

Intro to Stats: Homework 3.2-3.3 (10th edition)

- All of these problems were taken from the textbook, though some have been rearranged for your convenience. You may find answers to some of these problems in the back of your book.
- **Please do your work and write your answers on other paper. Don't try to squeeze them onto this page.**

1. Statistics students participated in an experiment to test their ability to determine when 1 minute (or 60 seconds) has passed. The results are given below in seconds.

53 52 75 62 68 58 49 49

- Find the mean. (Remember the rule of thumb for rounding off)
- Find the median.
- Find the midrange.
- Find the range.
- Find the variance. (Remember: We have two formulas for variance, depending on if the data is an entire population or a sample from that population. Can you tell if this data is from all statistics students, or just from a subset of all statistics students?) This is the only variance I am asking you to do by hand (except for the exam). Please show your work.
- Find the standard deviation.
- Remember: Our whole point of statistical inference is to see what statistics can tell us about parameters. Identify at least one good reason why the mean from this sample (the statistic) might **not** be a good estimate of the mean for the *population of adults* (the parameter).
Hint: The sample size is small, but that is not necessarily a problem. Come up with something other than that.

2. The frequency distribution below describes the speeds of drivers ticketed by the police in the Town of Poughkeepsie. These drivers were traveling through a 30 mph speed zone on Creek Road. Find the mean of this data.

Speed	Frequency
42 - 45	25
46 - 49	14
50 - 53	7
54 - 57	3
58 - 61	1

Hint: The example on page 83 is the same type of problem.

3. Heights of men have a bell-shaped distribution with a mean of 176 cm and a standard deviation of 7 cm. Using the empirical rule (in your reading), what is the approximate percentage of men between:

- 169 cm and 183 cm (Hint: $169 = 176 - 7$.)
- 155 cm and 197 cm

Hint: The Empirical Rule (page 100) says, among other things, that if we have bell-shaped data, then 95% of all of the data falls within 2 standard deviations of the mean. Since our data on this problem is bell-shaped, and since our mean 176, and since two standard deviations would be 14, the Rule tells us that 95% of the data falls between $176-14$ and $176+14$, or between 162 and 190.