

**NAME:** \_\_\_\_\_

**STUDENT ID (if any):** \_\_\_\_\_

**GSI (Daniel or Partha):** \_\_\_\_\_

**SECTION TIME:** \_\_\_\_\_

***Stat 2 final***  
***10:00 a.m., Friday 15<sup>th</sup> August, 2008***  
***Time allowed: 60 minutes***

**Answer all SIXTEEN questions. All questions are of equal value (two points).**

**Please keep written answers brief.**

**You may refer to ONE double-sided sheet of A4 paper with hand-written notes.**

**You may refer to a standard normal table.**

**Unless otherwise stated, you may leave numerical answers as fractions, decimal or percentages (where applicable). Show as many decimal places as is necessary to show your understanding.**

**Question 1:** An observational study finds that not wearing your seatbelt is correlated to serious injury in car accidents. Can we conclude, from this study alone, that wearing your seatbelt prevents serious injury? Why or why not?

The following incomplete table gives income data, as well as the heights of the bars of a histogram of this income data:

| <b>Income</b>    | <b>% of population in this income range</b> | <b>Height of histogram bar<br/>(in percent per \$1000)</b> |
|------------------|---|--|
| \$0-\$20000      | 30  | 1.5  |
| \$20000-\$40000  | 30  | 1.5  |
| \$40000-\$60000  | 20  | 1  |
| \$60000-\$100000 | ?   | ?  |

No one in this population earns more than \$100,000.

**Question 2:** What should the height of the \$60000-\$100000 histogram bar be?

*The following paragraph pertains to questions 3, 4, 5 and 6:*

The average height of a 10-year-old boy is 55.7 inches, with a SD of 2 inches. The average weight of a 10-year-old boy is 85 pounds, with an SD of 15 pounds. The scatter plot of weight in pounds against height in inches is approximately football-shaped, with a correlation of 0.7.

**Question 3:** 1 inch is 2.54 cm; 1 pound is 0.454 kg. What is the correlation between height in cm and weight in pounds?

**Question 4:** What is the probability a randomly selected 10-year-old boy is between 54.5 inches and 56.5 inches in height?

**Question 5:** What is the regression prediction for the weight of a 53-inch tall 10-year-old boy?

**Question 6:** A 53-inch tall 10-year-old boy is randomly selected. What is the probability he will weigh over 85 pounds?