

### Question #131

Key: E

$$E(S) = \lambda E[X] = 2/3(1/4 + 2/4 + 3/2) = 2/3 \times 9/4 = 3/2$$

$$\text{Var}(S) = \lambda E[X^2] = 2/3(1/4 + 4/4 + 9/2) = 23/6$$

So cumulative premium to time 2 is  $2(3/2 + 1.8\sqrt{23/6}) = 10$ , where the expression in parentheses is the annual premium

Times between claims are determined by  $-(1/\lambda) \log(1-u)$  and are 0.43, 0.77, 1.37, 2.41

So 2 claims before time 2 (second claim is at 1.20; third is at 2.57)

Sizes are 2, 3, 1, 3, where only the first two matter.

So gain to the insurer is  $10 - (2+3) = 5$