

Question #288

Answer: C

The benefit premium in year one is vq_{50} . By the equivalence principle:

$$10,000(vq_{50} + v^2 p_{50}q_{51} + v^3 p_{50}p_{51}q_{52}) = 10,000vq_{50} + (vp_{50} + v^2 p_{50}p_{51})\pi$$

$$10,000\left(\frac{0.95(0.06)}{1.04^2} + \frac{0.95(0.94)(0.07)}{1.04^3}\right) = \left(\frac{0.95}{1.04} + \frac{0.95(0.94)}{1.04^2}\right)\pi$$

$$1082.708665 = 1.739090\pi$$

$$\pi = 622.5719$$

$${}_2V = 10,000(0.07) / 1.04 - 622.5719 = 50.51.$$