

Question #4

Answer: C

Let ns = nonsmoker and s = smoker

$k =$	$q_{x+k}^{(ns)}$	$p_{x+k}^{(ns)}$	$q_{x+k}^{(s)}$	$p_{x+k}^{(s)}$
0	.05	0.95	0.10	0.90
1	.10	0.90	0.20	0.80
2	.15	0.85	0.30	0.70

$$A_{x:\overline{2}|}^{1(ns)} = v q_x^{(ns)} + v^2 p_x^{(ns)} q_{x+1}^{(ns)}$$
$$\frac{1}{1.02} (0.05) + \frac{1}{1.02^2} 0.95 \times 0.10 = 0.1403$$

$$A_{x:\overline{2}|}^{1(s)} = v q_x^{(s)} + v^2 p_x^{(s)} q_{x+1}^{(s)}$$
$$\frac{1}{1.02} (0.10) + \frac{1}{(1.02)^2} 0.90 \times 0.20 = 0.2710$$

$$A_{x:\overline{2}|}^1 = \text{weighted average} = (0.75)(0.1403) + (0.25)(0.2710)$$
$$= 0.1730$$