

Strategies for the Putnam

For beginners.

- For those new to mathematical problem solving at this level, it may be worth focusing preparation on basic problem-solving strategies; any good preparatory material for Olympiad-style problems will also be good preparation for the Putnam. In addition to various books, this includes the (freely accessible) AoPS forums.
- Focus initially on A1, A2, B1, B2. These problems are intended to be easier than the others, and so are a good way to get started with Putnam-type problems. In the competition, these problems also have a disproportionate effect on most of the scores; for example, getting three out of the four is generally sufficient to place within the top 500, while getting all four is usually enough for a top-200 finish (see the historical score cutoffs on page 314).
- When using this book to study for the Putnam, remember that we have included hints in addition to the solutions. The hints are deliberately quite terse, and may not make much sense at first; be persistent!
- When participating in the competition, do not count on partial credit; most solutions are assigned a score from the set $\{0, 1, 2, 8, 9, 10\}$. For the same reason, it is worth spending some extra time writing up your solutions to make sure they score in the 8–10 range.

For experts.

- Any preparatory material for Olympiad problems is also broadly applicable to the Putnam, but is likely to omit material on college-level topics such as calculus, linear algebra, and abstract algebra. Ways to remedy this include using the topic index of this book (page 339) to identify problems on these topics; searching the AoPS forums for the tag “Putnam”; or reading the book [AG17], which provides a Putnam-centered approach to mathematical problem solving.
- While each set of six problems is intended to be ordered by difficulty, this is highly subjective and may not agree with your experience. When participating in the competition, you should at least attempt all of the problems.
- By comparison with Olympiad competitions, the time control on the Putnam is quite rapid (30 minutes per problem). One effect of this is that in contrast with advanced Olympiad problems, Putnam problems do not generally have multiple layers; usually only one key insight is required. If you have a complicated approach in mind, it may be worth looking for something simpler.
- A key insight is often one that transforms the problem from one subject area within Putnam-level mathematics to another. For instance, we transform 2015 A3 from algebra to number theory, 2014 B3 from linear algebra to graph theory, 2016 B4 from linear algebra to combinatorics, and 2013 A6 from combinatorics to calculus to algebra.
- Another effect of the time control is that it makes time management a more serious issue than for Olympiad competitions. When participating in the competition, try not to get hung up on any one problem; a better approach is to continually cycle through all remaining problems, moving on once you find yourself stuck.
- Yet another effect of the time control is that competitors need to be efficient about writing up completed solutions. It may help to practice writing solutions out carefully (not just solving the problem “in your head”).
- Be prepared for the possibility that your final score comes in somewhat lower than you had anticipated. This is rather common, even among expert solvers!