MLC Module 1 Section 4 Exercises

1. Given \( l_{50} = 600 \) and \( l_{51} = 560 \), determine each of the following:
   (a) \( l_{50.25} \) using the UDD assumption
   (b) \( l_{50.6} \) using the CF assumption

2. Given \( l_{47} = 1000 \), and \( p_{47} = .95 \), and \( 2p_{47} = .90 \) determine each of the following:
   (a) \( l_{48.5} \) using the UDD assumption
   (b) \( l_{48.3} \) using the CF assumption

3. Using ILT mortality, determine each of the following:
   (a) \( 0.2q_{65.3} \) using the UDD assumption
   (b) \( 1.5p_{72.2} \) using the CF assumption

4. Given \( q_{30+k} = 0.1 + 0.05k \) for \( k = 0, 1, 2, \) and \( 3 \), determine each of the following:
   (a) \( 0.2q_{31} \) using the UDD assumption
   (b) \( 1.5p_{32} \) using the CF assumption
   (c) \( 0.4|0.6q_{30.8} \) using the UDD assumption
   (d) \( 1.7|0.8q_{31} \) using the CF assumption

5. Given \( k_{1}q_{50} = 0.01(k + 1) \) for \( k = 0, 1, 2, \) and \( 3 \), determine each of the following:
   (a) \( 0.2q_{50} \) using the UDD assumption
   (b) \( 1.5p_{51} \) using the CF assumption
   (c) \( 0.6|0.4q_{50.8} \) using the UDD assumption
   (d) \( 1.8|0.7q_{51} \) using the CF assumption

6. Given \( q_{k} = 0.15 - .05k \), for \( k = 0, 1, \) and \( 2 \), determine
   (a) \( t^{p} \) for \( 0 \leq t \leq 1 \) using the UDD assumption
   (b) \( t^{p} \) for \( 0 \leq t \leq 1 \) using the UDD assumption

7. From a population of 1000 30-year-olds, you are given \( n_{d_{30}} = 20n \) for \( 0 \leq n \leq 20 \) and \( n_{d_{50}} = 30n \) for \( 0 \leq n \leq 20 \). Determine \( 30p_{35} \).

8. Given \( t^{p}_{30} = (.9)^{t} \) for \( 0 \leq t \leq 20 \) and \( t^{p}_{50} = (.8)^{t} \) for \( 0 \leq t \leq 20 \), determine \( 30p_{35} \).