MATHEMATICS CHALLENGE FOR YOUNG AUSTRALIANS
INTERMEDIATE: YEARS 9 and 10
WARM UP PROBLEM 02

Cornelius the Camel
Gianna rides her camel Cornelius across the Gibson Desert from Hier to Thair, stopping occasionally to recharge Cornelius with water. Cornelius holds 50 litres and can travel 100 km on 10 litres. The water sellers at the oases between Hier and Thair charge varying amounts per litre of water, as shown on the map. Gianna stops as infrequently as possible on her journey as it is difficult to get Cornelius going after a stop. She fills Cornelius with 50 litres of water at Hier and starts her journey.

When she does stop, including the beginning of the journey at Hier and the end of the journey at Thair, she always lets Cornelius fill up with water completely.

1. What is the minimum number of times Gianna must stop for water for Cornelius? Give reasons for your answer.

2. Gianna crosses the Gibson Desert with a minimum number of stops. At which oases should she stop to spend as little as possible on water for Cornelius? How much does this cost her?

3. Suppose that Gianna allows for more than the minimum number of stops (including Hier and Thair), still letting Cornelius fill up completely at each stop. What is the cheapest way to get across the desert?