14-7 Volkswagon Passat

x = mpg (mpg per tank)

$x \sim N(\mu, \sigma)$ $\mu = 31$, $\sigma = 3$ mpg/tank

a) 30.4 would not be surprising. It is less than one standard deviation from the mean.

b) since $\bar{x} \sim N(\mu, \frac{\sigma}{\sqrt{n}})$ or $N(\mu, \sigma_{\bar{x}})$ where $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{3}{\sqrt{30}}$

c) same as b), but $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} = \frac{\sigma}{\sqrt{60}}$

d) It is possible the first response could, if the original distribution was so skewed (or strange) that 30.4 might be unlikely, but not b) or c) since $n \geq 30$

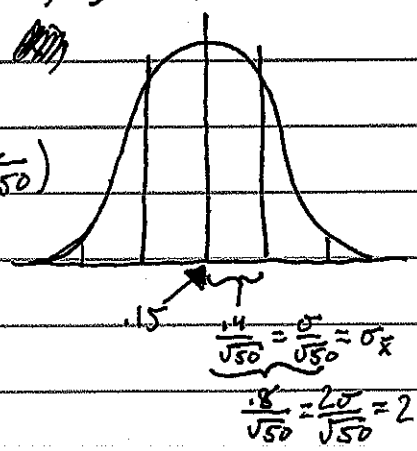
14-12

a) O.U. is a table

b) variable is a tip. It is Quantitative

c) $\mu = .15$ or 15% $\sigma = .04$ or 4%

$\bar{x} \sim N(\mu, \frac{\sigma}{\sqrt{50}})$



d) Between $\pm \sigma_{\bar{x}} = \pm \frac{\sigma}{\sqrt{50}}$ is (by empirical rule) 68% of the data. So within one sample standard deviation