

# Applying to Graduate School in Mathematics

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# Why?

- You love mathematics!
- You want to learn more about it.
- You are prepared to spend long, long hours working on math.
- You can envision yourself in a career that involves lots of math (academia, teaching, research, industry, government, finance, software design, ...)
- Being a college professor is NOT the only reason to go to grad school!

# What kind of program?

- Think about what department makes most sense:  
(Pure) Math, Applied Math, Statistics, Computer Sci, Biostatistics, etc.
- Terminal Master's programs  
(for jobs in industry, government, finance, actuarial science, operations research, secondary teaching, some 2-year colleges)
- Master's programs that might lead to a PhD program  
(same job opportunities as above if you stop with a Master's degree)
- PhD programs  
(same job opportunities as above, plus university teaching, research institutes, high-level private sector or government research analyst)

# When and Where to Apply

- Most applications will be due in December or January of your senior year, if you want to start graduate school the following autumn.
- Ask professors who know you well for suggestions about realistic universities to apply to.
- Include at least one “stretch” school & at least one “backup” school.
- Most faculty will advise you to go to a different school than the one where you got your undergraduate degree; but this is not a hard-and-fast rule.
- If you already have a strong attraction to a particular mathematical area, look for advice about which schools are strong in that area.
- But chances are great that you’ll change your mind, so look for breadth.
- Visit schools, talk with faculty & students, try to assess the climate.

# How to Apply

- Be prepared to submit
  - GRE scores (General Test & Math Subject Test)
  - Transcripts (from all prior postsecondary schools)
  - List of math courses (title, school, instructor, dates, textbook, content, grade)
  - Statement of purpose
  - Letters of recommendation
  - Resume or CV
  - Application fee
  - (For international students) TOEFL scores

# The GRE

- For PhD admission the Math Subject Test will be much more important than the General Test
- For Master's admission, subject test may or may not be required
- Subject test coverage: precalculus, calculus, linear algebra, ODE, abstract algebra, elementary real analysis, elementary logic & set theory (and some topology, geometry, complex analysis, probability & statistics, numerical analysis)
- Prepare!! (Use ETS's prep book and commercially available prep books; take practice tests.)
- Take it in fall of your senior year, so you have as much coursework as possible under your belt
- If you feel prepared, it's not a bad idea to take it as a junior for practice; then take it again if you feel you can improve your scores
- Check each university's website for deadlines

# Transcripts & List of Math Courses

- You should have an undergraduate mathematics major, or at least have coursework equivalent to one.
- Take the most advanced courses you are prepared for.
- For math graduate school, **abstract algebra** and **real analysis** are by far the most important.
- Topology, differential geometry, complex analysis are great, and may be required by some universities.
- If you can fit in some graduate courses (and do well in them!), do so.
- Of course, the higher your grades, the better your chances.
- It might be hard to get admitted with a math GPA below 3.5.
- Find out whether universities need official or unofficial transcripts.

# Statement of Purpose

- It's fine to write a single statement of purpose for all universities, but it's a good idea to tweak it for each university you apply to
- Length: typically 200-300 words
- Express who you are: try not to sound like a generic math major.
- Admissions committees look for love of math, curiosity, creativity, persistence, maturity, initiative, writing ability, realistic self-assessment.
- What excites you about math? Are there specific college experiences that prompted you to want to go to math grad school?
- What do you want to learn more about?
- Express modest goals (not "I want to prove the Riemann hypothesis")



# Statement of Purpose (cont.)

- If there is anything unusual about your record (low grade, gap in your education, double major, late start in math, medical or financial issues that interfered with your education, disadvantaged background, etc.), explain it
- If you've participated in any research-oriented experiences (such as REU, Budapest Semester, publications), explain them
- If you've participated in activities to promote diversity in STEM, community outreach, K-12 tutoring, etc., explain them
- If you know that a particular department is your first choice, tell them so, and explain why
- If you can express interest in a particular department (specific research area, specific program, individual faculty members), do so

# Letters of Recommendation

- Most universities want 3-5 letters. In most circumstances, 3 is fine.
- They should be from math professors (or lecturers) who have taught you or supervised your research.
- Choose recommenders who know you, and for whom you've done excellent work.
- Ask your recommenders at least a month in advance; tell them where you expect to apply and when the deadlines are.
- Give your recommenders some information to go on: transcript, draft of your personal statement.
- If your recommender is an instructor in a current course, it's best if they can wait until the course is over before writing.

# Resume or CV

- Just as you would write for a job interview
- Include *all* math-related activities
- Include any honors & awards received
- Include job experience, but unless it's math-related, mention it only briefly
- Include other significant activities (dance performances, poetry prize, patented inventions, ... ?)

# Application fee

- Typically \$50-\$85 per university
- Some universities will waive the fee for financial need, but it's typically not easy to get a waiver

# International Applicants

- If your native language is not English, you might have to take the TOEFL. Check the university's website for requirements.
- Before taking the TOEFL, practice practice practice! Read lots of English-language books; have native English speakers edit some of your writing; spend lots of time talking with native speakers.

# Financial Support

- Most graduate programs in mathematics provide full financial support in the form of teaching assistantships: free tuition plus a modest living stipend (typically \$20,000 - \$30,000 per year)
- You'll probably have to work 10-20 hours per week
- Typical duties include conducting small sections of large classes, grading homework and tests, holding office hours
- You might be offered a chance to teach your own section of a course
- Find out if summer teaching is required, optional, or unavailable
- Some departments are able to offer fellowships that do not require teaching

# Questions?

- For more information about applying to the UW Graduate Program in Mathematics:

[math.washington.edu/graduate-admissions](http://math.washington.edu/graduate-admissions)

[gradadm@math.washington.edu](mailto:gradadm@math.washington.edu)