14. (4.25 points)

An insurance company that began operating on January 1, 2015 has no assumed or ceded business. Given the following information from the company's Annual Statements:

($000 Omitted)	Annual Statement Year		
	2015	2016	2017
Premiums earned	2,725	2,340	2,500
Loss reserves	1,660	2,065	2,420
Loss adjustment expense reserves	450	425	510
Surplus as regards policyholders	1,410	1,330	1,280
Gross agents' balances in the course of collection	585	540	576

2017 Schedule P - Part 2 - Summary					
Years In Which Losses Were Incurred	Incurred Net Losses and Defense And Cost Containment Expenses Reported at Year End ($000 Omitted)			Development	
	2015	2016	2017	One Year	Two Year
Prior	0	0	0	0	0
2015	1,781	2,114	2,131	17	350
2016		1,181	1,546	366	XXX
2017			1,307	XXX	XXX
Totals				383	350

a. (0.5 point)

Calculate 2017 IRIS ratio 10 and identify whether it is within the range of usual values.

b. (0.5 point)

Calculate 2017 IRIS ratio 11 and identify whether it is within the range of usual values.

c. (0.5 point)

Calculate 2017 IRIS ratio 12 and identify whether it is within the range of usual values.

d. (2.25 points)

Calculate 2017 IRIS ratio 13 and identify whether it is within the range of usual values.

e. (0.5 point)

Based on IRIS ratios 11 and 13, describe why a regulator may be concerned about the financial health of this insurer.

Common mistakes included:
- Errors in the RBC = $R_0 + (R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2)^{1/2}$ formula, such as squaring R_0 or including R_0 in the covariance adjustment
- Errors in calculating the LCF
- Applying the LCF in a way that increased the original R_4 charge, when the intention of the LCF is to lower the R_4 charge by accounting for diversification across multiple lines of business
- Applying the LCF to risk charge components other than R_4
- Using ACL in place of RBC to calculate the initial R_4 and/or the final revised RBC ratio
- Not calculating the revised RBC ratio as the last step

SPRING 2019 EXAM 6US, QUESTION 14	
TOTAL POINT VALUE: 4.25	**LEARNING OBJECTIVE: C2**
SAMPLE ANSWERS	

Part a: 0.5 point

Gross agents' balances in the course of collection = 576
Policyholder surplus = 1,280
Agents' Balances / PHS = 45%
Greater than 40%, so unusual

Part b: 0.5 point

Sample 1: Using total one-year development of 383
One-year reserve development = 366 + 17 = 383
Policyholders' surplus, prior year = 1,330
One-year reserve development to policyholders' surplus = 383/1,330 = 28.8%
Greater than 20%, so unusual

Sample 2: Calculating one-year development based on incurred values in triangle
One-year reserve development = (2131-2114)+(1546-1181) = 382
Policyholders' surplus, prior year = 1,330
One-year reserve development to policyholders' surplus = 382/1,330 = 28.7%
Greater than 20%, so unusual

Part c: 0.5 point

Two-year reserve development = 350
Policyholders' surplus, prior year = 1,410
Two-year reserve development to policyholders' surplus = 350/1,410= 24.8%
Greater than 20%, so unusual

Part d: 2.25 points

Sample 1: Using total one-year development of 383

Developed Loss & LAE Reserves, prior year = 2,065 + 425 + 383 = 2,873

Premiums Earned, prior year = 2,340
Developed Loss & LAE Reserves to Premium Ratio, prior year = 2,873/2,340 = 122.8%

Developed Loss & LAE Reserves, 2nd prior year = 1,660 + 450 + 350 = 2,460
Premiums Earned, 2nd prior year = 2,725
Developed Loss & LAE Reserves to Premium Ratio, 2nd prior year = 2,460/2,725 = 90.3%

Average Ratio of Reserves to Premium = (1.228 + .903)/2 = 106.5%

Estimated Loss & LAE Reserves Required = 1.065 * 2,500 = 2,663.16

Estimated Loss & LAE Reserve Deficiency (Redundancy) = 2,663.16 – (2,420+510) = -266.84

Current Reserve Deficiency (Redundancy) = -266.84 / 1,280 = -20.8%

Less than 25%, so not unusual

Sample 2: Calculating one-year development based on incurred values in triangle
Developed Loss & LAE Reserves, prior year = 2,065 + 425 + 382 = 2,872
Premiums Earned, prior year = 2,340
Developed Loss & LAE Reserves to Premium Ratio, prior year = 2,873/2,340 = 122.7%

Developed Loss & LAE Reserves, 2nd prior year = 1,660 + 450 + 350 = 2,460
Premiums Earned, 2nd prior year = 2,725
Developed Loss & LAE Reserves to Premium Ratio, 2nd prior year = 2,460/2,725 = 90.3%

Average Ratio of Reserves to Premium = (1.228 + .903)/2 = 106.5%

Estimated Loss & LAE Reserves Required = 1.065 * 2,500 = 2,662.63

Estimated Loss & LAE Reserve Deficiency (Redundancy) = 2,662.63 – (2,420+510) = -267.37

Current Reserve Deficiency (Redundancy) = -267.37 / 1,280 = -20.9%

Less than 25%, so not unusual

Part e: 0.5 point

Sample responses if the candidate found ratio 11 to be unusual and ratio 13 to be usual:
- There may be concern that the increased development of reserves causing the unusual ratio 11 will not be supported by adequate premiums. A mix of business change many be causing ratio 13 to be in the usual range.
- Ratio 11 is an unusual value, indicating the reserve is inadequate. There is adverse development of the reserves. However, ratio 13 seems to be in the usual range. But notice the Earned premium in 2015 is high, then earned premium decreases. Therefore, ratio 13 may be distorted by earned premium change. But ratio 11 indicates the problem

of reserve inadequacy.
- Based on ratio 11 being in the unusual range, the regulator would be concerned with the adverse development and want to know the cause. However, ratio 13 is not unusual so it appears that reserves are adequate. However, ratio 13 can be distorted by rapid swings in premium growth or shrinkage and by changes in mix of business, so regulator would be concerned that one or both are distorting ratio 13.
- Since ratio 11 is unusual, the company might be intentionally under-reserving.

Sample response if the candidate found both ratios 11 and 13 to be unusual:
- The insurer has seen unusually high reserve development, which is a significant threat to solvency if it continues (Ratio 11). Assuming that ratio 13 is unusually high, that would suggest that the insurer is under reserved in the latest year and will continue to see adverse development, meaning the problem seen in ratio 11 has not been corrected.

EXAMINER'S REPORT

Candidates were expected to understand the IRIS 10, 11, 12, and 13 calculations, and to apply knowledge of reserving and Schedule P to opine on the company's reserve risk.

Part a

Candidates were expected to calculated IRIS 10 with the given information and determine whether is resulted in value within the usual range.

Common mistakes included:
- Indicating an incorrect threshold for the usual range
- Misidentifying the requested IRIS ratio

Part b

Candidates were expected to calculated IRIS 11 with the given information and determine whether is resulted in value within the usual range.

Common mistakes included:
- Indicating an incorrect threshold for the usual range
- Omitting the one year development from 2015
- Calculating the ratio with the incorrect policyholder surplus (incorrect year)

Part c

Candidates were expected to calculated IRIS 12 with the given information and determine whether is resulted in value within the usual range.

Common mistakes included:
- Indicating an incorrect threshold for the usual range
- Calculating the ratio with the incorrect policyholder surplus (incorrect year)

Part d

Candidates were expected to calculated IRIS 12 with the given information and determine whether is resulted in value within the usual range.

Common mistakes included:
- Indicating an incorrect threshold for the usual range
- Omitting the reserve development for calculations of the loss ratios and the loss reserve deficiency (redundancy)
- Omitting the LAE for calculations of the loss ratios and the loss reserve deficiency (redundancy)
- Applying a weighted average rather than straight average of prior year and second prior year loss ratios
- Switching the current reserves and required reserves in the reserve deficiency calculation, incorrectly resulting in deficiency

Part e

Candidates were expected to make an assessment for each of the IRIS ratios presented earlier in the problem, and why a regulator may be concerned about the financial health of this insurer.

Common mistakes included:
- Only stated that ratios were usual/unusual, and not elaborating on why the results would concern regulators
- Only mentioning and assessing one of the two ratios
- Stating that the insurer was over reserving or adequately reserving based on the result of ratio 13
- Opining on information not relevant to either ratio 11 or 13

SPRING 2019 EXAM 6US, QUESTION 15	
TOTAL POINT VALUE: 4.25	**LEARNING OBJECTIVE: C2**
SAMPLE ANSWERS	

	CMP	WC
Company Avg. LLAE Ratio (10 year avg.) (CMP 2012 ratio limited to 300%)	95.3%	73.5%
Ratio of Company Avg. LLAE to Industry LLAE	$\frac{95.3\%}{80\%} = 1.191$	$\frac{73.5\%}{85\%} = .865$
Company LLAE Ratio	Avg(.94,.94*1.191) = 1.03	Avg(.97,.97*.865) = .904
Base WP RBC	(1.03*.961+.25-1)*100 = 24	(.904*.934+.25-1)*135 = 12.8
Loss Sensitive Adj.		
Loss Sensitive Adjustment	0	.3*.12+.15*.04 = .042
Loss Sensitive Discount	0	.042*12.8 = .54