Reading: Odomirok.18-IEE (profit-loss - 2015.Spring Q13) a-Question
Model: 2015.Spring #13
Problem Type: Pre-tax profit (loss)

Given

		prior CY	current CY
TOTAL net investmemt earned	Inv	1,785	3,000
TOTAL net realized capital gains	CapG	15,000	18,000
TOTAL policyholders' surplus	S	133,000	157,000
HOMEOWNERS total investment gain	NIG_H	10,000	10,530

		homeowners		TOTAL	
		prior CY	current CY	prior CY	current CY
commission	C	13,600	14,000	26,400	28,000
taxes, licenses, fees	TLF	1,360	1,400	2,640	2,800
other acquisition expenses	Other	3,400	3,500	6,600	7,000
general expenses	Gen	4,760	5,520	10,320	10,800
written premium	WP	68,000	70,000	132,000	140,000
earned premium	EP	59,500	69,000	129,000	135,000
loss & LAE reserves	L + LAE	23,800	27,600	51,600	54,000
unearned premium reserves	UEP	28,560	29,400	55,440	58,800
agents' balances	AB	6,800	7,000	13,200	14,000
net loss & LAE incurred	IL	40,800	42,000	79,200	84,000
finance charges not included in premium	charges	2,040	2,100	3,960	4,200
fine & penalties of regulatory authorities	penalties	600	690	1,290	1,350

Find

Current CY pre-tax profit (loss) as a percentage of policyholders' surplus for homeowners.

Let m(x)	=	mean value of (prior CY value of x , current CY value of x)

Step 1: Calculate: *pre-tax profit (loss) excluding investment gain*

According to the formula provided in Odomirok, these are the components:

(+)	earned premium	69,000						
(-)	dividends to policyholders	*not given*						
-	incurred loss	42,000						
-	DCC incurred	*not given*						
-	A&O incurred	*not given*						
-	C	14,000						
-	TLF	1,400						
-	Other	3,500						
-	Gen	5,520						
(+)	other income less expenses	1,410	=	2,100	-	690		
		3,990	*<== pretax profit (loss) excluding InvGain*					

Step 2: Calculate TOTAL profit (loss) by adding the investment gain *(given)*

=	3,990	+	10,530	
=	14,520			

Step 3: Calculate Surplus Ratio *(because we need to allocate surplus to homeowners)*

	SR	=	m(S) / [m(L) + m(LAE) + m(UEP) + NEP_{CY}]							
where:										
	m(S)	=	(	133,000	+	157,000	)	/	2	= 145,000
	m(L+LAE)	=	(	51,600	+	54,000	)	/	2	= 52,800
	m(UEP)	=	(	55,440	+	58,800	)	/	2	= 57,120
	NEP_{CY}	=	135,000							
then:										
	SR	=	145,000	/	244,920	=	59.2%			

Step 4: Allocate surplus to homeowners

	S_H	=	SR x [$m(L_H)$ + $m(LAE_H)$ + $m(UEP_H)$ + $NEP_{H(CY)}$]							
where:										
	m(L+LAE)	=	(	23,800	+	27,600	)	/	2	= 25,700
	m(UEP)	=	(	28,560	+	29,400	)	/	2	= 28,980
	NEP_{CY}	=	69,000							
then:										
	S_H	=	59.2%	x	123,680		=	73,222		

Step 5:

Final Ratio	=	Step 2	/	Step 4	=	19.8%	*<== final answer*