

# Solutions to MLCM352 Exercises

1) (See Video Solution)

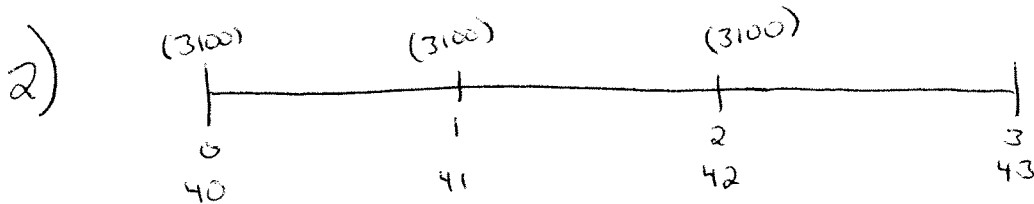
(a) 2041.97

(b) -106.4

(c) 457,779.04

(d)  $K < 27$

(e)  $27 \bar{a}_{35}^{\overline{ILT}} = .15567$



(a)  $({}_0L|T=1.5) = 10000 v_{.05}^{1.5} - 3100 - 3100 v_{.05} = 3241.91$

(b)  $({}_0L|T=4.5) = 10000 v_{.05}^3 - 3100 \ddot{a}_{3|.05} = -225.80$

3) (See Video Solution)

(a) 452.49

(b) 2,384,200

(c) 0.72

(d) 900

(e) 552.63

$$4) \quad {}_0L = X \cdot Z_{50:\overline{10}|} - 150 \ddot{Y}_{50:\overline{10}|}$$

$$E[{}_0L] = X \cdot A_{50:\overline{10}|} - 150 \ddot{a}_{50:\overline{10}|} = 0$$

$$\Rightarrow X = \frac{150 \ddot{a}_{50:\overline{10}|}}{A_{50:\overline{10}|}} = \frac{150 \ddot{a}_{50:\overline{10}|}}{1 - d \ddot{a}_{50:\overline{10}|}}$$

$$\therefore X = 2000$$

$$5) \quad {}_0L = 10000 \bar{Z}_x - \pi \cdot \bar{Y}_x$$

$$E[{}_0L] = 10000 \bar{A}_x - \pi \bar{a}_x = 0$$

$$\Rightarrow \pi = \frac{10000 \bar{A}_x}{\bar{a}_x} = \frac{10000 \bar{A}_x}{\left(\frac{1 - \bar{A}_x}{s}\right)} = \frac{10000s \cdot \bar{A}_x}{1 - \bar{A}_x}$$

$$\therefore \pi = 600$$

$$6) \quad {}_0L = 100000 Z_{\overline{30:35}} - 4000 \ddot{Y}_{30:35}$$

$$E[{}_0L] = 100000 A_{\overline{30:35}} - 4000 \ddot{a}_{30:35}$$

$$\ddot{a}_{30:35} = \frac{1 - A_{30:35}}{d} = \frac{1 - .6}{.05} = 8$$

$$A_{50} = 1 - d \ddot{a}_{50} = 1 - .05(9.4) = .53$$

$$\therefore A_{\overline{30:35}} = A_{30} + A_{50} - A_{30:50} = .38 + .53 - .6 = .31$$

$$\therefore E[{}_0L] = 100000 (.31) - 4000 (8) = -1000$$

$$7) \quad {}_0L = 60000 \cdot {}_{20|}\ddot{Y}_{40} - \frac{16000}{\cancel{24000}} \ddot{Y}_{40:\overline{20}|}$$

$$E[{}_0L] = 60000 \cdot {}_{20|}\ddot{a}_{40} - \frac{16000}{\cancel{24000}} \ddot{a}_{40:\overline{20}|}$$

$$\ddot{a}_{40:\overline{20}|} = \ddot{a}_{40} - {}_{20}E_{40} \cdot \ddot{a}_{60} \stackrel{\text{FLT}}{=} 11,7612 \quad \text{II}$$

$${}_{20|}\ddot{a}_{40} = {}_{20}E_{40} \cdot \ddot{a}_{60} \stackrel{\text{FLT}}{=} 3,0554 \quad \text{II}$$

$$\therefore E[{}_0L] = 60000 \text{ (II)} - \frac{16000}{\cancel{24000}} \text{ (II)} = -4855,20$$