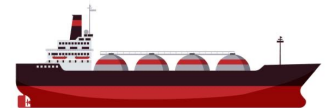


Reasoning in LLMs

Ships and camels

A ship has to transport 30000 gallons of fuel between the two ends of 200 miles long canal. The ship can carry a maximum of 10000 gallons of fuel and uses 50 gallons of fuel per mile, from the fuel it is carrying. However, at every two miles there is a tank with unlimited capacity, which can be loaded and unloaded from the ship without any losses. Knowing that the ship can go back and forth and use any tank as intermediate storage, what is the maximum amount of fuel that can be transported from the beginning to the end of the canal?



Okay, so there's this problem about transporting fuel through a 200-mile canal. The ship can carry up to 10,000 gallons, uses 50 gallons per mile, and there are tanks every two miles that can store fuel. The goal is to get as much fuel as possible from the start to the end of the canal. Hmm, this reminds me of the classic camel and bananas problem, where you have to make multiple trips to set up intermediate storage points to maximize the amount you can transport over a distance. Let me try to apply similar logic here.



You have a pile of 3,000 bananas. You wish to transport them to a place 1,000 miles away on the back of a camel; however, the camel can only carry a maximum of 1,000 bananas, and will eat one banana every mile it travels (and will not go anywhere if it does not have any bananas). However, you can load and unload as many bananas as you want anywhere. What is the most bananas you can bring over to your destination?

Reasoning in LLMs

- **Phase 1:** 20 segments (40 miles) reducing fuel by 500 gallons each segment.
 - Total fuel consumed: $20 \times 500 = 10,000$ gallons.
 - Fuel remaining: $30,000 - 10,000 = 20,000$ gallons.
- **Phase 2:** 34 segments (68 miles) reducing fuel by 300 gallons each segment.
 - Total fuel consumed: $34 \times 300 = 10,200$ gallons.
 - Fuel remaining: $20,000 - 10,200 = 9,800$ gallons.
- **Phase 3:** 46 segments (92 miles) reducing fuel by 100 gallons each segment.
 - Total fuel consumed: $46 \times 100 = 4,600$ gallons.
 - Fuel remaining: $9,800 - 4,600 = 5,200$ gallons.