

MA 17: HOW TO SOLVE IT

HANDOUT 0: GENERAL INFORMATION

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ABOUT THE PUTNAM COMPETITION

The Putnam Competition, organized by the Mathematical Association of America (MAA), takes place on the first Saturday in December. The examination consists of a morning session (8AM to 11AM) and an afternoon session (1PM to 4PM) with a two-hour break in between. For Putnam 2025, the exam will take place on **December 6, from 8AM to 4PM, Pacific Time**.

Each session contains 6 problems, for a total of 12. The problems are generally ordered by difficulty (A1, B1 are the easiest; A6, B6 are the most difficult). Each problem is worth 10 points. Typically, there is very little partial credit: the scores per problem are almost always 0, 1, 2, 8, 9, or 10. A score of 8 indicates an essentially correct solution with small gaps, while 2 reflects very serious progress. Therefore, the best strategy is to solve a problem completely and write it up very carefully. In a typical year, the median score is 0 or 1 out of 120, so earning even a single point is a major accomplishment, and solving one problem is even more so!

The competition emphasizes ingenuity rather than knowledge, so freshmen are not at a significant disadvantage compared to seniors. Interest in or experience with problem solving is a strong asset. Success is not limited to math majors; many top performers come from other disciplines, including physics, computer science, and engineering.

See the official website of MAA (<https://maa.org/putnam/>) for more information.

WHY PARTICIPATE?

- For the challenge!
- For a different kind of thinking than homework problems, more akin to research.
- Gain problem-solving skills that can be useful for learning more advanced mathematics and other quantitative disciplines.

WHAT YOU NEED TO DO?

Register now if you think that there is a chance you will participate.

Link: <https://putnam.edvistas.com/datamate/testRegister.aspx?id=3170f99c-6da3-4868-bb38-7aa107214b29>.

WHAT THIS COURSE IS LIKE?

The course meets once a week on Tuesdays at 7:00 PM. For three weeks, there will be a mock Putnam exam lasting three hours (ending at 10:00 PM). In the remaining weeks, class ends at 9:00 PM and consists of an introduction to certain techniques followed by problem discussions. No prior background will be assumed. And yes—there will be snacks!

For any week without a mock Putnam exam, a problem set will be released on Wednesday and due one week later (except for Problem Set 4, which is due two weeks after release because of the midterm examination period). A problem session, led by the TA, will be held on the Thursday (7PM to 8PM) following the due date to discuss the problems.

More information (location, schedule, handouts, problem sets, etc.) is available on the course website:

<https://web.lfzhang.com/CaltechMA1725FA.html>

HOW TO PREPARE (BEYOND THIS COURSE)?

The best preparation for the Putnam competition is **going over the problems from previous years**. Problems (with solutions) can be found in Kiran Kedlaya's archive. A good strategy is to try each problem for up to 1 hour, and then look up the solutions, and then try to remember the ideas from the solutions for subsequent problems.

Some other resources:

- Răzvan Gelca , Titu Andreescu *Putnam and beyond*.
- Loren C. Larson *Problem-Solving Through Problems*.

You are also more than welcome to talk to me (after class or by making an appointment via email).