Problem of the Week
Problem B and Solution
Can You Canoe?

Problem

Chris and Wes decided to go fishing at their favourite fishing hole but needed to go around several islands. From west to east they are; Little Island, Kettle Island and Big Island. Starting at the dock on the west side of Lake Numero, they paddled east 600 m (past Little Island), then turned south and went 400 m between Little Island and Kettle Island (to go below Kettle Island). Next, they turned east again and paddled 800 m (past Kettle Island), and then north 400 m between Kettle Island and Big Island. Finally, they turned west and went 100 m to get to their fishing hole north of Kettle Island.

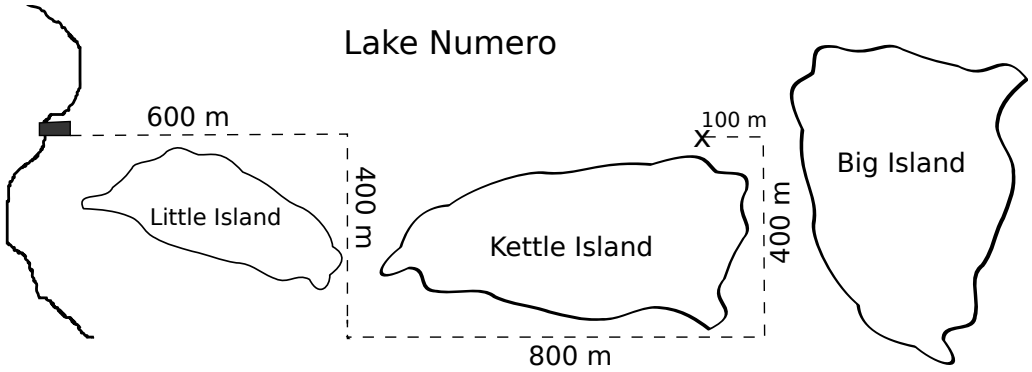
a) Using grid paper, an appropriate legend, and a suitable scale, plot a possible route that Chris and Wes used, with approximate locations of the three islands.

b) Using the shortest route possible, how far is their fishing hole from where they started?

c) Assuming Kettle Island is a rectangle, what is the greatest possible area of Kettle Island?

Solution

a)

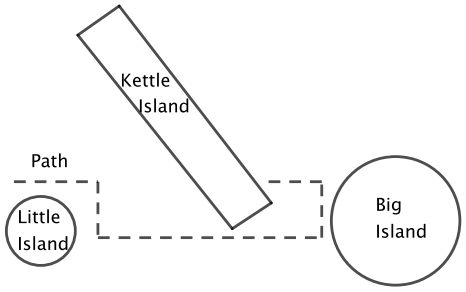


(NOTE: The shapes of the islands are hypothetical.)

b) Since they went equal distances south and north, their fishing hole is $600 + 800 - 100 = 1\,300$ m due east from the dock.

c) Given the distances Chris and Wes paddled, a rectangular Kettle Island would have to have area less than $800 \times 400 = 320\,000\,\text{m}^2$ or $0.32\,\text{km}^2$.

(Note: In the solution to part c) we assume that the sides of Kettle Island are parallel to the path that the canoe takes. On the next page, we show a diagram where they are not parallel.)



In order to solve this problem we would need to know some higher mathematics.