Question #196
Answer: E

If (40) dies before 70, he receives one payment of 10, and Y = 10. The probability of this is (70 – 40)/(110 – 40) = 3/7

If (40) reaches 70 but dies before 100, he receives 2 payments.

$Y = 10 + 20v^{30} = 16.16637$

The probability of this is also 3/7.

If (40) survives to 100, he receives 3 payments.

$Y = 10 + 20v^{30} + 30v^{60} = 19.01819$

The probability of this is 1 – 3/7 – 3/7 = 1/7

$E(Y) = (3/7)\times 10 + (3/7)\times 16.16637 + (1/7)\times 19.01819 = 13.93104$

$E(Y^2) = (3/7)\times 10^2 + (3/7)\times 16.16637^2 + (1/7)\times 19.01819^2 = 206.53515$

$Var(Y) = E(Y^2) - [E(Y)]^2 = 12.46$

Since everyone receives the first payment of 10, you could have ignored it in the calculation.