p. 10: $M = 1 + \frac{A_p - E_p}{E + K_E} + \frac{A_e - E_e}{E + J_E}$.

p. 11: $K_E = \mathbf{E} \frac{0.1E + 2570G}{E + 700G}$, subject to a minimum of 7500.

$J_E = \mathbf{E} \frac{0.75E + 203825G}{E + 5100G}$, subject to a minimum of 150,000.

p. 31, sol. 1.19: $M = 1 + Z_p \frac{A_p - E_p}{E} + Z_e \frac{A_e - E_e}{E}$.

p. 40, second exercise: Rule 1b: These policies should cover no more than 45 months; in which case we would exclude the oldest one of these policies.
These policies cover the period 10/1/03 to 7/1/07, a period of 45 months which is okay.
Thus we use policies effective: 10/1/03, 10/1/04, 10/1/05, 10/1/06.

p. 59, sol. 2.2: $B = 0.1E + \frac{2500\ E\ 5.9}{E + (700)(5.90)} = (0.1)(25 \text{ million}) + \frac{2500\ (25 \text{ million})\ 5.9}{25 \text{ million} + (700)(5.90)} =$

2.5 million + **14,748** = 2,514,748. $Z_p = E/(E + B) = 25/27.51 = 90.9\%$.

page 64, sol. 2.10:
Need **either** at least column A premium, $12,000, over the most recent 24 months of the experience period, or at least column B, $6000, average premium over the experience period.
For the first three employers, the experience period is 2009, 2010, and 2011 policies.
For Employer 1, the average premium over the experience period is:
(6000 + 6000 + 5000)/3 = $5667 < $6000. Employer #1 does not qualify under this possibility.
However, the total premium over the last 24 months of the experience period is:
6000 + 6000 = 12,000 ≥ 12,000, so **Employer 1 is eligible for experience rating**.
For Employer 2, the average premium over the experience period is:
(3000 + 9000 + 3000)/3 = $6000. Thus Employer #2 is eligible.
For Employer 2, the premium over the most recent 24 months of the experience period is:
3000 + 9000 = $12,000. So Employer #2 is also eligible under this possibility.
Employer #2 is eligible for experience rating.
For Employer 3, the average premium over the experience period is:
(6000 + 5000 + 7000)/3 = $6000. **Employer 3 is eligible for experience rating**.
Based on Rule 2.E.1, the experience period is determined as follows:

- Policies not less than 21 months before effective date.
- Policies not more than 57 months before effective date.
- Not more than 45 months of experience; delete oldest policy if necessary.

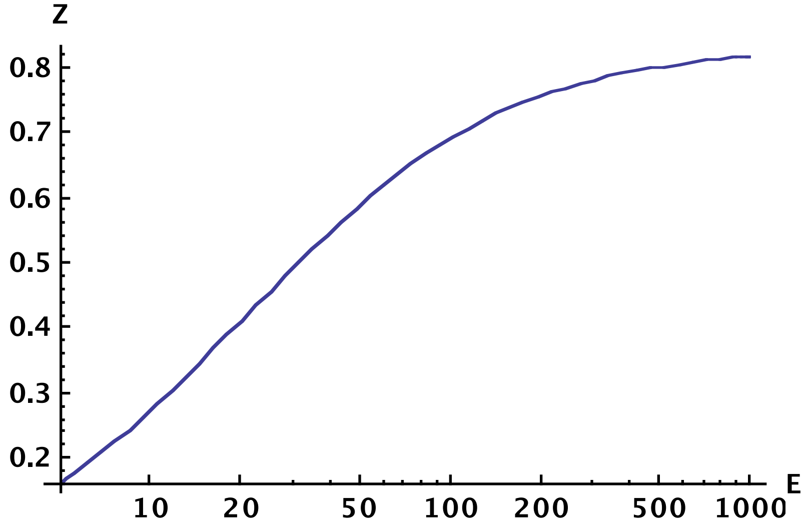
Therefore, for Employer #4, the experience period is the 2008, 2009, 2010, and 2011 policies.
For Employer 4, the average (annual) premium over the experience period is:
(7000 + 5000 + 4000 + 7000) / (45/12) = $6133 > $6000. Thus Employer #4 qualifies.
Alternately, the premium for policies within the most recent 24 months of the experience period is:
7000 + 5000 = $12,000. **Employer #4 is eligible for experience rating**.

page 78, sol. 2.33: a. For eligibility see rule 2.
Need **either** at least column A premium over the most recent 24 months of the experience period or at least column B average premium over the experience period.
For Alabama for 2011: Column A = \$10,000 and Column B = \$5000.
For both employers, the experience period is the 2007, 2008, and 2009 policies.
For both employers, the premium over the most recent 24 months of the experience period is:
\$5000 + \$5000 = \$10,000. So both employers barely qualify under the first part of the rule.
Thus both **Employer A and B are eligible for experience rating**.
b. For Employer A, only the first two claims are in its experience period of 2007, 2008 and 2009.
For the medical only claim, primary is (5000)(0.3) = 1500 and excess is (8000 - 5000)(0.3) = 900.
We limit the large claim by the accident limit of \$158,000.
A_p = 1500 + 5000 = 6500. A_e = 900 + 153,000 = \$153,900.
We are given E = \$19,600 and E_e = \$16,072.
Based on E, W = 0.09 and B = \$15,750.
Therefore, $M = \frac{6500 + (0.09)(153,900) + (0.91)(16,072) + 15,750}{19,600 + 15,750}$ = **1.43**.

For Employer B, 126% debit modification.
Comment: This solution to part (a) differs from that shown in the CAS sample solutions.
For Employer A, the average premium over the experience period is:
(5000 + 5000 + 4000)/3 = \$4667 < \$5000.
Thus Employer A would not qualify for experience rating under this possibility.
For Employer B, the average premium over the experience period is:
(5000 + 5000 + 6000)/3 = \$5333 ≥ \$5000.
Thus Employer B would also qualify for experience rating under this possibility.

p. 133, Q. 4.20, rewrite this past exam question (9, 11/97 Q.30):
The rating period is from 1/1/99 to 12/31/99.
As rewritten, we will be calculating experience mods on policies effective during 1999.
To do so, we will use data from policies effective during 1997, 1996, and 1995.
This is two years more recent than the data used to calculate G; thus the trend period is two years.
In the original exam question, we will be calculating experience mods on policies effective during 1996. To do so we will use data from policies effective during 1994, 1993, and 1992.
This is one year older than the data used to calculate G; this makes no sense.

p. 206, sol. 5.3: The last graph shown is for E/(1.1 + 25) rather than E/(1.2 + 25) as asked about.
Z = E/(1.**2**E + 25) results in smaller credibilities for large risks:



page 283, sol. 6.30:
In the ISO plan one adds a provision for expected unreported to the reported losses. Loss Development is backed out in the calculation of the Expected Loss Rates used in the NCCI Plan.
Expected losses are detrended in the ISO Plan but not the NCCI Plan.
Inflation is backed out in the calculation of the Expected Loss Rates used in the NCCI Plan.

page 288, sol. 6.39: I included an LDF for the occurrence policy for 2001, in order to calculate the expected unreported losses. This is what is usually done. (For claims-made the LDF would be 0.)
However, this exam question does states that the losses for the occurrence policies are fully developed (which is unusal.) Thus, it would have been better to have an expected unreported of 0.
The CAS seems to have accepted both solutions.

page 291, sol. 6.46: Alternately, use the given 6% annual trend, and the detrend factors become: $1/1.06^2$, $1/1.06^3$, $1/1.06^4$.

	Premium	ELR	Policy Adj. Factor 1	Policy Adj. Factor 2	Detrend Factor	Subject Loss Cost
Latest	323,125	0.8	1.16	0.44	0.890	117,425
2nd Latest	323,125	0.8	1.16	1	0.840	251,768
3rd Latest	323,125	0.8	1.16	1	0.792	237,517
						606,710
Subject Loss Cost	EER	LDF	Expected Unreported			
117,425	0.973	0.6	0	no provision; it is a claims made policy		
251,768	0.973	0.45	110,237			
237,517	0.973	0.35	80,886			
			191,123			

Consulting Table 16, with 606,710 in company subject premium:
Z = 0.68, EER = 0.973, MSL = 257,000.
Claim #1 is not in the experience period.
Assuming a $100,000 basic limit as in Rule 5A of the Experience Rating Manual:

Claim Number	Basic Limit Loss and Unlimited ALAE	Limited by MSL
2	$200,611	$200,611
3	$185,000	$185,000
4	$137,000	$137,000
5	$538,250	$257,000
Total		$779,611

AER = (779,611 + 191,123) / 606,710 = 1.600.
M = (0.68)(1.600 - 0.973) / 0.973 = **43.8% debit**.
Comment: The CAS seems to have accepted either of the two alternative solutions.

page 374, sol. 7.30: remove the Zs from the righthand side of the equation.

$6Z_1 + 0.9Z_2 + 0.81Z_3 + 0.729Z_4 + 0.6561Z_5 = 0.59049$.

$0.9Z_1 + 6Z_2 + 0.9Z_3 + 0.81Z_4 + 0.729Z_5 = 0.6561$.

$0.81Z_1 + 0.9Z_2 + 6Z_3 + 0.9Z_4 + 0.81Z_5 = 0.729$.

$0.729Z_1 + 0.81Z_2 + 0.9Z_3 + 6Z_4 + 0.9Z_5 = 0.81$.

$0.6561Z_1 + 0.729Z_2 + 0.81Z_3 + 0.9Z_4 + 6Z_5 = 0.9$.

Also the final solution is not correct.
Solving: Z_1 = 5.525%, Z_2 = 6.373%, Z_3 = 7.560%, Z_4 = 9.150%, Z_5 = 11.228%.

5.525% + 6.373% + 7.560% + 9.150% + 11.228% = 39.836%.
The remaining weight of 60.164% is given to the a priori mean.

page 466, sol. 8.49: adding vertical strips: $\int_d^u (x - d) f(x) dx$ + **(u-d)G(u)**.

page 500, 3rd line from the bottom: H = ($cr_H\hat{E}$ + b + cF)T =

page 527, sol. 9.5: As the loss limit approaches zero, all of the losses are eliminated from the retro calculation. Thus by the definition of the LER here, which differs from that used for deductibles, the LER approaches **one**. Thus the multiplier asymptotically approaches infinity.

page 535, sol. 9.17: b. For the eight risks the expected loss ratio is:
E = {0.1 + 0.2 + 0.4 + 0.6 + 0.7 + (2)(0.9) + 1.1}/10 = 0.6125 = (49)(10)/8.

Loss Ratio	# > L. R.	Sum Upwards	Charge	Entry Ratio	Savings
0	8	49	1.0000	0.0000	0.0000
0.1	7	41	0.8367	0.1633	0.0000
0.2	6	34	0.6939	0.3265	0.0204
0.3	6	28	0.5714	0.4898	0.0612
0.4	5	22	0.4490	0.6531	0.1020
0.5	5	17	0.3469	0.8163	0.1633
0.6	4	12	0.2449	0.9796	0.2245
0.7	3	8	0.1633	1.1429	0.3061
0.8	3	5	0.1020	1.3061	0.4082
0.9	1	2	0.0408	1.4694	0.5102
1	1	1	0.0204	1.6327	0.6531
1.1	0	0	0.0000	1.7959	0.7959

For example, 22 + 6 = 28. 28/49 = 0.5714. 0.3/0.6125 = 0.4898.
0.5714 + 0.4898 - 1 = 0.0612.
c. From the previous solution, e = 96,000 / 100,000 - 0.59 = 0.96 - 0.59 = 0.37.
We assume this is the appropriate provision for expenses for these insureds.
We need to change the maximum and/or the minimum loss ratio. For example, if we keep the minimum the same and raise the maximum loss ratio, then S_H = 0.0204.

b = cE(X_G - S_H) + e - E(c - 1). ⇒ 0.264 = (1.15) (0.6125) (X_G - 0.0204) + 0.37 - (0.6125)(0.15).

⇒ X_G = 0.0003. Thus, using the table in part (b), the new maximum loss ratio should be **110.0%**.

page 537, sol. 9.24, 2nd line from the bottom: e + E **+** cE(X_G - X_H).

⇒ **X_H - X_G = (e + E - H/T)/(cE)**.

page 543, sol. 9.43: $750,000 - $119,500 = $630,**5**00.

page 548, has solution 9.50b, while solution 9.50a is on page 546.

page 552: remove “Part 4F has a list of hazard groups for each class.”

page 590, sol. 10.4: Rule 1.F states that we should limit each multi-person accident to its two most costly claims and then limit that sum to the accident limit, which in this case is $100,000.
"$50,000, $40,000, and $30,000, three workers injured in a single accident."
Step one, only include the two biggest claims: $50,000 and $40,000.
Step two, limit there sum to $100,000; but their sum is already $90,000.
94,600+10,000+25,000+75,000+ **90,000** +100,000 = 394,600.
The total limited losses become 394,600. The retro premium becomes 622,438.
When retro rating, if we have three or more persons injured in an accident, then step one, limit to the two largest claims. Step two limit their sum to the accident limit. I failed to apply step one of rule 1.F.

page 591, sol. 10.6: Rule 1.F states that we should limit each multi-person accident to its two most costly claims and then limit that sum to the accident limit, which in this case is not mentioned.
We limit the result of the explosion to: $400,000 + $600,000 = $1 milion
The total losses become 1,182,000. The retro premium becomes 1,485,691.

page 602, sol. 10.36: The Excess Loss Premium and the Retro Development Premium are reversed. However, the final answer is correct.

page 614: (0.2)(0.5) + (0.2)(0.1) + (0.2)(0.1) + 0 + 0 = 0.14.

page 615: (0.2 - 0)(0.8 - 0.4) + (0.6 - 0)(0.9 - 0.8) = 0.14.

page 632: The insurance **savings** is a increasing function of r, which is concave upwards.

page 681: The calculated Table L Insurance Charges were a little too big:

Loss ($ million)	Entry Ratio	Insurance Charges (Table M) Infinite Accident Limit	Insurance Charges (Table L) 500,000 Accident Limit	Insurance Charges (Table L) 100,000 Accident Limit
1.0	0.583	0.4174	0.4174	0.4174
1.5	0.875	0.1824	0.1825	0.2013
2.0	1.166	0.0778	0.0835	0.1695
2.5	1.458	0.0383	0.0578	0.1691
3.0	1.749	0.0248	0.0532	0.1691
3.5	2.041	0.0193	0.0526	0.1691
4.0	2.332	0.0158	0.0525	0.1691
4.5	2.624	0.0127	0.0525	0.1691
5.0	2.915	0.0098	0.0525	0.1691

page 682: For example, if the maximum premium corresponds to limited aggregate losses of \$2.5 million, then r_G = \$2.5 million/\$1,625,000 = 1.538.

The insurance charge out of Table M_{500000} is 0.0056.

This Table M_D charge is multiplied by the expected limited losses, in this case \$1,625,000, while the excess ratio is multiplied by the expected unlimited losses, in this case \$1,715,000.
(0.0056)(1.625) + (0.0525)(1.715) = \$0.0991 million.
Using the corresponding corrected Table L charge from page 681 of 0.578, we multiply by the expected unlimited losses: (0.0578)(1.715) = \$0.0991 million, matching the previous amount.
Done consistently, using Table M_D and ELFs should get you to the same place as using Table L.

page 683: The calculated Table L Insurance Charges were a little too big:

Loss ($100,000)	Entry Ratio	Insurance Charges (Table M) Infinite Accident Limit	Insurance Charges (Table L) 500,000 Accident Limit	Insurance Charges (Table L) 100,000 Accident Limit
1.0	0.583	0.4628	0.4628	0.4628
1.5	0.875	0.3083	0.3083	0.3084
2.0	1.166	0.2247	0.2247	0.2270
2.5	1.458	0.1816	0.1816	0.1908
3.0	1.749	0.1569	0.1569	0.1765
3.5	2.041	0.1392	0.1392	0.1714
4.0	2.332	0.1240	0.1240	0.1698
4.5	2.624	0.1095	0.1095	0.1693
5.0	2.915	0.0952	0.0952	0.1691

page 683: For example, for an entry ratio of 1.458, the charges are:

	Larger Insured, λ = 100	Smaller Insured, λ = 10
Table M (no accident limit)	0.0383	0.1816
Table L, 500,000 accident limit	0.0578	0.1816
Table L, 100,000 accident limit	0.1691	0.1908

page 816: As correctly stated in my study guide, if the accident limit is less than or equal to \$100,000, then use the empirical excess ratio for the adjusted data for that hazard group.
In step 5, the empirical excess ratio at 100,000 for that hazard group is from Exhibit 3, as shown in the example on page 817 of my study guide.
However, at page 140 of this syllabus reading, the last line should say Exhibit 3 rather than Exhibit 2. Exhibit 3 is based on the adjusted data.
By comparing the values in Exhibits 8 and Exhibit 3 of the paper, one can see that the values for low limits came from Exhibit 3 rather than Exhibit 2.

page 852, sol. 14.27: Entry ratio correspond. to 250,000: (250,000 - 150,000)/**188,315** = 0.531.
The mean of the given mixed distribution is close to 1; however, 0.9930 ≠ 1
On an exam, one could just leave the scale parameters alone as done in my solution, in which case it would not hurt to mention one is doing so.
Alternately, as per the syllabus reading, one could divide each scale parameter by 0.9930, so that the mixed distribution has a mean of one.
Then the mean of Exponential would be: 0.6270 / 0.9930 = 0.6314, and the scale parameter of the Pareto would be: 1.4950/0.9930 = 1.5055.
Then of course the resulting excess ratios would be slightly different than shown in my solution.
I believe either alternative would get full credit as long as one was clear about what one was doing.

page 855, sol. 14.31: In this exam question, 9, 11/09, Q.33, the mean of the given mixed distribution is 0.880, far from one. As per the syllabus reading, one could divide each scale parameter by 0.880, so that the mixed distribution has a mean of one.
What I have shown is the solutions provided by the CAS, where this was not done.
I believe either alternative would get full credit as long as one was clear about what one was doing.
Here it makes a significant difference whether one adjust the mean of the mixed distribution to one.
The mean of the Exponential would be: 0.8/0.880 = 0.9091, and the scale parameter of the Pareto would be: 8/0.880 = 9.0909.
Then for the mixed distribution, with the mean adjusted to one, the excess ratio at 0.806 is:

$$\frac{(0.4)(9.0909/8)\ (1\ +\ 0.806/9.0909)^{1-9}\ +\ (0.6)(0.9091)\ \mathrm{Exp}[-0.806/0.9091]}{(0.4)(9.0909/8)\ +\ (0.6)(0.9091)} = 0.4551.$$

The empirical excess ratio at \$50,000 is 0.42.
Therefore, the estimated excess ratio at \$100,000 is: (0.4551)(0.42) = 0.191.

page 856, sol. 14.32: Same comment on this follow-up question as on the exam question.
For the mixed distribution, with the mean adjusted to one, the excess ratio at 2.419 is:

$$\frac{(0.4)(9.0909/8)\ (1 + 2.419/9.0909)^{1-9} + (0.6)(0.9091)\ \text{Exp}[-2.419/0.9091]}{(0.4)(9.0909/8) + (0.6)(0.9091)} = 0.1070.$$

The empirical excess ratio at \$50,000 is 0.42.
Therefore, the estimated excess ratio at \$200,000 is: (0.1070)(0.42) = 0.045.

page 901, sol. 15.1b: $\hat{R}(3) = \{R(2.\mathbf{5}0)/0.833 + R(3.75)/1.25\}/2$

page 922, sol. 15.13: Using the hint with c = y/10:

$$\int_0^2 (1 - e^{-y r/10})\ r/2\ dr = 1 - e^{-y r/10}(100/y^2 + r\ 10/y)/2\Big]_{r=0}^{r=2}$$

Final solution is okay.

page 937, near bottom: **Excess WC Premium** = $\dfrac{(EL)\ (XL)\ (1 + LAE) + (SP)\ (GO)}{1 - A - T - P}$.

page 955, Q 16.37: The last three lines in the table that refer to Acquisition Expense, Premim Tax, and Profit Load should have "to net premium" in parentheses instead of "to standard premium."

pae 981, footnote 725: Expected Primary Losses = (**Standard Premium**) (1 - ELF)

page 1001, Q 17.16: In this past exam question, the given “Excess Loss Factors” should have been “Excess Loss **Pure Premium** Factors”.
Expected Excess Losses = ELPPF (Expected Losses) = ELF (Standard Premium).

page 1010, sol. 17.6: Interpolating, ϕ*(0.8062) = (0.7752)(0.6461) + (0.2248)(0.6224) = 0.6407.
Thus $M_{100,000}(2)$ = (0.6407 - 0.5969) / (1 - 0.5969) = **0.1087**.
Alternately, the expected primary losses are: (1 - 0.5969)($350,000) = $141,085.
Thus an entry ratio of 2 in Table M_D, corresponds to an aggregate limit of:
(2)($141,085) = $282,170.
An aggregate limit of $282,170 corresponds to an entry ratio in Table L of:
$282,170/$350,000 = 0.8062.
Interpolating, ϕ*(0.8062) = (0.7752)(0.6461) + (0.2248)(0.6224) = 0.6407.
Thus the insurer would expect to pay losses for such an LDD policy of:
($350,000)(0.6407) = $224,245.
Using the technique in Fisher, the excess losses are: (0.5969)($350,000) = $208,915.
We must have that: $224,245 = $208,915 + ($141,085) (Table M_D charge).
⇒ Table M_D charge = (224,245 - 208,915) / 141,085 = **0.1087**.

page 1011, sol. 17.7: Premium =

$$\frac{\$533{,}484 + \$153{,}724 + \$183{,}960 + \$126{,}000 + \$122{,}640 + \$378{,}000}{1 - 7\% - 2\% - (-5\%)} = \mathbf{\$1{,}560{,}217}.$$

page 1020, solution 17.20: entry ratio of: 2.85/**1.14** = 2.50.

page 1057, solution 18.25, line 5: Excess Ratio is: **500**/1000 = 50%.

page 1066, Q.19.27. (9, 11/96, Q.18): Choice E should be **1**, 2, 3

page 1105, solution 19.59: Insurer B **loses** $75,000

page 1108, last sentence: Since the loss elimination ratio is increasing and concave downwards, the excess ratio is **de**creasing and concave upwards (convex).

page 1109: the normalized retention is: d = D / **M**.

page 1143, sol. 20.1c: S(x) = G'(x) / G'(0) =

page 1157, sol. 20.16b: x = 1500/2**0**00 = 0.75.

page 1159, sol. 20.17: a) We are looking at the layer from \$100,000 to \$200,000.
x = 100 /2000 = 0.05, and x = 200/2000 = 0.1.
$G(0.1) - G(0.05) = (1 - 0.15^{0.1}) / (1 - 0.15) - (1 - 0.15^{0.05}) / (1 - 0.15) = 0.09683$.
b) Assume that the correct value of b is for example 0.1.
$G(0.1) - G(0.05) = (1 - 0.1^{0.1}) / (1 - 0.1) - (1 - 0.1^{0.05}) / (1 - 0.1) = 0.10769 > 0.09683$.
Thus the actuary would have underestimated the portion of total losses in the layer.

page 1273: If the Buhlmann Credibility formula holds, then the three-year credibility is
Z = 3 / (3 + K), with K = EPV / VHM.
(As will be discussed subsequently, the Buhlmann Credibility formula does not hold for this data.)

For K big compared to 3: $Z \cong 3/K = (3)(VHM / EPV)$.

Let μ be the overall mean frequency, which is also the mean of the hypothetical mean frequencies.

Assume the EPV is (approximately) proportional to the overall mean frequency: EPV = c μ.
Then the ratio of the credibility to the mean frequency is approximately:
$(3)(VHM / EPV) / \mu = (3/c)\ VHM / \mu^2$.
Thus the ratio of the credibility to the mean frequency is proportional to the square of the coefficient of variation of the hypothetical means. Thus the smaller this ratio, the smaller the CV of the hypothetical means, and the less variation between the insureds within a class.
The smaller the ratio of credibility to frequency, the more homogeneous the class.

page 1284, second exercise: $100,000\ e^{-0.\mathbf{3}} = 74,082$. Final solution is correct.

page 1284, 3rd exercise: $\{(0.1 - 0.2)^2 + (0.3 - 0.\mathbf{2})^2\}/2 = 0.01$. Final solution is correct.

page 1318, Q. 23.35: Rerwite part b of this past exam question.

Accident-Free Years	Single Car Credibility
1 or More	0.06
2 or More	0.10
3 or More	0.14

page 1327, sol. 23.16:
Alternately, the subsequent frequency for those who are not claims-free is: 1700/10,000 = 0.17.
Assuming a Poisson frequency, the average number of claims for those who were not claims-free is:
$\lambda / (1 - e^{-\lambda}) = 0.125 / (1 - e^{-0.125}) = 1.0638$. $Z\ 1.0638 + (1 - Z)(0.125) = 0.170. \Rightarrow Z =$ **4.8%**.
Let, M = relative premium based frequency for risks with one or more claims in the past year.
Then, $Z = (M - 1)(e^{\lambda} - 1) = (0.17/0.125 - 1)(e^{0.125} - 1) = 4.8\%$.

page 1329, solution 23.22: We are not given the average premium for each class.
I will estimate that the average premium for each class is approximately such that:
(average premium for class) (1 - Z) = (average premium for 3-years claims free and in class).
Thus the average premium for Class A is: 150 / (1 - 0.082) = 163.40.
For each class, we get the frequency per exposure by multiplying the frequency per $ premium times the premium per exposure.
For example, for Class A: (0.001625)(163.4) = 26.55%.
Then take the ratio of the 3-year credibility to this frequency, as per Table 2 in Bailey-Simon.
For example, for Class A: 8.2% / 26.55% = 0.3088.

Class	Ord	Class Freq. per Prem.	Claims-Free Prem. per Expo.	Class Prem. per Expo.	Freq. per Expos.	Ord Freq.
A	8.2%	0.001625	$150	$163.40	26.55%	**0.3088**
B	4.6%	0.001750	$148	$155.14	27.15%	**0.1694**
C	7.9%	0.002212	$190	$206.30	45.63%	**0.1731**

A more homogeneous class will have a ratio of credibility for experience rating to frequency that is lower. Thus Class A is more heterogeneous than Classes B and C;
Class A exhibits more variation of individual hazards than do the others.

page 1344: E[X $\wedge$ 250,000] = (15 + 35 + 90 + 140 + 250)/5 = 10**6,0**00. ILF = 1.5**6**.

page 1409: The deductible factor for $2000 should be 0.5.

page 1462, solution 24.8: E[X$\wedge$$100,000] - E[X$\wedge$$50,000] =

$$\frac{1{,}105{,}000 - (18)(50{,}000) + 1{,}430{,}000 - (23)(50{,}000) + (8)(50{,}000)}{60 + 89} = \$5940$$

In order to estimate E[X$\wedge$$250,000] - E[X$\wedge$$100,000], we only use data from policies with limit of at least $250,000.
The losses of size less than $100,000 contribute nothing to this layer.
The losses of size 100,000 to 250,000 contribute their value minus 100,000 to the layer.

$$E[X \wedge \$250{,}000] - E[X \wedge \$100{,}000] = \frac{1{,}112{,}000 - (8)(100{,}000)}{89} = \$3506.$$

Thus we estimate E[X$\wedge$$250,000] as: $34,341 + $5940 + $3506 = $43,787.
ILF($250,000) = E[X$\wedge$$250,000] / E[X$\wedge$$50,000] = $43,787/ $34,341 = **1.275**.
Alternately, ILF($250,000) = 1 + (5940 + 3506) / 34,341 = **1.275**.

page 1465, solution 24.16: Claims 6 contributes to this layer: 100,000 - 25,000 = 75,000.

page 1547: The loglikelihood is the sum of the contributions from the three observations:

$(\alpha-1)$ {ln(1) + ln(2) + ln(**9**)} - α {1/($\beta_0 + \beta_1$) + 2/($\beta_0 + 2\beta_1$) + 9/($\beta_0 + 3\beta_1$)}

- α {ln($\beta_0 + \beta_1$) + ln($\beta_0 + 2\beta_1$) + ln($\beta_0 + 3\beta_1$)} + 3αln(α) - 3 ln[$\Gamma(\alpha)$].

page 1661, solution 25.29: (2-1) + (3-1) + (**3**-1) + 1 = 6.

Sex Age Terr. Base