

133. Solution: B

$$\Pr(\text{man dies before age 50}) = \Pr(T < 50 \mid T > 40)$$

$$= \frac{\Pr(40 < T < 50)}{\Pr(T > 40)} = \frac{F(50) - F(40)}{1 - F(40)}$$

$$= \frac{e^{-\frac{1-1.1^{40}}{1000}} - e^{-\frac{1-1.1^{50}}{1000}}}{e^{-\frac{1-1.1^{40}}{1000}}} = 1 - e^{-\frac{(1.1^{40} - 1.1^{50})}{1000}}$$

$$= 0.0696$$

$$\text{Expected Benefit} = 5000 \Pr(\text{man dies before age 50}) = (5000) (0.0696) = 347.96$$