

Biology 3B
Hypothesis and stats assignment

1. Two students are conducting research on the effect of sport supplements during an individual time trial. They collected times at a local amateur time trial during November and December 2007.

Time for a 5.3 km time trial (all times are minutes:seconds for the same individuals)
November 2007 (initial): 19.55, 20.03, 20.15, 20.27, 20.37, 20.37, 20.47
December 2007 (after supplement): 18.25, 19.05, 19.14, 19.34, 19.47, 19.48, 19.49

- a) What hypothesis are they testing?
- b) What type of statistical analysis should they use? Run the analysis and attach it. Construct a graph of your results. Do not forget to include all the components of a graph.

2. The 2007 SCNCA Team Time Trial took place on 6/2/07 at Lake Los Angeles. In the four men team time trial, the combined ages (220+, 180+ and 140+) of each member was combined to determine the riders category and competed for the fastest time (minutes:seconds).

Category:	<u>220+</u>	<u>180+</u>	<u>140+</u>
	49.42	49.56	47.59
	55.07	50.56	47.59
	55.57	54.39	48.38
	58.23	54.42	50.26

- a) What is the hypothesis that is being tested?
- b) What is the null hypothesis for this data set?
- c) What type of analysis would you run? Attach your analyses and construct a graph for the data set.

3. Research question: Was autumn 2002 significantly drier than autumn 2001? Cumulative precipitation during the months of Sept.-Nov. was recorded in 10 northern and southern California cities during both winters. Examination of independent data suggests that the precipitation levels were normally distributed.

- a) Which statistical test is most appropriate?
- b) Why?
- c) State a suitable null and alternative hypotheses that could be used to address the research question,