

1.

$$(1) t_{0.025}(10) = 2.228$$

$$(2) t_{0.95}(8) = -1.86$$

$$1 - 0.05$$

$$(3) \chi^2_{0.05}(12) = 21.026$$

$$(4) \chi^2_{\alpha}(15) = 7.26 \quad \alpha = ?$$

$$\alpha = 0.95$$

$$(5) \chi^2_{0.95}(10) = 3.940$$

$$(6) F_{0.05}(5, 8) = 3.69$$

$$(7) F_{0.95}(6, 7) = \frac{1}{F_{0.05}(7, 6)} = \frac{1}{4.21} = 0.238$$

$$(8) F_{\alpha}(6, 6) = 4.28 \quad \alpha = 0.05$$

$$7. (1) \hat{p} = \frac{45}{80} = 0.56$$

$$(2) Z \frac{\frac{\alpha}{2} \sqrt{\hat{p}(1-\hat{p})}}{2} = Z_{0.025} \sqrt{\frac{0.56 \times 0.44}{80}}$$

$$= 1.96 \times 0.06 = 0.12$$

$$(3) \hat{p} \pm Z \frac{\frac{\alpha}{2} \sqrt{\hat{p}(1-\hat{p})}}{2}$$

$$= 0.56 \pm Z_{0.025} \sqrt{\frac{0.56 \times 0.44}{80}}$$

$$= 0.56 \pm 1.96 \times 0.06$$

$$= 0.56 \pm 0.12 \Rightarrow (0.44, 0.68)$$

$$8. \hat{p}_1 = 0.55 \quad \hat{p}_2 = 0.6$$

$$(\hat{p}_1 - \hat{p}_2) \pm Z \frac{\frac{\alpha}{2} \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}}{2}$$

$$= (0.55 - 0.6) \pm Z_{0.025} \sqrt{\frac{0.55 \times 0.45}{100} + \frac{0.6 \times 0.4}{100}}$$

$$= -0.05 \pm 1.96 \times 0.07$$

$$= -0.05 \pm 0.14$$

$$21. (1) \hat{p} = \frac{105}{250} = 0.42$$

$$0.42 \pm Z_{0.05} \sqrt{\frac{0.42 \times 0.58}{250}}$$

$$= 0.42 \pm 1.645 \times 0.03$$

$$= 0.42 \pm 0.05 \Rightarrow (0.37, 0.47)$$

$$(2) \textcircled{a} \hat{p} = 0.3, e = 0.03, 1 - \alpha = 0.95$$

$$e = \frac{\sigma}{\sqrt{n}} \times Z$$

$$n = \left(\frac{Z}{e} \right)^2 \times \hat{p} \times (1 - \hat{p})$$

$$n = \left(\frac{1.96}{0.03} \right)^2 \times 0.3 \times 0.7 = 896.37$$

$$\approx 897$$

$$\textcircled{b} \hat{p} = 0.42$$

$$n = \left(\frac{1.96}{0.03} \right)^2 \times 0.42 \times 0.58 = 1039.99$$

$$\approx 1040$$

$$\textcircled{c} \hat{p} = 0.5$$

$$n = \left(\frac{1.96}{0.03} \right)^2 \times 0.5 \times 0.5 = 1067.11$$

$$\approx 1068$$

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

$$(1) \quad \sigma = 3, e = 0.5, 1 - \alpha = 0.95$$

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

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

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

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

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

$$6. \quad 1250 \pm Z_{0.025} \sqrt{\frac{140^2}{125}}$$

$$= 1250 \pm 25.05 \Rightarrow (1224.95, 1275.05)$$

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

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

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

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