Name:_____

Student ID #:_____

EECS 170A Section B
Homework #1
HW will be collected in DISCUSSION ONLY.
Do not turn your HW in anywhere else, or it will not be accepted.
You are encouraged to turn it in at your own discussion section.
You may turn it in at any discussion section.
Last option to turn in: Right after Friday discussion section October 6, 2006.
DUE: 10 AM Friday, October 6 2006

Please *staple* this sheet to the front of your homework.

1	2a	2b	Total
/50	/25	/25	/100

1) In a modern integrated circuit, there are 10^8 transistors. Integrated means all the transistors are on one chip. They fit because they are very very small. In the lab of this course, we will be using discrete transistors. This means that each transistor is packaged into a little plastic package all by itself with three wires sticking out. The package measures about 5 mm x 5 mm x 5 mm. If you wanted 10^8 of them in a planar square close packed array, how large would the side of that array be? Would it fit into the lab?

2) A wire has a current density of 1 mA/cm^2. It's diameter is 0.001".
    a. What is the current in the wire.
    b. How many electrons per second flow past a plane perpendicular to the wire.