pg 288 #23

a) $P = 90$ 89.5   90.5

$np = 100(.93) = 93$

$nq = 100(.07) = 7$

$\mu = 93$ $\sigma = \sqrt{100(.93)(.07)} = 2.55$

$\frac{89.5 - 93}{2.55} = -1.3725$

$\frac{90.5 - 93}{2.55} = -.9804$

Normal CDF lower -1.3725
upper = -.9804
u = 0
σ = 1

.0785

b) 89.5 -
-1.3725
99999
0
1
.9151

c) -99999
-1.3725
0
1
.0849

D) none are less than 0.05

295 #55

$u = n\not{p} = 76$

$\sigma = \frac{20.5}{\sqrt{35}} = 3.465$

56) $u = 108.3$

$\sigma = \frac{35.1}{\sqrt{40}} = 5.55$

59) a) $\sigma = \frac{1500}{\sqrt{45}} = 223.6$

$\frac{29000 - 29200}{223.6} = -.8945$ upper

$= .1855$

b) $\frac{31000 - 29200}{223.8} = 8.04 =$ lower

$0.4 \times 10^{-16} \approx 0$

60) $\frac{250}{\sqrt{36}} = 41.67$

a) $\frac{1400 - 1300}{41.67} = 2.3998 \rightarrow$ upper

$P(<1400) = .9918$

b) $\frac{1150 - 1300}{41.67} = -3.6882$ - lower

$P(>1150) = .9998$

61) $\dfrac{500{,}000}{\sqrt{15}} = 129{,}099.44$

$\dfrac{1{,}125{,}000 - 1{,}500{,}000}{129{,}099.44} = -2.9047$ − upper

$P(\leq 1.125) = .0018$

62) $\dfrac{30}{\sqrt{15}} = 7.7460$

$\dfrac{525 - 500}{7.7460} = 3.2275$ lower

$P(>525) = .0006$

63) $np = 12(.96) = 11.52$

$nq = 12(.04) = 0.48$

cannot use normal distribution because $nq < 5$

64) $np = 30(.75) = 22.5$

$nq = 30(.25) = 7.5$

yes

$\mu = 22.5$

$\sigma = \sqrt{30(.75)(.25)}$

$\sigma = 2.37$

69) $45(.67) = 30.15$ $\mu = 30.15$

$45(.33) = 14.85$ $\sigma = 3.154$

yes

$$\frac{20-30.15}{.4702}$$

$$\frac{3.154}{\sqrt{45}} = .4702$$

-21.5

upper $P(<20) \approx 0$

70) $15(.31) = 4.65$

cannot use normal distribution

11) $35(.81) = 28.35$ $\mu = 28.35$

$35(.19) = 6.65$ $\sigma = \sqrt{35(.81)(.19)}$

yes $= 2.3209$

12) $\dfrac{20.5 - 28.35}{2.3209} = -3.3823$ -upper

$P(\leq 20) = 3.594 \times 10^{-4}$

$= 0.0004$

event is extremely unusual because the probability is much less than 0.05