review 13 w.s. answers

1) $.37 = \hat{p}$ $\quad .41 = p$

2) $128 = \mu$ $\quad 126.07 = \bar{x}$

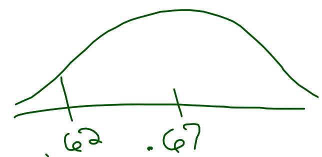
$15 = \sigma$

3) mean of $\hat{p} = .67$

~~15,000~~ $.67 = p$

$100 = n$ $\quad .62 = \hat{p}$

4) St. dev. of $\hat{p} = \sqrt{\dfrac{.67(1-.67)}{100}} = .047$



5) Shape of samp. dist.

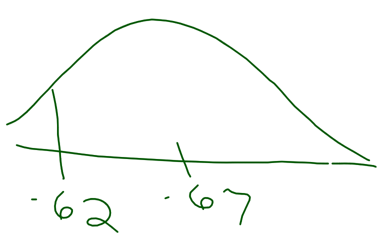
approx. normal

$np \geq 10$ AND $n(1-p) \geq 10$

$100(.67) \geq 10$ $\quad 100(1-.67) \geq 10$

$67 \geq 10$ $\quad 33 \geq 10$

6)



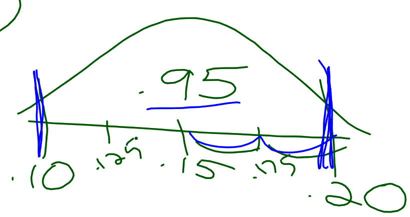
$z = \dfrac{.62 - .67}{.047} = -1.06$

$Pr(z < -1.06) = \boxed{.1446}$

13-18

b)

$.20 - .15 = \frac{.05}{2} = .025$



$\sqrt{\frac{.15(1-.15)}{n}} = .025$

$n = 204$

a) $\sqrt{\frac{.15(1-.15)}{n}}$

14-3

a) $922 = n$

$\$857 = \bar{x}$

b) i) pop ⇒ Am. adults who plan to buy Christmas presents

ii) sample ⇒ 922 Am. adults interviewed

iii) param. ⇒ avg. exp. to spend of all Amer. adults...

iv) stat ⇒ $857 ⇒ avg. amt. exp. to spend (by the 922 people)

c) No (doesn't have to be $857), Yes (possible) ($\mu$ 850), Yes ($\mu = 800$), Yes ($\mu = 1000$)

assume:

$\mu = 850$ $\sigma = 250$

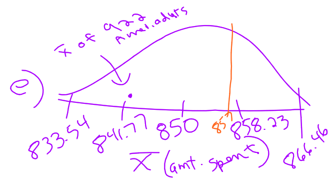
d) The CLT says the samp. dist. of $\bar{x}$ would be:

- approx. normal if n is large: $n \geq 30$ — $922 \geq 30$ ✓
- with a mean of $850 ($\mu_{\bar{x}} = 850$)
- and a st. dev. of $\frac{\sigma}{\sqrt{n}} = \frac{250}{\sqrt{922}} = 8.23$

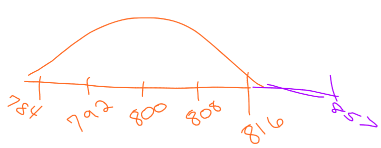
f) $\bar{x} = 857$ not surprising if $\mu = 850$ w/in 1 st. dev.

$z = \frac{857-850}{8.23}$

e)



g)



$z = \frac{857-800}{8.23} = 6.93$

$857 very surp. if $\mu = 800$

h) $\sigma = 250$

$\sigma_{\bar{x}} = \frac{250}{\sqrt{922}} = 8.23$

i) $\bar{x}$

$857 \pm 2(8.23)$

$(840.54, 873.46)$

μ

14-7
14-8