

PROLOG

8



A “Buddy Bear” with Matheon Logo marks the entrance of the Mathematical Institute of Technische Universität Berlin.

“OHNE MATHEMATIK TAPPT MAN DOCH IMMER IM DUNKELN.”

“Without mathematics you are simply groping in the dark.”

Werner von Siemens

9

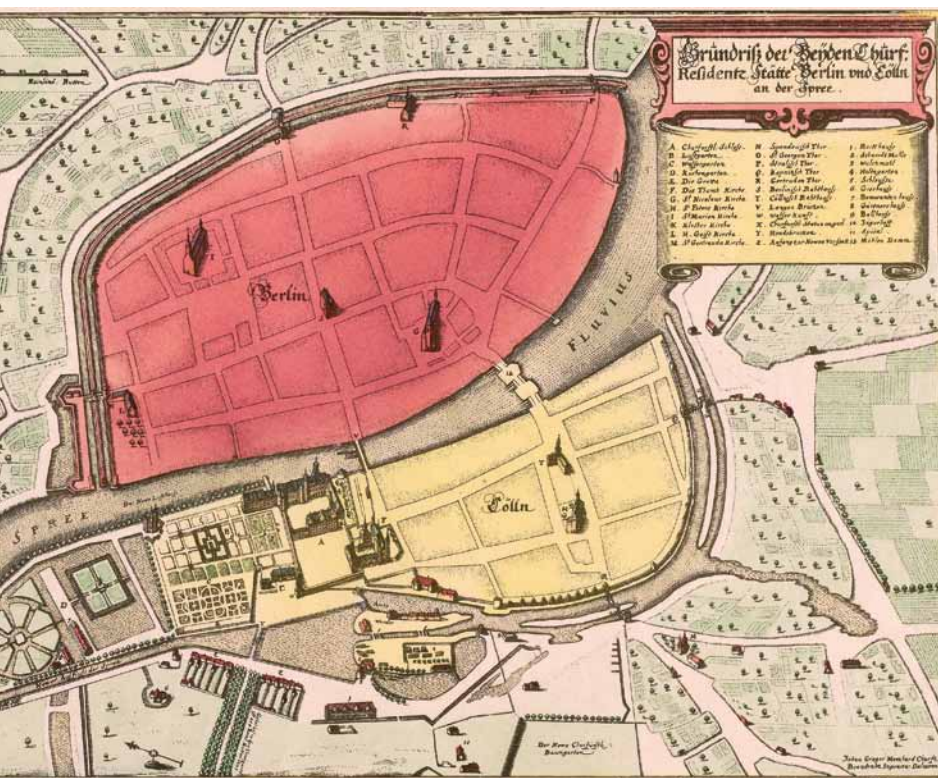
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Are you eager to explore Berlin? Is mathematics your hobby or profession? If so, this book is the perfect guide for you. What can you expect? You will become familiar with the mathematical developments in Berlin from their beginnings to the present. You will meet outstanding mathematicians, learn about their contributions to mathematics and science in general, and hear about their successes and tragedies. You will get to know mathematical institutions of Berlin and their locations, such as universities and research centers where mathematics takes place currently. You will be directed to places commemorating well-known mathematicians and discover various “mathematical sights” in the city. All stories about mathematics are integrated into the urban, cultural, and political history of Berlin. A metropolis with a great choice of fascinating scientific places is looking forward to your visit.



A street in Berlin-Adlershof is named after Leopold Kronecker, one of the leading mathematicians of the 19th century.

Following the motto “theoria cum praxi” (theory plus practice), stated in 1696 by the eminent German mathematician, Gottfried Wilhelm Leibniz (1646-1716), the book doesn’t just cover theoretical overviews, but also contains practical advice. It includes, for instance, information about several tours in various parts of Berlin, so that you can go on your own private explorations and trace the mathematical past and presence. Details for each tour tell you where to start the walks, how to get along a route in order to see many of the locations mentioned before in the text, and call your attention to other interesting sights. On one of these walks, you will meet the inventor and eminent entrepreneur Werner von Siemens (1816-1892), who – according to the introductory words of this chapter – considered mathematics to be truly essential for science and industry.



The oldest known map of Berlin-Cölln was drafted in 1652 by the court engineer Johann Gregor Memhardt (1607-1678).



Mathematics has a history of several thousand years. Starting in the distant past with elementary arithmetical operations and the study of basic geometrical patterns, mathematics emerged as one of the greatest intellectual endeavors of mankind providing important tools for almost all branches of modern science and technology and strongly (but mostly invisibly) influencing our daily lives.

Surely, mathematics was already reasonably developed when Berlin and its twin city Cölln were founded in medieval times. According to archaeological findings, the towns were in existence at the end of the 12th century. The oldest known written records including the names of these two settlements date from 1237 (for Cölln) and 1244 (for Berlin). From the start, counting, measuring, weighing as well as calculating costs and profits were daily mathematical routines in these two cities, which were established – mainly by merchants – at the crossing of two major trade routes. Later on, when the two towns on opposite sides of the river Spree merged under the name of Berlin and expanded, more and more mathematical skills had to be applied for erecting buildings, drawing maps, or constructing bridges and fortification walls.

All these activities were based on the experience of craftsmen and, of course, also on the elementary mathematical knowledge of those days. This book, in contrast, is about advanced mathematics that was created in Berlin and about

Happy children in a math and science class at the Haus des Lehrers, a building from the GDR era at Alexanderplatz.



Multiplication on a stone board in front of the former arsenal which today houses the German Historical Museum.

distinguished mathematicians and their research at various institutions in Berlin. It took about 500 years after the establishment of Berlin that this category of mathematics got started in the city. There is general agreement that scientific mathematics in Berlin was initiated by Gottfried Wilhelm Leibniz with the establishment of the Berlin Academy of Science in the year 1700. In the 18th century, mathematics in Berlin experienced a first boom with Leonhard Euler (1707-1785). In the 19th century it celebrated a golden age with Karl Weierstrass (1815-1897) and others. Likewise, the political ups and downs in the 20th century had an important impact on the mathematical community in the city. At present, its numerous excellent education and research institutions and important associations make Berlin an international mathematical center. From Leibniz to the lively mathematical scene of today: You are welcome to a fascinating mathematical expedition through Berlin.



A "perfect" number painted on numerous imperfect spots (here the Tacheles building) – that is street-art made in Berlin.