DA 2 - BMAT101L

Let $f(x, y) = x^2y^2$ represents the utility function or customer satisfaction derived by a consumer from the consumption of a certain amount of product x and certain amount of product y. Maximize the utility function subject to the constraint $2x + 4y = 40$.

Find the dimension of rectangular box with the largest possible volume with an open top and one portion to be constructed from 162 sq. inches of cardboard. (Note: The amount of the material used in construction of box is $xy + 2xz + 2yz = 162$).