

A company needs to make food containers in the shape of a circular cylinder that will hold 58 cubic inches of food. The metal alloy for the curved side and bottom costs 6 cents per square inch, and the lid cost 4 cents per square inch. How should they design the containers?

The temperature on the surface of a sheet of metal is

$$T(x, y) = 19 - 3x^2 - y^2$$

where  $x$  and  $y$  are the number of feet from a corner of the rectangular metal sheet, and the temperature is in degrees Fahrenheit. Find the average temperature when  $x$  varies between 0 and 4 feet and  $y$  varies between 0 and 2 feet.