# ISTA 116: WEB QUIZ 3 (6 PTS)

You are encouraged to work out the answers to the questions before beginning the web quiz. You'll learn more if you calculate an answer before viewing the choices. You may want to print out this sheet and write calculations in the spaces provided.

The following contingency table deals with the prediction of tornadoes in the 1880s.

| | | **Tornadoes Observed** | |
|---|---|---|---|
| | | **Yes** | **No** |
| **Tornadoes Predicted** | **Yes** | 28 | 72 |
| | **No** | 23 | 2680 |

(1) (1 pt) Out of all predictions made, what percentage were correct?

(2) (1 pt) What is the marginal proportion of the time that tornadoes were predicted?

(3) (1 pt) What is the marginal proportion of the time that tornadoes were actually observed?

*Date*: Due 23 September 2011.

(4) (1 pt) The "hit rate" (or "sensitivity") for a prediction system is defined as the conditional proportion of times something was predicted, given that it occurred. What is the hit rate of this tornado predictor?

(5) (1 pt) The "false alarm rate" is the conditional proportion of the time an event was predicted given that it did *not* actually occur. What was the false alarm rate for the tornado predictor?

(6) (1 pt) Suppose you developed an ingenious tornado prediction system that just predicted "no tornado" all the time. Assuming the actual (marginal) rates of tornadoes stayed constant, how would the total percent correct, sensitivity and false alarm rates of your system compare to the system that generated the data above (i.e., would they increase, decrease or stay the same)? (Note: it is possible to reason out this question without doing any calculations; though you may want to do them anyway to check your intuitions)