7.2

(1) $X \sim N(\mu_x, 784)$ $Y \sim N(\mu_y, 627)$

$\bar{X} = 937.4$ $n = 56$ $\bar{Y} = 988.9$ $n = 57$

$\alpha = 0.10$

$\bar{X} - \bar{Y} = -51.5$ $\varepsilon_0 = Z_{\alpha/2}\sqrt{\frac{\sigma_x^2}{n} + \frac{\sigma_y^2}{n}}$

$= 1.65\sqrt{}$

$= 8.25$

$P(-59.75 < \bar{X} - \bar{Y} < -43.25) = 90\%$

(5)

$\bar{X} = 5.91\bar{6}$ $\bar{Y} = 8.153$

$S_x = 0.663$ $S_Y = 1.187$

$\bar{X} - \bar{Y} \simeq -2.2364$

$\varepsilon = 0.40974$

$P(-\infty < \bar{X} - \bar{Y} < -1.82666) = 0.95$

(10) $\mu_D \approx \bar{x} = 0.07875$

$S = 0.06498$

$\varepsilon = t_{0.05}(23) \frac{S}{\sqrt{24}}$

(1.714)

$= 0.089$

$P(-0.0104 < \mu_D < \infty) = 0.95\%$

No it is not helpful

7, 3

(1) (a),(b) a) $\hat{p} = \frac{24}{642} = 0,03\ 738$

b) $\varepsilon = Z_{0,025} \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$

$= 1,96 \sqrt{5,665 \cdot 10^{-5}}$

$= 0,015$

$p(0,0227 < p < 0,052) = 95\%$

(3) a) $\bar{Y} = \frac{167}{330} = 0,50\bar{6}$

b) $\varepsilon = Z_{0,05} \sqrt{\frac{\bar{Y}(1-\bar{Y})}{n}}$

$1,65 \cdot 0,0275$

$= 0,045$

$p(0.46 < p < 0.55) = 90\%$

(10) $\bar{p}_1 = \frac{28}{194} = 0.144$ $\bar{p}_2 = \frac{11}{162} = 0.067$

$\varepsilon_1 = Z_{0.025} \cdot 0.025$

1.96

$P(0.095 < p_1 < 0.194) = 95\%$

$\bar{p}_1 - \bar{p}_2 \approx 0.0764$

$\varepsilon = Z_{0.05} \sqrt{\frac{\bar{Y}_1(1-\bar{Y}_1)}{n_1} + \frac{Y_2(1-Y_2)}{n_2}}$

$= 0.053$

$P(0.024 < p_1 - p_2 < \infty) = 95\%$

7.4

(3) $\mu = 6.04$ $\sigma = 0.02$

$\varepsilon = 0.001$ $\alpha = 0.1$

$$n = \left\lceil \left(\frac{z_{\alpha/2}\, \sigma}{\varepsilon} \right)^2 \right\rceil = 1083$$

$n = 1219$ $\bar{x} = 6.048$ $s = 0.022$ $\alpha = 0.1$

$$\varepsilon = Z_{\alpha/2} \left(\frac{0.022}{\sqrt{1219}} \right)$$

$$= 0.00104$$

$$P(6.047 < \bar{x} < 6.049) = 90\%$$

$$\frac{6.09 - 6.048}{0.1} \cdot 14{,}000 = 58.8K$$

$$P(x < 6.0)$$

$$= P\left(z < \frac{6.0 - \bar{x}}{s}\right)$$

$$= P(z < -2.1818) = 0.0146$$

(8) $n = 137$ $\bar{Y} = \frac{54}{n} \approx 0.394$

$\varepsilon = 0.04$ $\alpha = 0.1$

$$n = \left\lceil \left(\frac{z_{\alpha/2}}{\varepsilon_0} \right)^2 (\bar{Y})(1 - \bar{Y}) \right\rceil$$

$= 404$

(11) $\bar{p} = 0.89$

$\varepsilon = 0.1$

$\alpha = 0.05$

$$n = \left\lceil \left(\frac{Z_{\alpha/2}}{\varepsilon_0}\right)^2 (\bar{p})(1-\bar{p}) \right\rceil$$

$n = 38$

$\bar{Y} = \frac{44}{60} = 0.7\overline{33}$

$\alpha = 0.05$

$$\varepsilon = Z_{0.025}\sqrt{\frac{\bar{Y}(1-\bar{Y})}{60}}$$

$= 0.111$

$P(0.623 < p < 0.845) = 95\%$

7.5

(2) $n = 12$

4.8 5.0 5.4 | 5.4 5.5 5.7 5.8 5.9

6.0 6.0 | 6.3 6.8

a) $P(5.4 < m < 6.3) = 96.14\%$

$$\sum_{n=3}^{9} \binom{12}{n} \left(\frac{1}{2}\right)^{12}$$

b) $$\sum_{n=1}^{6} \binom{12}{n} (0.3)^{n} (0.7)^{12-n} = 0.948$$

$= 95\%$

(3) 5.99 6.31 | 6.58 6.78 1
7.05 7.12 7.22 | 7.40 7.80

$p(6.31 < m < 7.40) = 96\%$

$$\sum_{n=3}^{6} \binom{9}{n} (1/2)^{12} = 82\%$$

$(6.58, 7.22)$