Statistics 10
Fall 2001
Prof. Dinov
HW #1 Solutions

HW 1.1

Study 1
Treatment: subject weights.
Response: score on comprehensive exam.
This is an *uncontrolled experiment*, because there is no feasible way the researcher could randomly assign subjects to different treatment groups, yet the study is not strictly observational. There is no blocking in this study.

Study 2
Treatment: baking temperature.
Response: impact strength.
This is an *experiment*. For blinding purposes, the lab which evaluates impact strength should not know the baking temperatures. There is no blocking in this study.

Study 3
Treatment: use of diagnostic machine.
Response: service time.
This is an *experiment*. For blinding purposes, an independent observer should record service times and, if possible, not be allowed to know whether the diagnostic equipment is being used. The experiment would be better designed if the order of repairs using the machine vs. not using the machine were randomized. The use of two mechanics of different levels of experiences introduces blocking.

Study 4
Treatment: student gender.
Response: grade on exams.
This is an *uncontrolled experiment*. As in study 1, there is no feasible way of randomly assigning treatment groups. If separate scores were available for each of the 10 exams, that would represent a form of blocking.

HW 1.2

```
Stem Leaf                    #
  6 8                        1
  6
  5 8                        1
  5 02                       2
  4 67799                    5
  4 01122234                 8
  3 567788889                9
  3 244                      3
    ----+----+----+----+
```

Mean	42.66
Min	32
Lower quartile	38
Median	41
Upper quartile	47
Max	68
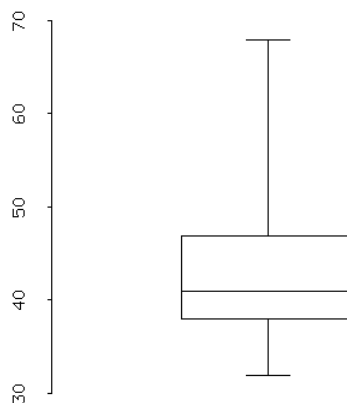
The data are right-skewed, which means that there are a small number of days in which a very large number of parking tickets are given out.

The median number of parking tickets is 41. The minimum number of 32 is only 9 tickets less than the median, while the maximum number of 68 is 27 tickets more than the median.

The mean number of tickets (42.66) is larger than the median. This is typical of right-skewed distributions.