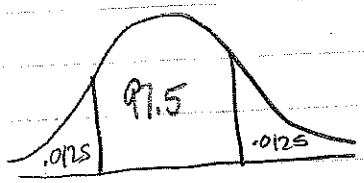
CH 10

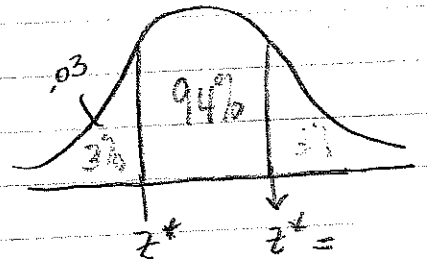
pg 632-633 #7-10
637-638 #14, 15, 16

#7)



$z^* = 2.24$

#8



$z^* = 1.88$

#9) $z^* = 2.576$ $\quad E = \frac{15}{\sqrt{81}} = 6.94$

$\mu = 105.84$

$98.9 < \mu < 112.78$ or $(98.9, 112.78)$

(b) sampling is key to making population inferences for a population in question. If it was one class in one school it may not be representative of whole school district so you would not be able to generalize.

#10) a pharmaceutical product is a medication or device used to treat patients. Analysis is important to make sure the production process is working as it should & medications have the right amount of ingredients

(b) $z^* = 2.576$ $\quad \hat{p} = .8484$ $\quad E = 2.576\left(\frac{.0068}{\sqrt{3}}\right) = \pm .0039$

$(.8303, .8505)$

(c) With 99% confidence we estimate the true concentration of the active ingredient for this specimen to be between .8303 and .8505

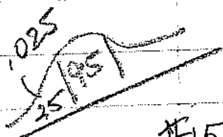
#14) $z^* = 2.325$ $\mu = 10.0023$

$$E = 2.325\left(\frac{.0002}{\sqrt{5}}\right) = .000208$$

(10.0021, 10.0025)

(b) $$n \geq \left(\frac{z^*\sigma}{E}\right)^2 = \left(\frac{(2.325)(.0002)}{.0001}\right)^2 = 21.6$$

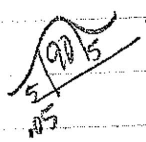
$n \geq 22$ samples



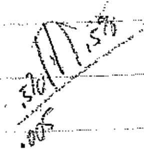
#15) $z^* = 1.96$ $\mu = 22$ 95%

$$E = 1.96\left(\frac{50}{\sqrt{1000}}\right) = 3.099$$

(18.901, 25.099)
(18.9, 25.1)



90% $1.645 = z^*$
$$E = 1.645\left(\frac{50}{\sqrt{1000}}\right) = 2.601$$ **(19.4, 24.6)**



99% $2.575 = z^*$
$$E = 2.575\left(\frac{50}{\sqrt{1000}}\right) = 4.07$$ **(17.93, 26.07)**

lower conf level mean smaller intervals

#16) $z^* = 1.96$ $\mu = 22$ $n = 250$

(a) $$E = 1.96\left(\frac{50}{\sqrt{250}}\right) = 6.198$$ (15.8, 28.2)

b) $n = 4000$
$$E = 1.96\left(\frac{50}{\sqrt{4000}}\right) = 1.55$$ (20.45, 23.55)

d) $$n \geq \left(\frac{(1.96)(50)}{2}\right)^2$$ **$n \geq 2401$**

(c) as you increase sample size, margin of error decreases