

The Gold Rush Problem

In 1848, gold was discovered at Sutter's Mill in California. Over the next several years, hundreds of thousands of prospectors traveled westward hoping to make their fortunes mining gold.

A man named Billy Merrell happened to own some of the land where the gold was discovered. Instead of digging the gold himself, he decided to rent plots of land to the prospectors. Billy gave each prospector four wooden stakes and a rope measuring exactly 100 meters in length. Each prospector then had to use the stakes and the rope to mark off a rectangular plot of land.

Assuming that each prospector would like to have the biggest possible plot, what should the dimensions of each plot be? Explain the reasoning behind your answer in a sentence or two.

Extension: One prospector noticed an advertisement that Billy had posted on his land. It read: "Join the ropes together! You can get more land if you work together!" Investigate whether or not this statement is actually true for two or more prospectors who work together and divide the plot equally, still using just four stakes.

Explain your answer in a few sentences.