

Recorder: _____

Task Master: _____ Cynic: _____ Other: _____

THE CONE

Working in small groups (3 or 4 people), solve as many of the problems below as possible. Try to resolve questions within the group before asking for help. The Recorder is responsible for writing up the group's results and turning it in. Show your work! Full credit will only be given if your answer is supported by calculations and/or explanations as appropriate.

An ice cream cone is to be dipped in chocolate. The cone can be described by the equation $z^2 = 9(x^2 + y^2)$, with $0 \leq z \leq 9$ and x , y , and z in centimeters. The dipping process is such that the resulting (surface) density of chocolate on the cone is given by $\sigma = 1 - \frac{z}{9}$ in grams per square centimeter. Find the total amount of chocolate on the cone.

(There is no ice cream on the cone!)

