

Problems

1.
 - a. $s_{\bar{x}} = 0.87$
 - b. $s_{\bar{x}} = 0.79$
 - c. $s_{\bar{x}} = 0.40$
 - d. $s_{\bar{x}} = 2.68$
 - e. $s_{\bar{x}} = 2.15$
2.
 - a. $t = \pm 2.2622$
 - b. $t = \pm 2.5758$, ± 2.58 are the t scores cutting off the deviant 1% of the normal curve.
 $t = \pm 1.9600$, ± 1.96 are the t scores cutting off the deviant 5% of the normal curve.
 - c. $t = \pm 2.0141$, approximately
 $t = \pm 2.6896$, approximately
 - d. The sampling distribution of means becomes more compact with larger sample sizes. Thus, deviant scores are closer to the mean as sample size (and df) increases.
 - e. Use the values for the df closest to the observed df .
3.
 - a. With $df = 120$, 95% CI = $20 \pm 0.49 = 19.51$ to 20.49
99% CI = $20 \pm 0.65 = 19.35$ to 20.65
 - b. 95% CI = $10 \pm 0.80 = 9.20$ to 10.80
99% CI = $10 \pm 1.09 = 8.91$ to 11.09
 - c. 95% CI = $10.5 \pm 0.83 = 9.67$ to 11.33
99% CI = $10.5 \pm 1.11 = 9.39$ to 11.61
4.
 - a. $t(53) = 2.01$, $p < .05$. Applicants demonstrate significantly higher Conscientiousness scores than the general population.
 - b. 95% CI = $54.2 \pm 4.40 = 49.80$ to 58.60
 - c. 99% CI = $54.2 \pm 5.86 = 48.34$ to 60.06
5.
 - a. 95% CI = $29.6 \pm 2.09 = 27.51$ to 31.69
 - b. 99% CI = $29.6 \pm 2.78 = 26.82$ to 32.38
6.
 - a. $\sigma_{\bar{x}} = 2.10$
 - b. $s_{\bar{x}} = 1.70$
 - c. $t(24) = 0.82$, $p > .05$
 - d. If you made an error, it was a Type II error (failure to reject a false null hypothesis).
7. $t(25) = -2.55$, $p < .05$. Significantly fewer calculators were assembled in the last hour of the shift.
8.
 - a. $s_{\bar{x}} = 2.43$
 - b. 95% CI = $77.6 \pm 5.35 = 72.25$ to 82.95 . No, 71.1 is not in the interval.
 - c. $t(11) = 2.67$, $p < .05$
 - d. Working with the psychologist significantly improved free-throw shooting.
9.
 - a. $s_{\bar{x}} = 1.28$
 - b. $\sigma_{\bar{x}} = 1.30$. This is very similar to $s_{\bar{x}}$.
 - c. $t(9) = -1.40$, $p > .05$. The sample probably came from the population with $\mu = 22.5$.
 - d. 95% CI = $20.85 \pm 2.67 = 18.18$ to 23.52