1. We are going to fence in a rectangular field. If we look at the field from above the cost of the vertical sides are $10/ft, the cost of the bottom is $2/ft and the cost of the top is $7/ft. If we have $700 determine the dimensions of the field that will maximize the enclosed area. [**Solution**](http://tutorial.math.lamar.edu/Solutions/CalcI/Optimization/Prob4.aspx)
2. We have 45 m2 of material to build a box with a square base and no top. Determine the dimensions of the box that will maximize the enclosed volume. [**Solution**](http://tutorial.math.lamar.edu/Solutions/CalcI/Optimization/Prob5.aspx)
3. We want to build a box whose base length is 6 times the base width and the box will enclose 20 in3. The cost of the material of the sides is $3/in2 and the cost of the top and bottom is $15/in2. Determine the dimensions of the box that will minimize the cost. [**Solution**](http://tutorial.math.lamar.edu/Solutions/CalcI/Optimization/Prob6.aspx)
4. We want to construct a cylindrical can with a bottom but no top that will have a volume of 30 cm3. Determine the dimensions of the can that will minimize the amount of material needed to construct the can. [**Solution**](http://tutorial.math.lamar.edu/Solutions/CalcI/Optimization/Prob7.aspx)
5. We have a piece of cardboard that is 50 cm by 20 cm and we are going to cut out the corners and fold up the sides to form a box. Determine the height of the box that will give a maximum volume.

