**The Tangram Puzzle Book**  
**A New Approach to the Classic Pieces**  
by David Goodman and Ilan Garibi

The tangram is a familiar puzzle that consists of seven pieces, each of which is composed of a number of identical isosceles right triangles. A typical tangram puzzle requires one to arrange these pieces into a given shape, perhaps with certain restrictions or side constraints. Of course, the solver sees only the final silhouette of the shape and not the borders between the pieces!

This book boasts more than one hundred tangram puzzles and their solutions. Multiple illustrations adorn almost every page. Most of the puzzles in the book require pieces to share a common edge; that is, mere corner-to-corner contact is not permitted. The authors state that most of the puzzles are original, although some of them are based on classical examples. The puzzles are divided into four categories. The first batch (17 puzzles) requires the use of a complete tangram set. The next group (33 puzzles) forbids the use of one or more pieces in each construction. The third chapter (40 puzzles) involves multiple tangram sets. The final part (13 puzzles) discusses variations on the tangram theme.

*The Tangram Puzzle Book* is ideal for puzzle enthusiasts and can be enjoyed by readers of all ages. For example, energetic elementary school students could tackle many of the puzzles. Some of the more advanced puzzles will baffle even professional mathematicians.

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**How to Fall Slower Than Gravity**  
*And Other Everyday (and Not So Everyday) Uses of Mathematics and Physical Reasoning*  
by Paul J. Nahin

This book is a collection of twenty-six tricky and enlightening problems with accompanying historical digressions, curious bits of trivia, motivating material, and complete solutions. A few mathematical gems, such as a derivation of Brouncker’s continued fraction expansion for $4/\pi$, are tacked on as an appendix.

Instructors who regularly teach honors calculus courses or those looking for big, open-ended problems for an inquiry-based class could welcome this as a source of devious and delightful problems.

The problems are all elementary, in the sense that they involve only basic algebra, calculus, and differential equations, with an occasional dash of probability theory, combinatorics, and number theory. This does not mean that the questions are easy! In fact, a few of them appear unsolvable based upon the meager information given. Here is an example: “One day in the morning it starts to snow at a steady rate. At precisely noon, a snowplow starts to clear a long, straight road. The plow removes snow at a constant rate (some fixed volume of snow per hour). The driver, an observant fellow, notices that during the second hour of clearing he travels exactly half the distance he traveled the first hour. When did it start to snow?” Fortunately, detailed solutions make up approximately one third of the book’s length.

There are a few spots in which Nahin’s background as an engineer with strong leanings toward physics emerges. For example, proofs of combinatorial identities that involve algebraic manipulation are referred to as “mathematical” proofs, whereas proofs that any mathematician would call “combinatorial” (based upon counting the same quantity in two different ways) are called “physical” proofs. There are also places in which he cuts a corner or two in the computation of improper Riemann integrals (“plugging in infinity” and so forth) and the isolated use of Dirac-delta functions. Nahin readily admits that mathematicians may not be completely happy with his methods, but this is of little concern since it is usually clear how one could make the arguments rigorous.