

## 1. ASSIGNMENT 2

1.1. **Problem 1.** A random sample of 130 healthy people had an average body temperature of 98.25 with a standard deviation of 0.73 degrees.

- Construct a 99% confidence interval for the mean body temperature of healthy people.
- Does the interval contain the accepted figure of 98.6°? What conclusion can you draw?

1.2. **Problem 2.** 1,000 randomly selected Americans were asked how well the term *patriotic* described them. The results are summarized by age group as:

Age group	18-34	60+
Very well	.35	.77
Somewhat well	.41	.17
Not Very well	.16	.04
Not well at all	.08	.02

- If the 18-34 and 60+ age groups consisted of 340 and 150 individuals, respectively, find a 98% confidence interval for the difference in the proportions of those age groups who agreed that *patriotic* described them very well.
- Based on the interval computed in part a), do you think that the difference in proportions is as large as 0.6? Explain.

1.3. **Problem 3.** SAT scores have fallen slowly since their inception but have recently begun to rise. The means scores for 2005 were approximately 508 for the verbal test and 520 for the mathematics test. A random sample of the test scores of 20 students from a large urban high school produced the following results:

	Verbal	Mathematics
Sample mean	505	495
Sample standard deviation	57	69

- Find a 90% confidence interval for the mean verbal SAT score for seniors from this school.
- Does the interval include 508? What can you conclude?

c) Do the same for the mathematics score. Does the interval include 520? What can you conclude?

1.4. **Problem 4.** Chronic anterior compartment syndrome is characterized by exercise-induced pain in the lower leg. In an experiment involving ten healthy runners and ten healthy cyclists, the measured compartment pressures were:

Condition		Mean	$s$
Rest	Runners	14.5	3.92
	Cyclists	11.1	3.98
80% max $VO_2$	Runners	12.2	3.49
	Cyclists	11.5	4.95

a) Construct a 95% confidence interval for the difference in mean compartment pressures between runners and cyclists under the resting condition.

b) Construct a 90% confidence interval for the difference in mean compartment pressures between runners and cyclists at 80% max  $VO_2$ .

c) Consider the intervals constructed in parts (a) and (b). How would you interpret the results that you obtained?