


STATISTICS 1040
Review for Quiz 8

1. About 8 percent of men in the U.S. have some form of color-blindness. Assuming that color-blindness is assigned randomly to men at birth, estimate the chance that of 400 male births in the U.S., fewer than 6 percent will be color-blind.

$\boxed{8.15, 92.05} \rightarrow$ Draw 400 & consider the % is drawn.
 EV for % = 8%
 Box SD = $\sqrt{(0.08)(0.92)} = .27$ SE for % = $\frac{\text{Box SD} \times \sqrt{400} \times 100\%}{400}$
 $\frac{6-8}{1.36} = -1.47$ = $\frac{(.27)(20)}{4} = 1.36$

 $A(1.47) = 86\%$ **7%**

2. A simple random sample of 400 people (over the age of 18) is taken from Utah. Of those sampled, 256 favor fluoridation of the drinking water. Find a 95% confidence interval for the percentage of people in the state who favor fluoridation of the drinking water.

$\boxed{? \text{ is } ? \text{ Os}} \rightarrow$ Draw 400 & consider the % is drawn.
 EV for % is = box % is.
 SE for % is = $\frac{\text{Box SD} \times \sqrt{400} \times 100\%}{400}$
 $\approx \frac{\sqrt{\frac{256}{400} \times \frac{144}{400}} \times \sqrt{400}}{400} \times 100\% = \frac{(.48) \times 20}{4} \% = 2.4\%$
 $64\% \pm 2(2.4\%)$, $64\% \pm 4.8\%$

3. The U.S. Bureau of Labor Statistics regularly collects information on the labor market. From a random sample of 1600 manufacturing workers, the bureau found that workers employed in manufacturing industries earned an average of \$670 per week and the standard deviation for this sample is \$80. Find a 95% confidence interval for the average weekly earnings of all U.S. workers employed in manufacturing industries.

$\boxed{\text{weekly earnings}} \rightarrow$ Draw 1600 + consider AV of draws.
 AV draws = Box AV + chance error.
 $SE = \frac{\text{Box SD} \times \sqrt{1600}}{1600} \approx \frac{80 \times \sqrt{1600}}{1600} = \2
 $\$670 \pm 2 SEs$, $\$670 \pm \4
 How about a 90% C.I.:
 $\$670 \pm (1.65) \2
 $\$670 \pm \3.30