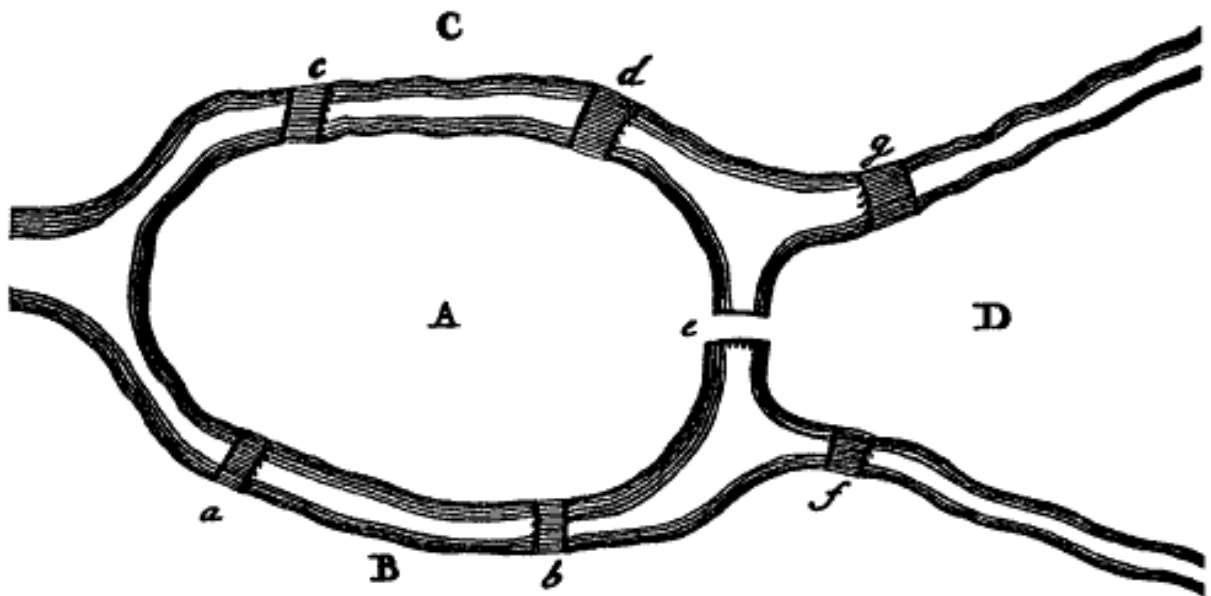


## Story 10. Crossing Bridges (A True Story)

"In 1254 the Teutonic knights founded the Prussian city of Königsberg (literally, king's mountain). With its strategic position on the river Pregel, it became a trading center and an important medieval city. The river flowed around the island of Kneiphof (literally, pub yard) and divided the city into four regions connected by seven bridges: Blacksmith's bridge, Connecting bridge, High bridge, Green bridge, Honey bridge, Merchant's bridge, and Wooden bridge... Königsberg later became the capital of East Prussia and more recently became the Russian city of Kaliningrad, while the river Pregel was renamed Pregolya."

"It is claimed that in the early eighteenth century the citizens of Königsberg used to spend their Sunday afternoons walking around their beautiful city... The problem that the citizens set themselves was to walk around the city, crossing each of the seven bridges exactly once and, if possible, returning to their starting point."

Below is a diagram taken from a famous mathematics paper written in 1736 about this problem. Were the citizens able to find a route to make this possible? If so, describe the route. If not, explain why. If a route exists (or were to exist), does (or would) it matter where one begins the walk? Why or why not?



Text and figure excerpted from: Hopkins, Brian; Wilson, Robin J. The Truth about Königsberg. *The College Mathematics Journal* 35 No.3 (May 2004) 198-207. (Problem suggested by Professor Erika King.)