6.80 Let y = the number of the twenty swordfish pieces with a level of mercury above the FDA limit. Then y is a binomial random variable with $n = 20$ and $p = .4$.

a. Using the normal approximation to the binomial, the distribution of y is approximately normal with $\mu = np = 20(.4) = 8$ and $\sigma = \sqrt{npq} = \sqrt{20(.4)(.6)} = \sqrt{4.8} = 2.19$.

6.88 a. From Theorem 6.11, $\chi^2 = \frac{(n-1)s^2}{\sigma^2}$ has a chi-square distribution with $\nu = n - 1 = 10 - 1 = 9$ degrees of freedom.

6.90 $\frac{(n_1-1)s_1^2}{\sigma_1^2}$ has a χ^2 distribution with $\nu_1 = n_1 - 1$ degrees of freedom.

$\frac{(n_2-1)s_2^2}{\sigma_2^2}$ has a χ^2 distribution with $\nu_2 = n_2 - 1$ degrees of freedom.

6.92 Let $A = \frac{(\bar{y}_1 - \bar{y}_2) - (\mu_1 - \mu_2)}{\sqrt{\sigma^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$ Then A has a standard normal distribution.

Let $B = (n_1 + n_2 - 2)s^2 / \sigma^2$ Then B has a χ^2 distribution with $\nu_1 = n_1 + n_2 - 2$ degrees of freedom.

Let $t = \frac{A}{\sqrt{B/(n_1 + n_2 - 2)}}$