

$$e = \frac{\alpha}{\sum \alpha} \times Z \frac{\alpha}{2}$$

$$= \alpha = 3e = 0.5 \quad 1 - \alpha = 0.5$$

$$n = \left( \frac{3}{0.5} \right)^2 \times 1.96^2 = 138.3 \approx 139$$

(2)

$$\alpha = 0.2e = 0.03 \quad 1 - \alpha = 0.97$$

$$n = \left( \frac{0.2}{0.03} \right)^2 \times 1.645^2 = 120.27 \approx 121$$

(3)

$$\alpha = 0.05 \quad e = 0.02 \quad 1 - \alpha = 0.95$$

$$n = \left( \frac{0.05}{0.02} \right)^2 \times 2.326^2 = 33.8 \approx 34$$

6.

$$1250 \pm Z_{0.025} \sqrt{\frac{140^2}{120}}$$

$$= 1250 \pm 25.05$$

$$= (12175.05, 12249.95)$$

10

$$M_1 - M_2 = \bar{x} - \bar{y} = 85 - 78 = 7$$

(2)

$$7 \pm 1.645 \sqrt{\frac{184}{50} + \frac{146}{40}}$$

$$= 7 \pm 1.645 \times 2.59$$

$$= 7 \pm 4.26 \Rightarrow (11.26, 2.74)$$