Applied Optimization

Problem 1

We would like to build a box whose base length is 3 times the base width. The material used to build the top and bottom cost $5/ft^2$ and the material used to build the sides cost $4/ft^2$. The box must have a volume of $100ft^3$. Find the dimensions that will minimize the cost to construct the box.

Problem 2

A student needs to create a poster that will have a total area of $100in^2$. It will have 3 inch margins on the sides and a 2 inch margin on the top and bottom. What dimensions will yield the greatest printed area?