

1. Wire of length 12 m is divided into two pieces and each piece is bent into a square. How should this be done in order to minimize the sum of the areas of the two squares?

2. Find the dimensions x and y of the rectangle inscribed in a circle of radius r that maximizes the quantity xy^2 .

3. A poster of area 6000 cm^2 has blank margins of width 10 cm on the top and bottom and 6 cm on the sides. Find the dimensions that maximize the printed area.
4. According to postal regulations, a carton is classified as “oversized” if the sum of its height and girth (perimeter of its base) exceeds 108 in. Find the dimensions of a carton with square base that is not oversized and has maximum volume.