

Math 110
Quiz 5 Sample
November 18, 2008

Be sure to show the calculations that lead to your answers.

1. For biochemists and biophysicists working in the Worcester area, the Bureau of Labor Statistics reports an average salary estimate of \$89,000. (Assume this is the average of a simple random sample of biochemists and biophysicists.) The Bureau reports a 95% confidence interval for this estimate of $\$89,000 \pm \5700 .

True or false and explain: This means that 95% of the biochemists and biophysicists in the Worcester area have a salary between \$83,300 and \$94,700.

2. On November 6, 2007, the Gallup poll reported the results of a survey about the role of women in society in the three North African countries of Algeria, Morocco, and Tunisia. Among the results of the poll, the Gallup organization reported that 76% of Tunisian adults agreed with the statement that “Women should be allowed to hold any job for which they are qualified outside the home.” The Tunisian sample consisted of 912 adults. Based on this information, compute a 95% confidence interval for this estimate. (Assume for the purposes of this calculation that it was a simple random sample.)

(Note: Information about this poll can be found at:

<http://www.gallup.com/poll/102595/Majorities-Support-Womens-Rights-North-Africa.aspx>)

3. The maker of a certain compact car claimed that the car averaged at least 31 miles per gallon of gasoline. A sample of nine cars was selected and each car was driven with one gallon of regular gasoline. The sample showed a mean of 29.43 miles with a standard deviation of 3 miles. Conduct a hypothesis test for $\alpha = .05$ to make a judgement on the validity of the claim. (*Hint:* What are the null and alternative hypotheses? Should you use a one-tail or two-tail test for significance?)