

STAT 472

Quiz 3

Fall 2019

September 19, 2019

1. You are given that mortality follows the following select and ultimate mortality table:

$[x]$	$q_{[x]}$	$q_{[x]+1}$	q_{x+2}	$x+2$
101	0.10	0.30	0.50	103
102	0.20	0.40	0.80	104
103	0.25	0.50	1.00	105

Further, you are given that $d = 0.10$.

Let Z be the present value random variable for a whole life insurance on (102) that pays a death benefit of 2000 at the end of the year of death.

Calculate the $E[Z] + \sqrt{\text{Var}[Z]}$.

2. You are given:

i. $A_{60} = 0.500$

ii. ${}^2A_{60} = 0.350$

iii. $p_{59} = 0.97$

iv. $p_{60} = 0.96$

v. $i = 0.10$

Let Z be the present value random variable for a whole life to (59) with a death benefit of 1 paid at the end of the year of death.

Calculate the $Var[Z]$.

STAT 472

Quiz 3

Fall 2019

September 19, 2019

1. You are given that mortality follows the following select and ultimate mortality table:

$[x]$	$q_{[x]}$	$q_{[x]+1}$	q_{x+2}	$x+2$
101	0.10	0.30	0.50	103
102	0.20	0.40	0.80	104
103	0.25	0.50	1.00	105

During the first two years, deaths are assumed to be distributed uniformly between integral ages. After two years, it is assumed that we have a constant force of interest.

Calculate ${}_{0.6}P_{[102]+1.8}$.

2. You are given the following mortality table:

x	q_x
106	0.10
107	0.20
108	0.30
109	0.40
110	0.50
111	0.60
112	0.70
113	0.80
114	0.90
115	1.00

You are also given that $i = 0.10$.

Calculate $12,000 A_{106:\overline{4}|}^1$.