The Skimpy Donut Project Report

Dear Mr. CEO of GETFAT Donut Company:

In response to your challenge to find the dimensions that will allow the company to reduce the chocolate costs of making a donut, my colleague and I have prepared a report summarizing our results.

In our research we found that in order to minimize the surface area of the donut and thus save money on chocolate, the hole must basically be removed from the center of the donut, thereby making the radius of the circle and the distance from the center of the donut to the center of the circle the same. In our calculations we determined that this radius is the cube root of 45 cm, approximately 3.56 cm. This will give a new surface area of the donut of 499.46 cm^2, whereas your current donut has a surface area of 592.18 cm^2. This is a 15.66% reduction in surface area; thus the company can save about 15% on chocolate costs by adjusting the dimensions of the donut in this way. The calculations used to reach these conclusions are documented in Appendix A.

With respect to the maximum surface area we determined that there is no set maximum surface area for a given volume of donut; rather, the surface area can be made arbitrarily large by adjusting the values of a (the the distance from the center of the hole to the center of the circle) and b (the radius of the circle). The chart below summarizes the results of our calculations.

Sincerely,

Andrew Crenwelge

Sam Gerlich