STAT 472
Spring 2021
Quiz 3
February 16, 2021

1. You are given:

    a. $q_{85} = 0.2$

    b. $q_{86} = 0.4$

    c. Deaths are uniformly distributed between age 85 and 86.

    d. There is a constant force of mortality between age 86 and 87.

    Calculate $_{0.8}q_{85.4}$.

2. You are given:

    a. $q_{85} = 0.2$

    b. $q_{86} = 0.4$

The Massey Insurance Company has 10,000 insureds who are exact age 85.

Let L_2 be the random variable that represents the number of insureds still alive after 2 years.

Calculate the $E[L_2]$ and $Var[L_2]$.

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   b. $q_{86} = 0.4$

   c. Deaths are uniformly distributed between age 85 and 86.

   d. There is a constant force of mortality between age 86 and 87.

   Calculate $_{0.4|0.7}q_{85.6}$.

2. You are given the following one year select and ultimate mortality table:

$[x]$	$q_{[x]}$	q_{x+1}	$x+1$
80	0.05	0.10	81
81	0.07	0.12	82
82	0.10	0.15	83
83	0.13	0.19	84

If $l_{[81]} = 100,000$, calculate $l_{[80]}$.