Review Session 4

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A manager of the shipping company OceanFast has to decide how many workers she is going to hire at the port of Hamburg. The cost to employ one worker on a permanent basis is \$200 per day. One worker is able to unload five containers during the normal shift. Due to union contracts, workers who have no containers to unload can not be sent home and can claim the full salary for that day. Experience has shown, that the number of containers that need to be unloaded during a day can be quite accurately modeled by a normal distribution with mean 500 and standard deviation 100. If the number of workers hired permanently by OceanFast is insufficient to unload the arriving containers, the company needs to hire workers from a temp agency for \$250 per day.

1. A senior manager, a former lawyer, suggests to hire 100 workers, as that is 'the average number needed and surely will result in the lowest cost.' Explain whether this procedure will yield the correct result or not. Why?
2. Set up an Excel spreadsheet and simulate the cost of hiring 50 to 150 workers in increments of 10. What is the number of workers to hire and what is the expected cost per day?
3. Produce a graph showing the expected cost depending on the number of hired workers.