# 5.1

## 1

**a** $\frac{1-.95}{2} = .025 = \alpha/2 \Rightarrow Z_{\alpha/2} = 1.96$

**b** $\frac{1-.98}{2} = .01 = \alpha/2 \Rightarrow Z_{\alpha/2} = 2.33$

**c** $\frac{1-.99}{2} = .005 = \alpha/2 \Rightarrow Z_{\alpha/2} = 2.58$

## 4

$99.9 \rightarrow (5.1, 13.6)$
$98 \rightarrow (6.4, 12.3)$
$95 \rightarrow (6.8, 11.9)$

## 6

**a** $\bar{X} \pm Z_{\alpha/2}\sigma_{\bar{X}} \Rightarrow 654.1 \pm 1.96 * \frac{311.7}{\sqrt{50}} = 654.1 \pm 86.4$

**b** $\bar{X} \pm Z_{\alpha/2}\sigma_{\bar{X}} \Rightarrow 654.1 \pm 2.33 * \frac{311.7}{\sqrt{50}} = 654.1 \pm 102.71$

**d** $Z_{\alpha/2}\sigma_{\bar{X}} < 50 \Rightarrow \frac{s*Z_{\alpha/2}}{3}^2 > n \Rightarrow n > 210.98 \Rightarrow n \geq 211$

**e** $Z_{\alpha/2}\sigma_{\bar{X}} < 50 \Rightarrow \frac{s*Z_{\alpha/2}}{3}^2 > n \Rightarrow n > 258.68 \Rightarrow n \geq 259$

## 8

**a** $136.9 \pm 1.96 * \frac{22.6}{\sqrt{123}} = 136.9 \pm 3.99$

**b** $136.9 \pm 2.81 * \frac{22.6}{\sqrt{123}} = 136.9 \pm 5.73$

**d** $\frac{s*Z_{\alpha/2}}{3}^2 > n \Rightarrow 218.01 > n \Rightarrow 219 \geq n$

**e** $\frac{s*Z_{\alpha/2}}{3}^2 > n \Rightarrow 377.758 > n \Rightarrow 378 \geq n$