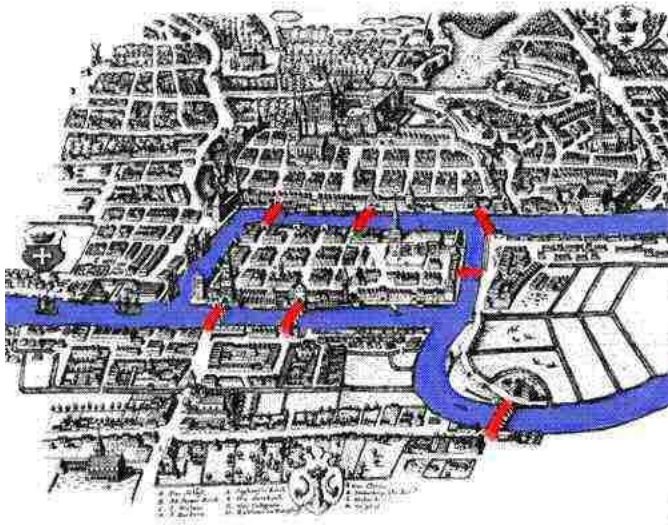


UW Math Circle  
February 16th, 2017

1. The city of Königsberg has seven bridges (look at the map of the city below). Is there any path through Königsberg that traverses each bridge exactly once? Once you start on a bridge you must go all the way across, and you can't leave the city, swim, pole vault, etc.



2. You have a wire that is 12 inches long. Is it possible to fold this wire into the shape of a 1 inch cube?
3. Draw 4 dots and connect each dot to every other dot. Is it possible to trace your picture, without ever picking up your pencil, going over each line exactly once? What if you started with 5 dots?
4. The country of Ramseyland has 50 towns, and each town has a pipeline connecting it to every other town. How many pipelines are there in all?

5. If you start with four knights placed on a  $3 \times 3$  chess board as shown on the left, is it possible to move them into the position on the right if two knights are never allowed to occupy the same square?

