CPS 130 Homework 1
Introduction

- due Fri May 17th -

Write and justify your answers on this sheet in the space provided.[1]

1. (CLRS 1.2-2) Suppose we are comparing implementations of insertion sort and merge sort on the same machine. For inputs of size n, insertion sort runs in $8n^2$ steps, while merge sort runs in $64n \log n$ steps. For which values of n does insertion sort beat merge sort?

2. (CLRS 1-1) For each function $f(n)$ and time t in the following table, determine the largest size n of a problem that can be solved in time t, assuming that the algorithms to solve the problem takes $f(n)$ microseconds.

	1 second	1 minute	1 day	1 month
n				
n^2				
2^n				

3. (CLRS 2.1-2) How do you modify the $INSERTION - SORT$ procedure to sort into non-increasing instead of non-decreasing order?

[1] Collaboration is allowed, even encouraged, provided that the names of the collaborators are listed along with the solutions. Students must write up the solutions on their own.