Reading: Odomirok.19-RBC (RBC (Model - 2014.Fall Q18)) a-Question

Model: 2014.Fall #18

Problem Type: Calculate RBC charge R₅

Given

	Line of Business				
	Comm				
	Auto				
	Liab	G/L	WC		
industry average L+LAE ratio (10 yrs)			0.982		
company average L+LAE ratio (10 yrs)			1.043		
industry L+LAE ratio			1.018		
adjustment for investment income			0.817		
company NWP (current yr)	15,000	6,900	8,200		
company U/W expense ratio (current yr)			0.335		
portion of reserves on retro-rated plan					
% direct loss-sensitive			11.4%		
% assumed loss-sensitive			3.5%		
NWP RBC charge after discounts	570,000	84,380			

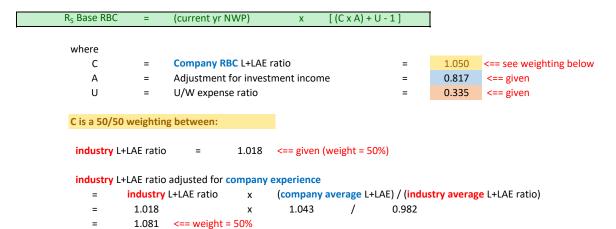
Excessive Premium Growth Charge: 20,462

Find Calculate the total R₅ RBC charge for all 3 lines combined

577,647 <== final answer

Apply equations 4, 5, 6 in succession to arrive at the final answer.

Equation 4: Base RBC



Putting this all together gives:

R ₅ Base RBC	=	8,200	х	(1.0495	Х	0.817	+	0.335	-	1)
R ₅ Base RBC	=	1,578								

Equation 5: Subtract Loss-Sensitive Discount (LSD)

	R ₅ RBC	after discount	=	Base RBC	-	LSD	
	where						
	LSD	=	Base RBC	х	(D%	+	A%)
		=	1,578	х	3.95%		
		=	62.3				
	D%	=	30%	Х	(% direct los	s sensitive)
		=	30%	Х	11.4%		
		=	3.42%				
	A%	=	15%	Х	(% assumed	loss sensit	ive)
		=	15%	Х	3.5%		
		=	0.53%				

Putting this together gives:

R ₅ RBC after discount	=	Base RBC	-	LSD
R ₅ RBC after discount	=	1,578	-	62.3
R ₅ RBC after discount	=	1,516		

Equation 6: Final RBC after apply Premium Concentration Factor (PCF)

Calculate P	CF and app	ly it to all lin	es of busine	SS						
	PCF	=	0.7	+	0.3	х	(max NWP by line)	/	(tota NWP)	
		=	0.7	+	0.3	x	15,000	/	30,100	
		=	0.850							

Putting this together gives the final answer:

Total R ₅ RBC (all lines)	=	total RBC for all lines	х	PCF	+	growth charge
Total R ₅ RBC (all lines)	=	(570000 + 84380 + 1516)	x	0.850	+	20,462
Total R ₅ RBC (all lines)	=	577,647 <== final answer	'			