STAT 100 SUMMER II 2001 (PROFESSOR GREEN) SOLUTIONS TO ASSIGNED PROBLEMS DUE AUGUST 13

Problem 16. $1-\alpha = .99$, so that $\frac{\alpha}{2} = .005$, and $z_{\frac{\alpha}{2}} = 2.58$. The estimated standard error is $\frac{.057}{\sqrt{110}}$ so that the error bound $d = \frac{.057}{\sqrt{110}} \times 2.58 = .014$. This gives $(\bar{x} - d, \bar{x} + d) = (.906, .934)$ as the desired confidence interval.

Problem 20. $1-\alpha = .98$, so that $\frac{\alpha}{2} = .01$, and $z_{\frac{\alpha}{2}} = 2.33$ The sample size is 35 (from Problem 19) so that the E.S.E is $\frac{47}{\sqrt{35}}$, and $d = 18.5$ This gives the 98% confidence interval (in milligrams of sodium) as $(649.5, 676.5)$.

Problem 26. $1-\alpha = .1$ so that $\frac{\alpha}{2} = .05$ and $z_{\frac{\alpha}{2}} = 1.645$. The Estimated standard error is $\frac{1.2}{\sqrt{40}}$ and the error bound is .31, giving a confidence interval (in minutes) of $(3.49, 4.11)$ for the mean time to process.

Problem 32. $1-\alpha = .05$ so $\frac{\alpha}{2} = .025$ and $z_{\frac{\alpha}{2}} = 1.96$. The estimated standard error is $\frac{.06}{\sqrt{65}}$ so that $d = .015$ and the desired confidence interval is $(\bar{x} - d, \bar{x} + d) = (.095, .125)$.

Problem 36.

(a) This question cannot be answered with certainty.
(b) The sample mean is the center point of the confidence interval and certainly lies in it.
(c) This question cannot be answered with certainty.
(d) Once again, this question cannot be answered with certainty. The sample data does not, with certainty, have any particular distribution, so that its distribution is not necessarily as predicted by a normal table.