

Solutions to MLCM353 Exercises

1) (See Video Solution)

(a) 2807.94

(b) ${}_{32}q_{37} \stackrel{ILT}{=} , 27268$

(c) -54.135

(d) 690,400

2) (See Video Solution)

(a) 315.84

(b) .37552

(c) -50

(d) 194,560

3) (See Video Solution)

$P \approx .1292$

$$4) \quad {}_0L = 8000 Z_{35:\overline{17}|} - 300 \ddot{Y}_{35:\overline{17}|}$$

$$= \left(8000 + \frac{300}{d}\right) Z_{35:\overline{17}|} - \frac{300}{d}$$

$$\text{Var}({}_0L) = \left(8000 + \frac{300}{d}\right)^2 \left[{}^2A_{35:\overline{17}|} - (A_{35:\overline{17}|})^2 \right]$$

$$d = \frac{.06}{1.06}$$

$$\left. \begin{aligned} A_{35:\overline{17}|} &= A_{35} - {}_{17}E_{35} \cdot A_{52} + {}_{17}E_{35} \\ {}^2A_{35:\overline{17}|} &= {}^2A_{35} - {}^2{}_{17}E_{35} \cdot {}^2A_{52} + {}^2{}_{17}E_{35} \end{aligned} \right\} \begin{array}{l} \text{See \#8} \\ \text{from MLCM252} \\ \text{Exercises} \end{array}$$

$$\therefore \sqrt{\text{Var}({}_0L)} = 806.93$$

$$5) {}_0L = \left(1 + \frac{.025}{\delta}\right) \bar{Z}_{40} - \frac{.025}{\delta}$$

$$\text{Var}({}_0L) = \left(1 + \frac{.025}{\delta}\right)^2 \left[{}^2\bar{A}_{40} - (\bar{A}_{40})^2 \right]$$

$$\delta = \ln(1.05)$$

$$\bar{A}_{40} = \frac{1}{60} \bar{a}_{\overline{60}|} = \frac{1}{60} \cdot \frac{1 - v_{.05}^{60}}{\delta} = \boxed{1}$$

$${}^2\bar{A}_{40} = \frac{1}{60} \cdot \frac{1 - v_{.05}^{120}}{2\delta} = \boxed{2}$$

$$\therefore \text{Var}({}_0L) = \left(1 + \frac{.025}{\ln(1.05)}\right)^2 \left[\boxed{2} - (\boxed{1})^2 \right] = .15046$$