Reading: ISO.Rating
Model: Old Exam Questions
Problem Type: Summarize the study kit figures required this sitting.

This page summarizes the ISO.Rating study kit figures for the current sitting. Use it to quickly verify you've chosen the right figures. Full solutions to the past exam questions involving the study kit are provided on the subsequent pages.

Figures highlighted in grey are given in the original question.
Figures highlighted in yellow are calculated in the question and influence subsequent study kit figures.

2018 Q11	CSLC	Z	EER	MSL
	270,500	0.43	0.931	169,600

2017 Q9			
	Basic Limit	$100,000	
	PAF 13B	1.05	(Prem/Ops Mature Claims Made)
	PAF 13C - 2015	0.94	(Prem/Ops Mature Claims Made)
	PAF 13C - 2014	0.84	(Prem/Ops 4th Year Claims Made)
	PAF 13C - 2013	0.78	(Prem/Ops 3rd Year Claims Made)
	Detrend - 2015	0.916	(Prem/Ops Rule 5B)
	Detrend - 2014	0.876	(Prem/Ops Rule 5B)
	Detrend - 2013	0.839	(Prem/Ops Rule 5B)
	CSLC	330,941	
	Z =	0.48	
	EER =	0.944	
	MSL =	188,550	

2015 Q9			
	Basic Limit	$100,000	
	PAF 13B	1.00	(Prem/Ops Occurrence)
	PAF 13C - 2012	1.00	(Prem/Ops Occurrence)
	PAF 13C - 2011	1.00	(Prem/Ops Occurrence)
	PAF 13C - 2010	1.00	(Prem/Ops Occurrence)
	Detrend - 2012	0.916	(Prem/Ops Rule 5B)
	Detrend - 2011	0.876	(Prem/Ops Rule 5B)
	Detrend - 2010	0.839	(Prem/Ops Rule 5B)
	CSLC	1,683,840	
	Z =	0.83	
	EER =	0.995	
	MSL =	599,050	
	LDF - 2012	0.570	(Prem/Ops, 18 months)
	LDF - 2011	0.355	(Prem/Ops, 30 months)
	LDF - 2010	0.187	(Prem/Ops, 42 months)

2014 Q8		
	Basic Limit	$100,000
	CSLC	123,200
	Z =	0.26
	EER =	0.876
	MSL =	122,250

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Problem Type: Summarize the study kit figures required this sitting.

2012 Q14	Basic Limit	$100,000	
	PAF 13B	2.39	(Products, 1st Year Claims Made)
	PAF 13C - 2011	1.00	(Products, Occurrence)
	PAF 13C - 2010	1.00	(Products, Occurrence)
	PAF 13C - 2009	1.00	(Products, Occurrence)
	Detrend - 2011	0.882	(Products Rule 5B)
	Detrend - 2010	0.828	(Products Rule 5B)
	Detrend - 2009	0.777	(Products Rule 5B)
	CSLC	416,075	
	Z =	0.54	
	EER =	0.958	
	MSL =	216,150	
	LDF - 2011	0.701	(Products, 18 months)
	LDF - 2010	0.543	(Products, 30 months)
	LDF - 2009	0.390	(Products, 42 months)

Reading: ISO.Rating
Model: 2018.Q11
Problem Type: Calculate the experience mod

Given The following information for a construction insured's general liability policy that is subject to the ISO Commercial General Liability Experience and Schedule Rating Plan:

270,500	Company Subject Loss Cost
0.85	Actual Experience Ratio
January 1, 2020	Policy Effective Date
Annual	Policy Term

Find Calculate the experience modification for this policy.

Solution

$$Mod = Z \cdot \frac{AER - EER}{EER}$$

Look up the company subject loss cost (CSLC) to get

Z = 0.43

EER = 0.931

Mod = -0.0374

This is a 3.74% credit.

Reading: ISO.Rating
Model: 2017.Q9
Problem Type: Calculate the experience modified premium

Given Consider the following claims-made commercial general liability policy:

- The insurance contract was originally written January 1, 2011, and has been renewed annually as a claims-made policy.
- The annual Premises/Operations basic limits manual premium is $200,000 and there is no products exposure.
- The expected loss ratio is 70%.
- Loss experience is evaluated as of June 30, 2016.

Claim Number	Policy Year	Indemnity	ALAE
1	2011	$5,000	$5,000
2	2012	$15,000	$25,000
3	2013	$58,000	$0
4	2013	$20,000	$85,000
5	2014	$118,000	$82,000
6	2015	$8,000	$5,000

Find Calculate the experience modified premium for the policy effective January 1, 2017.

Solution The experience period runs from 1/1/2013 through 12/31/2015.

PAF 13B takes the risk being priced and translates it to a per-occurrence basis.
PAF 13C takes a per-occurrence risk and translates it to the historical risk basis.

PY 2013 is a 3rd year CM, PY 2014 is a 4th year CM, and PY 2015 is a mature CM.
Hence, PY 2017 will be a mature CM.

Assume there have been no dramatic exposure changes.

Year	SubLine	Type	ELR	PAF 13B	PAF 13C	Detrend	CSLC
2015	Prem/Ops	CM	70%	1.05	0.94	0.916	126,573
2014	Prem/Ops	CM	70%	1.05	0.84	0.876	108,168
2013	Prem/Ops	CM	70%	1.05	0.78	0.839	96,200
Total							330,941

Look up the CSLC to get
Z = 0.48
EER = 0.944
MSL = 188,550

Since all historical experience is from claims made policies, the LDFs are all 0 and so ARULL = 0.

Now calculate the loss history

Claim #	(1)	(2)	(3)
1	NA - outside of the experience period		
2	NA - outside of the experience period		
3	$58,000	$58,000	$58,000
4	$20,000	$105,000	$105,000
5	$100,000	$182,000	$182,000
6	$8,000	$13,000	$13,000
Total			$358,000

Calculations
(1) = min{ Basic limit, Indemnity}
(2) = (1) + ALAE
(3) = min{ MSL, (2)}

Now we can calculate the AER using $AER = \frac{Expected\ Future\ Development\ (ARULL) + Loss\ History}{CSLC}$

AER = 1.082

Lastly, calculate the mod using $Mod = Z \cdot \frac{AER - EER}{EER}$

Mod = 0.0700494

The experience modification factor is 1.070049
So the experience modified premium is $214,010

Reading: ISO.Rating ISO_Rating_2015_9 (Problem 1)
Model: 2015.Q9
Problem Type: Calculate the experience modification factor

Given The following Premises/Operations General Liability loss experience evaluated as of September 1, 2013:

Policy Eff. Date	Policy Type	Total Ground-Up Incurred Loss	Total Ground-Up Incurred ALAE
3/1/2010	Occurrence	1,500,000	600,000
3/1/2011	Occurrence	400,000	400,000
3/1/2012	Occurrence	350,000	2,000,000
3/1/2013	Occurrence	150,000	20,000

The insured has experienced the following ground-up large losses:

Accident Date	Incurred Loss	Incurred ALAE
6/30/2010	700,000	500,000
12/31/2011	150,000	200,000
4/5/2012	55,000	60,000

$800,000 Annual Basic Limits Premium
80% Expected Loss and ALAE Ratio

A new policy will become effective March 1, 2014 to February 28, 2015 and will be written on an occurrence basis.

Find Using the ISO Commercial General Liability Experience and Schedule Rating Plan, calculate the experience modification factor used to price this policy.

Solution The experience period is 3/1/2010 through 2/29/2013 ISO_Rating_2015_9 (Solution 1)

PAF 13B takes the risk being priced and translates it to a per-occurrence basis.
PAF 13C takes a per-occurrence risk and translates it to the historical risk basis.
Assume no dramatic change in exposures occurs.

Policy Year	SubLine	Type	ELR	PAF 13B	PAF 13C	Detrend	CSLC	EER	LDF	Total	
2010	Prem/Ops	Occ.	80%	1.00	1.00	0.839	$536,960	0.995	0.187	99,909	
2011	Prem/Ops	Occ.	80%	1.00	1.00	0.876	$560,640	0.995	0.355	198,032	
2012	Prem/Ops	Occ.	80%	1.00	1.00	0.916	$586,240	0.995	0.570	332,486	
Total							$1,683,840			$630,428	← ARULL

Look up the CSLC to get
Z = 0.83
EER = 0.995
MSL = 599,050

Also, since the historical policies are occurrence based, look up the LDFs from Table 15
Note the most recent PY is evaluated 6 months after its end. So the most recent LDF is the 18-month one.

Now calculate the loss history
First, notice all three large losses are within the experience period so subtract them from the data.
Non-large loss & ALAE experience 3,585,000

Now apply the basic limit and the MSL to the large losses before adding to the above.

Accident Dt	(1)	(2)	(3)
6/30/2010	100,000	600,000	599,050
12/31/2011	100,000	300,000	300,000
4/5/2012	55,000	115,000	115,000
Total			1,014,050

Calculations
(1) = min{ Basic limit, Indemnity}
(2) = (1) + ALAE
(3) = min{ MSL, (2)}

Loss history = 4,599,050

Now calculate the AER using $AER = \frac{Expected\ Future\ Development\ (ARULL) + Loss\ History}{CSLC}$

AER = 3.105686

Now calculate the mod using $Mod = Z \cdot \frac{AER - EER}{EER}$

Mod = 1.761

Finally, note the question asks for the experience modification factor which is 1 + Mod
Experience Modification Factor = 2.761

Reading: ISO.Rating ISO_Rating_2014_8 (Problem 1)
Model: 2014.Q8
Problem Type: Calculate the expected future development (ARULL)

Given An actuary is pricing a one-year commercial general liability occurrence policy.
The following information is available:

- Renewal effective date is January 1, 2014
- Losses are evaluated as of September 1, 2013

Policy Eff. Date	Company Subject Loss Costs
1/1/2013	$35,700
1/1/2012	$50,300
1/1/2011	$40,300
1/1/2010	$32,600
1/1/2009	$22,500

Date of Loss	Paid & Outstanding Loss Amounts	ALAE
7/21/2013	$2,000	$0
9/7/2012	$10,000	$0
4/1/2011	$100,000	$20,000
11/13/2010	$40,000	$0
2/14/2010	$70,000	$0
5/5/2009	$12,000	$0

Find Given that the experience modification is equal to 0.443, calculate the adjustment to reflect the ultimate level of loss.

Solution The experience period is 1/1/2010 through 12/31/2012. ISO_Rating_2014_8 (Solution 1)

This means the company subject loss cost is the sum of the loss costs for those years

CSLC = $123,200

Look up the CSLC to get

Z = 0.26

EER = 0.876

MSL = 122,250

Now use the experience mod to back into the AER: $Mod = Z \cdot \frac{AER - EER}{EER}$

AER = (Mod / Z) * EER + EER

2.3685692

Next, use the formula for AER to back into the ARULL

$$AER = \frac{Expected\ Future\ Development\ (ARULL) + Loss\ History}{CSLC}$$

To do this, we need the loss history

Claim #	(1)	(2)	(3)
1	NA - outside of the experience period		
2	$10,000	$10,000	$10,000
3	$100,000	$120,000	$120,000
4	$40,000	$40,000	$40,000
5	$70,000	$70,000	$70,000
6	NA - outside of the experience period		
Total			**$240,000**

Calculations

(1) = min{ Basic limit, Indemnity}

(2) = (1) + ALAE

(3) = min{ MSL, (2)}

ARULL = AER * CSLC - Loss History

$51,808

Reading: ISO.Rating
Model: 2012.Q14
Problem Type: Calculate the minimum number of large losses to trigger a debit mod.

Given The following information applies for a commercial general liability insured:

- All historical policies were effective January 1 to December 31.
- All historical policies were written on an occurrence basis.
- The policy effective January 1, 2013 will be on a claims made basis.
- The risk is products/completed operations only.
- The annual basic limit premium is $100,000.
- The expected loss ratio is 70%.
- Experience is being evaluated as of June 30, 2012.
- A large loss is defined as $250,000 or more in combined basic limit indemnity and ALAE.

Find Assuming all losses that occurred in the experience period meet the requirements to be defined as large losses, calculate the minimum number of large losses that must have occurred to trigger a debit modification for policy year 2013.

Solution The experience period is 1/1/2009 through 12/31/2011. ISO_Rating_2012_14 (Solution 1)

PAF 13B takes the risk being priced and translates it to a per-occurrence basis.
PAF 13C takes a per-occurrence risk and translates it to the historical risk basis.
Assume no dramatic change in exposures occurs.

We are pricing a first-year claims made policy.

Form the following table

PY	Subline	Type	BLEL	PAF 13B	PAF 13C	Detrend	CSLC	EER	LDF	Total
2011	Product	Occ.	70,000	2.39	1.00	0.882	147,559	0.958	0.701	99,094
2010	Product	Occ.	70,000	2.39	1.00	0.828	138,524	0.958	0.543	72,060
2009	Product	Occ.	70,000	2.39	1.00	0.777	129,992	0.958	0.39	48,568
Total							416,075			219,721

Also, since the historical policies are occurrence based, look up the LDFs from Table 15
Note the most recent PY is evaluated 6 months after its end. So the most recent LDF is the 18-month one.

Look up the CSLC to get

Z =	0.54
EER =	0.958
MSL =	216,150

Now use the equation for the experience mod to set up an inequality since a debit mod is larger than 0.000.
(the experience modification **factor** is larger than 1.000)

$Mod = Z \cdot \frac{AER - EER}{EER}$, which implies $AER > EER$ for a debit modification

AER > 0.958

Next, use the equation for the AER to back into an inequality for the Loss History

$$AER = \frac{Expected\ Future\ Development\ (ARULL) + Loss\ History}{CSLC}$$

Loss History > 178,878.58

Notice a large loss exceeds the MSL. So cap each large loss at the MSL.
Then since all losses are large losses, divide the loss history by the MSL to find the minimum number of large losses required.

Loss History / MSL = 0.83
So at least 1 large loss must have occurred to trigger a debit modification.