

# 223 Homework #12 Key

1.  $p = 42.6\%$   $n = 1442$

1 Prop Z Int  $\bar{x} = .426 \times 1442 = 614$

$n = 1442$

C-level: .95 (assume if not specified)

$(.40028, .45732)$

2.  $n = (.5)(.5) \left(\frac{1.96}{.02}\right)^2 = 2401$

3.  $\bar{x} = 2.78$

$s = .7$

$n = \left(\frac{1.96 \cdot .7}{.01}\right)^2 = 18,823.84 \Rightarrow 18,834$

4a.  $\bar{x} = 220, \sigma = 18, n = 500, C\text{-level} = .99$  Z interval  
 $(217.93, 222.07)$

b.  $\bar{x} = 11, \sigma = 4.2, n = 50, C\text{-level} = .92$   
 $(9.9601, 12.04)$

5. a.  $\frac{.500 + .200}{2} = .35$       b.  $\frac{61.3 + 58.7}{2} = 60$

6.  $\bar{x} = 135, n = 420,095$  C-level = .95 1 Prop Z Int  
 $(2.7 \times 10^{-4}, 3.8 \times 10^{-4})$

this interval contains .034% so it did not appear to make a difference  
We are 95% sure that the true value of cancer rates is between .027% & .058%

7.  $\bar{x} = 677, \sigma = 68, n = 50$  C-level = .95  
 $(658.15, 695.85)$

The true value of the population mean FICO score is between 658 and 696  
w/ 95% certainty

8. the interval width decreases

9. the interval gets wider

10. known  $\sigma$  and sample size bigger than 40

11.  $\frac{7.2 + 5.8}{2} = 6.5$      $7.2 - 6.5 = .7$      $\frac{\sigma}{\sqrt{n}} = .357$      $\frac{1}{\sqrt{n}} = .187 \therefore \sqrt{n} = 5.32$      $n = 28$

$$12. \frac{.481 + .413}{2} = .447 \quad \text{[redacted]} = \sqrt{\frac{p(1-p)}{n}}$$

$$.481 - .447 = \frac{.034}{1.64} = .02073 \quad \text{[redacted]} = \frac{p(1-p)}{4.298 \times 10^{-4} n}$$

$$\Rightarrow n = \frac{.447(1-.447)}{4.298 \times 10^{-4}}$$

$$n = 575.125 \dots$$

$$n = 575$$