**  
 Additional Guidance**

**Initial exposed to risk and expected claims**

Let *E*(*x*) denote the initial exposed to risk at age *x* for an individual policyholder. This is

broadly the time which that policyholder spent under observation whilst aged *x,* during the

period of the investigation.

This time spent under observation multiplied by the individual’s sum assured gives an

individual amount exposed to risk :

Summing this over all individuals who are aged *x* at some point during the investigation

period gives the total initial amounts exposed to risk at age *x*:

The total **expected amount of claims at age *x*** will then be:

where is the corresponding initial rate of mortality.

**Derivation of term assurance factors payable at the end of the year of death**

The term assurance factor for age *x* and term *n* can be derived using the recursive

relationship:



This gives the term assurance factor for a claim which is payable at the end of the year of

Death (.i.e expected present value of claim outgo).

**Derivation of temporary single life annuity factors payable in advance**

The annuity in advance factor for age *x* and term *n* can be derived using the recursive

relationship:



This gives the annuity factor for a $1 which is payable at the beginning of the year (.i.e expected present value of $1).