13. (3.25 points)

Given the following information for an insurance company that writes Workers' Compensation (WC), Private Passenger Auto Liability (PPAL) and Homeowners (HO) insurance (all dollar figures are in thousands):

Total Adjusted Capital for 2018	$14,000
2018 RBC Ratio	155%
R0	$100
R1	$500
R2	$1,600
R3	$400
R5	$2,500

	Loss and LAE Reserves
WC	$60,000
PPAL	$24,000
HO	$36,000

a. (0.75 point)

Based on the 2018 RBC Ratio of 155%, determine the 2018 RBC Action Level for this insurer, and briefly describe the actions required of both the regulator and the company under the RBC Model Act.

b. (0.5 point)

Propose a materiality standard that an Appointed Actuary may use for determining whether there is a significant risk of material adverse deviation in the Statement of Actuarial Opinion.

c. (2 points)

An actuary is reviewing the company's RBC formula and discovers that the loss concentration factor was not applied. Calculate the 2018 RBC Ratio with an adjustment for loss concentration.

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Part b

Candidates were expected explain shortfalls in how the IEE allocates surplus to lines of business.

Common mistakes include:

- Not connecting the concern and explanation specifically to homeowners
- Only recognizing the issue but fail to explain why the issue mentioned is a concern
- Not explaining how the allocation method works and why that would cause a problem for the homeowner line specifically

SPRING 2019 EXAM 6US, QUESTION 13

TOTAL POINT VALUE: 3.25	**LEARNING OBJECTIVE: C2**

SAMPLE ANSWERS

Part a: 0.75 point

Since the RBC ratio is between 150% and 200%, it is subject to the Company Action Level. Insurer must submit a plan to the commissioner indicating how it will increase its capital or reduce its risks. The regulator has no required action at this level.

Part b: 0.5 point

Sample 1

10% of the Loss + LAE Reserves = 10% * (60,000 + 24,000 + 36,000) = 12,000

Note: other percentages (5%, 15%, 20%, etc.) were also accepted

Sample 2

10% of capital = 10% * 14,000 = 1.4M

Note: other percentages (5%, 15%, 20%, etc.) were also accepted

Sample 3

The company should use a materiality standard corresponding to the decrease in total adjusted capital that would subject the company to the next RBC regulatory level, Regulatory Action Level. Materiality = 14M - 14M * (1.5 / 1.55) = 0.4516 million

Sample 4

Amount that would trigger Authorized Control Level (RBC = 100%). ACL level would be triggered if capital falls below 14K * 100% / 155% = 9.03K. Therefore I select 14K - 9.03K = 4.97K as my materiality standard.

Sample 5

I would choose a materiality standard that would bring the RBC ratio to below 150%, the Regulatory Action Level, which would authorize the state to take corrective action, limiting the ability of the company to do business.

Sample 6

The appointed actuary could use 10% of statutory surplus as their materiality standard. Surplus is a display of an insurer's financial position and solvency, a 10% change in surplus could impact the business decisions made.

Part c: 2 points

Sample 1

$1.55 = TAC / (RBC * 0.5) = 14{,}000 / (RBC * 0.5)$

$RBC = 18{,}064.52$

$18{,}064.52 = R_0 + (R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2)^{1/2}$

$18{,}064.52 = 100 + (500^2 + 1600^2 + 400^2 + R_4^2 + 2500^2)^{1/2}$

$R_4^2 = 313{,}503{,}839.8$

$R_4 = 17{,}706.04$

$LCF = 0.3 * 60{,}000 / (60{,}000 + 24{,}000 + 36{,}000) + 0.7$

$= 0.85$

New $R_4 = 17{,}706.04 * 0.85 = 15{,}050.13$

$RBC = 100 + (500^2 + 1600^2 + 400^2 + 15{,}050.13^2 + 2500^2)^{1/2}$

$= 15{,}453.39$

$RBC\ ratio = 14{,}000 / (15{,}453.39 * 0.5) = 1.8119 = 181.19\%$

Sample 2

$14 / ACL = 155\%$

$ACL = 9.0322$

$9.0322 * 2 * 1{,}000 = 100 + (500^2 + 1600^2 + 400^2 + R_4^2 + 2500^2)^{1/2}$

$R_4 = 17{,}705$

Assume all of R_3 is unpaid reinsurance recoverable risk

R_4 revised $= (17{,}705 - 400) * (0.3 * 60 / (24 + 36 + 60) + 0.7) + 400$

$= 15{,}109.25$

$RBC\ revised = 100 + (500^2 + 1600^2 + 400^2 + 15{,}109.25^2 + 2500^2)^{1/2}$

$= 15.511M$

$Revised\ RBC\ ratio = 14 / (15.511 * ½) = 180.5\%$

Sample 3

$14 / ACL = 155\%$

$ACL = 9.0322$

$9.0322 * 2 * 1{,}000 = 100 + (500^2 + 1600^2 + 400^2 + R_4^2 + 2500^2)^{1/2}$

$R_4 = 17{,}705$

Assume no loss-sensitive contracts, or premium growth

Assume all of R_3 is unpaid reinsurance recoverable risk

R_4 revised $= (17{,}705 - 400) * (0.3 * 60 / (24 + 36 + 60) + 0.7) + 400$

$= 15{,}109.25$

$RBC\ revised = 100 + (500^2 + 1600^2 + 400^2 + 15{,}109.25^2 + 2500^2)^{1/2}$

$= 15.511M$

$Revised\ RBC\ ratio = 14 / (15.511 * ½) = 180.5\%$

Sample 4

14,000 / ACL = 155%

ACL = 9,032

$9{,}032 * 2 = 100 + (500^2 + 1{,}600^2 + 400^2 + R_4^2 + 2{,}500^2)^{1/2}$

$R_4 = 17{,}705$

Assume 50% of R_3 is unpaid reinsurance recoverable risk

R_4 revised = $(17{,}705 - 0.5 * 400) * (0.3 * 60 / (24 + 36 + 60) + 0.7) + 0.5 * 400$

$= 15{,}080.13$

RBC revised = $100 + (500^2 + 1{,}600^2 + 400^2 + 15{,}080.13^2 + 2500^2)^{1/2}$

$= 15{,}483$

Revised RBC ratio = 14,000 / (15,483 * ½) = 180.8%

EXAMINER'S REPORT

Candidates were expected to know the different RBC action levels described in the RBC Model Act and the relationships between (adjusted) capital, the RBC ratio, the total RBC, and the individual risk charges by category (including the covariance adjustment). Candidates were also expected to be able to establish a materiality standard for determining whether risk of material deviation exists in a Statement of Actuarial Opinion.

Part a

Candidates were expected to identify that the insurer falls into the Company Action Level, and describe the actions required of the insurer and the regulator.

Common mistakes included:

- Not identifying or mis-identifying the RBC action level
- Omitting the actions required of the insurer and/or the regulator. Although the regulator has no required actions at this level, candidates were expected to state that explicitly.

Part b

Candidates were expected to propose a materiality standard specific to the data provided for determining whether risk of material deviation exists in a Statement of Actuarial Opinion. This could either be done by describing a standard in general and also calculating a dollar, or by describing the standard and justifying why it is appropriate in this situation.

Common mistakes included:

- Proposing a materiality standard without calculating the dollar amount or explaining why the standard is reasonable

Part c

Candidates were expected to know how to adjust the R_4 (reserve charge) component of the RBC using the loss concentration factor (LCF). Starting with the existing RBC ratio, candidates were expected to back into the current RBC charge and use it to calculate the pre-adjusted R_4 charge. From there, the candidates were expected to calculate the LCF, apply it to the R_4 charge and finally calculate the revised RBC ratio.

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	