skip

CH9 pg579-580 #11, 12, 13, 15a, 17, 1~~8~~
pg 589-590 #19, 22, 23, 25, 28

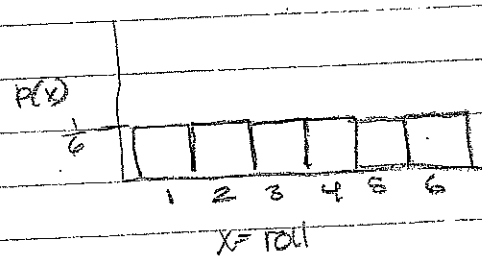
(11) $\hat{p} = 40.2\% \Rightarrow$ statistic
$\hat{p} = 31.7\% \Rightarrow$ statistic

(12) pop mean $\mu = 63$ parameter
sample mean $\Rightarrow \bar{x} = 64.5$ statistic

(13) (a) From many samples, the average $\bar{x}$ values from the samples will be close to μ therefore it is unbiased + can be used for analysis/interpretation

(b) Larger sample size gives more info and will therefore be more accurate as a point estimate. as sample size increases, variability in the distribution decreases.

(15a) mean $\mu = 3.5$ $\sigma = 1.708$
Histogram should be



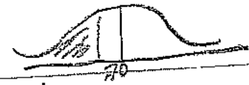
(17) The variability should Be about the same under the assumption NJ would have a sample < 870,000 (10% of pop)

(19) (a) $\mu_{\hat{p}} = p = \boxed{.7}$ $\sigma_{\hat{p}} = \sqrt{\frac{pq}{n}} = \sqrt{\frac{(.7)(.3)}{1012}} = \boxed{0.0144}$

(b) sample < 10% of population
1012 < 10% of All americans
> pop is at least 10 times sample

(c) Check $np \geq 10$ $.7(1012) = 708.4 \geq 10$ ✓
$nq \geq 10$ $.3(1012) = 303.6 \geq 10$ ✓

$\sigma = .0144$



(d) $P(\hat{p} \le .67) \Rightarrow$ normalcdf$(-\infty, .67, .70, .0144)$

$= .0186 \Rightarrow$ which means a proportion less than .67 is unusual w/ mean of .70. Results of poll not quotmable

(e) suppose $\sigma = .0072$

$$.0072 = \sqrt{\frac{pq}{n}} = .0072 = \sqrt{\frac{(.7)(.3)}{n}}$$

$$5.184 \times 10^{-4} = \frac{(.7)(.3)}{n}$$

$\boxed{n = 4048 \text{ adults.}}$

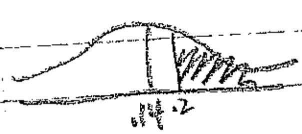
(f) greater than .67
B/c teens have more of a tendency to drink milk.

(22) Distrubution should be approx normal
w/ $\boxed{\bar{x} = .14 \text{ and } \sigma = .0155}$

(a)

$$\sqrt{\frac{(.14)(.86)}{500}} = 0.0155$$

(b)



$P(\hat{p} \ge .2) =$ normalcdf$(.2, \infty, .14, .0155)$
$= 5.422 \times 10^{-5} \Rightarrow \boxed{0\%}$
unlikely that it will be more than 20%.

(23) (a) $\hat{p} = .86$

(b) normal ok to use $np \geq 10$
$nq \geq 10$

$P(\hat{p} \leq .86)$

normalcdf(-∞, .86, .90, .0347)

$\sigma = \sqrt{\frac{(.90)(.14)}{100}} = .0347$

$P(\hat{p} \leq .86) = \boxed{.1245}$

(c) open ended.

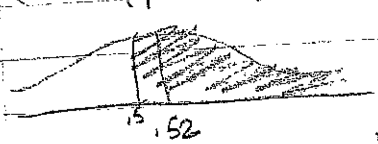
(25) $\mu_{\hat{p}} = .15$ $\sigma_{\hat{p}} = \sqrt{\frac{(.15)(.85)}{1540}} = .0091$

(b) the population larger than sample of 1540
more than 10%

1540 > 10% of US pop

(28) $\mu_{\hat{p}} = \boxed{.52}$ $\sigma_{\hat{p}} = \sqrt{\frac{(.52)(.48)}{500}} = \boxed{0.0223}$

b) $P(\hat{p} \geq .5)$ normal? $np \geq 10$ $(.52)(500)$ ✓
$nq \geq 10$ $(.48)(500)$ ✓



normalcdf(.5, ∞, .52, .0223) = $\boxed{.8151}$

Pg 603-604
41, 42, 43

single

(41) $\mu = 298$ $\sigma = 3$ $P(x<295)$
normalcdf$(-\infty, 295, 298, 3)$
$P(x<295) = \boxed{.1586}$

(b) $P(\bar{x}<295)$ $\sigma = \frac{3}{\sqrt{6}} = 1.225$
$\rightarrow$ normalcdf$(-\infty, 295, 298, 1.225) = \boxed{.00716}$

(42) μ = 55,000 miles σ = 4500m $n=8$
(a) normal ~~dis~~tribution w/ $\bar{x} = 55000$, $\sigma_{\bar{x}} = \frac{4500}{\sqrt{8}} = 1590.9$ or 1590

(b) $\bar{x} = 51800$
$P(\bar{x} < 51{,}800)$ normalcdf$(-\infty, 51800, 55000, 1590) = \boxed{.0221}$

(43) $\mu = 2.2$ $\sigma = 1.4$ $\boxed{\bar{x} = 2.2}$
$\sigma = \frac{1.4}{\sqrt{52}} = \boxed{.1941}$

$P(\bar{x}<2) = $ normalcdf$(-\infty, 2, 2.2, .1941) = \boxed{.1514}$

μ $52(2.2) = 114.4$ $\sigma = 1.4(52) = 72.8$ $\frac{n\sigma}{\sqrt{n}} = \frac{73}{\sqrt{52}} = \boxed{10.1}$
114 73

$P(\bar{x}<100) = $ normalcdf$(-\infty, 100, 114, 10.1) = \boxed{.0769}$

$error = \frac{\sigma}{\sqrt{n}}$

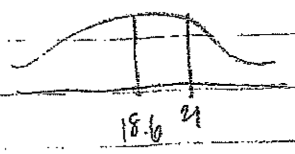
pg 596 #32, 34

(32) single: $\frac{x - \bar{x}}{SD} = z$ normalcdf(21, ∞, 18.6, 5.9) = .3421

34.21%

(a)

$P(x \geq 21) =$



(b) $\mu_{\bar{x}} = 18.6$ $\sigma_{\bar{x}} = \frac{5.9}{\sqrt{50}} = .8344$

(c) $P(\bar{x} \geq 21) =$ normalcdf(21, ∞, 18.6, .8344) = .0020

.2%

(34) (a) $\mu_{\bar{x}} = \boxed{6}$ $\sigma_{\bar{x}} = \frac{2.4}{\sqrt{10}} = \boxed{.7589}$

(b) $P(\bar{x} < 5)$ does not say distrib is normal