Zaslavsky, Alexey A.; Skopenkov, Mikhail B.
Mathematics via problems: Part 2. Geometry. Translated from the Russian by Paul Zeitz and Sergei G. Shubin. (English) Zbl 07417670

Preliminary review / Publisher's description: This book is a translation from Russian of Part II of the book Mathematics Through Problems: From Olympiads and Math Circles to Profession. Part I, Algebra, was recently published in the same series. Part III, Combinatorics, will be published soon.

The main goal of this book is to develop important parts of mathematics through problems. The authors tried to put together sequences of problems that allow high school students (and some undergraduates) with strong interest in mathematics to discover and recreate much of elementary mathematics and start edging into more sophisticated topics such as projective and affine geometry, solid geometry, and so on, thus building a bridge between standard high school exercises and more intricate notions in geometry.

Definitions and/or references for material that is not standard in the school curriculum are included. To help students that might be unfamiliar with new material, problems are carefully arranged to provide gradual introduction into each subject. Problems are often accompanied by hints and/or complete solutions.

The book is based on classes taught by the authors at different times at the Independent University of Moscow, at a number of Moscow schools and math circles, and at various summer schools. It can be used by high school students and undergraduates, their teachers, and organizers of summer camps and math circles.

In the interest of fostering a greater awareness and appreciation of mathematics and its connections to other disciplines and everyday life, MSRI and the AMS are publishing books in the Mathematical Circles Library series as a service to young people, their parents and teachers, and the mathematics profession.

See the review of Part 1 in [Zbl 1465.00001].

MSC:

00-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to mathematics in general
00A07 Problem books
51-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to geometry
52-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to convex and discrete geometry
14-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to algebraic geometry
97G10 Comprehensive works on geometry education
97-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to mathematics education