine). In my case I was interested in “geometry and mathematical physics”, but this is very broad! Everyone in this area does something different, and you should think hard about the work you want to do and how it relates to individuals at each institution. You want to be precise and concrete in your statement of purpose, and this means you should showcase some knowledge of research done by people you are interested in and how it relates to your own interests.

- **Look at environment.** All of the schools are good at what they do, so academic comparisons can be very difficult. However, the most important aspect of graduate school isn’t simply the academic aspect but also your well being and quality of life. For most people this is greatly influenced by geography and environment. Do you want to live in a large city or somewhere more rural? Do you have preferences about which part of the US (or elsewhere) that you want to live in? These are very important to consider!

- **Find connections.** This is difficult, but ideally (at least a year ahead of graduate school applications) you should reach out to mathematicians of interest and try to work with them, or even just explain some work you're doing and ask some questions about something you're stuck on. In each case, it's very important that you're genuine (and you're emailing the right person) rather than "doing it for the sake of grad school applications". I was fortunate in that I had done this with faculty at Stanford and Brown (and I was genuinely not even thinking about grad school applications at those times), and these later became helpful in my applications.
- **Talk to people.** At this stage we all know very little! However, there are many people around us who can give a lot of good advice. I talked to many people asking for advice when I was applying to grad schools, mostly older students and faculty at my undergrad institution. They all had different things to say and a synthesis of their comments helped me greatly.

Good luck!