1. Suppose you want to build a rectangular box with a square base. The material for the box bottom costs 8 cents per square inch, while the material for the top and sides costs 5 cents per square inch. If the box is to have volume 20 cubic inches, what is the minimum cost, and what are the dimensions of the minimum-cost box?

2. Suppose you wish to build a rectangular box satisfying the following conditions.
   - the base width should be three times the base length.
   - the surface area should be 100 square inches.

   What is the maximum volume for such a box?

3. Suppose you wish to build a rectangular box satisfying the following conditions.
   - the box has no top. Four sides and a bottom, but no top.
   - the base should be square.
   - the volume should be \(A\) cubic meters.

   What is the minimum surface area for such a box?