6.6

$\bar{x} = 22.3 \quad s = 5.5$

$1-\alpha = 0.95$

$\frac{\alpha}{2} = 0.025$

$z_{0.025} = 1.96$

$22.3 \pm 1.96 \frac{5.5}{\sqrt{100}}$

$= 22.3 \pm 1.08$

$= 22.22, 24.38$

$24.38 - 22.22 = 2.16$

6.7

(1) $\bar{x} = 16.33 \quad s = 4.29$

$1-\alpha = 0.95$

$\frac{\alpha}{2} = 0.025$

$z_{0.025} = 1.96$

$16.33 \pm 1.96 \frac{4.29}{\sqrt{36}}$

$= 16.33 \pm 1.40$

$= (17.73, 14.93)$

(2) $\bar{x} = 16.33 \quad s = 4.29$

$1-\alpha = 0.90$

$\frac{\alpha}{2} = 0.05$

$z_{0.05} = 1.645$

$16.33 \pm 1.645 \frac{4.29}{\sqrt{36}}$

$= 16.33 \pm 1.18$

$= (15.15, 17.51)$

6.8

$\bar{x} = 8.6 \quad s = 3.5 \quad n = 20$

$1-\alpha = 95 \quad z_{0.025} = 1.96$

$\frac{\alpha}{2} = 0.025$

$8.6 \pm 1.96 \frac{3.5}{\sqrt{20}}$

$= 8.6 \pm 1.53 \Rightarrow (6.47, 9.53)$

6.9

$\bar{x} = 31 \quad s = 0.05 \quad z_{\frac{\alpha}{2}} = 1.96$

$\left(\frac{1.96 \times 0.05}{0.01}\right)^2 = 96.04$

$\Rightarrow n \left(\frac{z_{\frac{\alpha}{2}} s}{e}\right)$