

Name:

Date:

PBHL 5013/BIOM 5013 – Collected Homework
Chapter 8

1. Answer to 8.12.

$$n=50, \bar{x}=56.4, s^2=2.6.$$

Best point estimate for the population mean μ : 56.4

Calculate the margin of error: 0.45

$$\begin{aligned} & 1.96 \left(\frac{s}{\sqrt{n}} \right) \\ &= 1.96 \left(\frac{1.61245155}{\sqrt{50}} \right) \\ &\approx 0.45 \end{aligned}$$

2. Answer to 8.36c. $n=50, \bar{x}=4.5, s=2.7$

Construct a 95% confidence interval for the mean completion time for online orders.

$$\frac{4.5}{\text{pt. estimate.}} \pm \frac{1.96}{\text{table value}} \frac{2.7}{\sqrt{50}} \text{ standard error of pt. est.}$$

$$\left(\frac{3.75}{\text{lower value}}, \frac{5.25}{\text{upper value}} \right)$$

3. Answer to 8.41. $n_1=30, \bar{x}_1=167.1, s_1=24.3$
 $n_2=30, \bar{x}_2=140.9, s_2=17.6$

Find a 95% confidence interval for the difference in the mean selenium intakes for two regions (i.e. a CI on $\mu_{\text{region1}} - \mu_{\text{region2}}$).

$$\frac{167.1 - 140.9}{\text{pt. estimate.}} \pm \frac{1.96}{\text{table value}} \frac{\sqrt{\frac{(24.3)^2}{30} + \frac{(17.6)^2}{30}}}{\text{standard error of pt. est.}}$$

$$\left(\frac{15.463}{\text{lower value}}, \frac{36.937}{\text{upper value}} \right)$$

4. Answer to 8.58. $\hat{p}_{\text{West}} = \frac{120}{200} = 0.6$, $\hat{p}_{\text{East}} = \frac{142}{200} = 0.71$

Find a 95% confidence interval for the true difference between the proportions of union-backed winners in the West versus the East (i.e. a CI on $P_{\text{West}} - P_{\text{East}}$).

$$\frac{0.6 - 0.71}{\text{pt. estimate.}} \pm \frac{1.96}{\text{table value}} \sqrt{\frac{(0.6)(0.4)}{200} + \frac{(0.71)(0.29)}{200}}_{\text{standard error of pt. est.}}$$

$$\left(\frac{-0.2025}{\text{lower value}}, \frac{-0.0175}{\text{upper value}} \right)$$