2.

$e = \frac{\sigma}{\sqrt{n}} \times Z_{\frac{\alpha}{2}}$

(1) $\sigma = 3$. $e = 0.6$.

$\alpha = 1 - 0.95$

$n = \left(\frac{3}{0.5}\right)^2 \times 1.96^2 = 138.3$

≈ 139

(2) $\sigma = 0.2$. $e = 0.03$ $1-\alpha = 0.9$

$n = \left(\frac{0.2}{0.03}\right)^2 \times 1.645^2$

$= 120.27 \approx 121$

(3) $\sigma = 0.05$. $e = 0.02$. $1-\alpha = 0.98$

$n = \left(\frac{0.05}{0.02}\right)^2 \times 2.326^2$

$= 33.8 \approx 34$

6 $1250 \pm Z_{0.025}\sqrt{\frac{140}{120}}$

$= 1250 \pm 25.05$

$\Rightarrow (1224.95, 1247.05)$

10 (1). $\mu_1 - \mu_2 = \bar{x} - \bar{y} = 85 - 78 = 7$

(2) $7 \pm 1.645 \times \sqrt{\frac{154}{50} + \frac{146}{40}}$

$= 7 \pm 1.645 \times 2.59$

$= 7 \pm 1.645 \times 2.59)$

$= (2.74, 11.26)$