

Question #21**Answer: A**

k	$\min(k, 3)$	$f(k)$	$f(k) \times (\min(k, 3))$	$f(k) \times [\min(k, 3)]^2$
0	0	0.1	0	0
1	1	$(0.9)(0.2) = 0.18$	0.18	0.18
2	2	$(0.72)(0.3) = 0.216$	0.432	0.864
3+	3	$1 - 0.1 - 0.18 - 0.216 =$ 0.504	<u>1.512</u>	<u>4.536</u>
			2.124	5.580

$$E[\min(K, 3)] = 2.124$$

$$E\left\{[\min(K, 3)]^2\right\} = 5.580$$

$$\text{Var}[\min(K, 3)] = 5.580 - 2.124^2 = 1.07$$

Note that $E[\min(K, 3)]$ is the temporary curtate life expectancy, $e_{x:\overline{3}|}$ if the life is age x .

Question #22**Answer: B**

$$S_0(60) = \frac{e^{-(0.1)(60)} + e^{-(0.08)(60)}}{2}$$

$$= 0.005354$$

$$S_0(60) = \frac{e^{-(0.1)(61)} + e^{-(0.08)(61)}}{2}$$

$$= 0.00492$$

$$q_{60} = 1 - \frac{0.00492}{0.005354} = 0.081$$