

5. (2 points)

Given the following information:

- Experience period on-level trended earned premium = \$250,000.
- Experience period trended and developed losses and LAE = \$200,000.
- Experience period earned exposure = 8,000.
- Variable expense provision = 19%.
- Fixed expenses for the experience period = \$16,000.
- Profit and contingency factor = 4%.

a. (0.75 point)

Calculate the indicated average rate level change using the loss ratio method.

b. (0.75 point)

Calculate the indicated average rate using the pure premium method.

c. (0.5 point)

Briefly describe one situation where the loss ratio method cannot be used and one situation where the pure premium method cannot be used.

EXAM 5 SPRING 2017 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 5	
TOTAL POINT VALUE: 2	LEARNING OBJECTIVE(S): A5
SAMPLE ANSWERS	
Part a: 0.75 point	
<u>Sample 1</u> Ind rate chg = $\frac{200/250 + 16/250}{1-.19-.04} - 1 = 12.21\%$	
<u>Sample 2</u> Projected and trended LR = $200,000/250,000 = 80\%$ Fixed exp % = $16,000/250,000 = 6.4\%$ Ind avg rate change = $(80\% + 6.4\%)/(1-19\%-4\%) = 12.21\%$	
Part b: 0.75 point	
<u>Sample 1</u> Ind avg rate = $\frac{200/8 + 16/8}{1-.19-.04} = \35.06	
<u>Sample 2</u> Projected and trended PP = $\$200,000/8000 = \25 Fixed exp per exposure = $\$16,000/8000 = \2 Ind avg rate = $(25+2)/(1-19\%-4\%) = \$35.06$	
Part c: 0.5 point	
<u>Sample Responses for a situation where loss ratio method cannot be used</u> <ul style="list-style-type: none"> • Loss Ratio method cannot be used in cases where you cannot on-level premium. • The loss ratio method gives a change, not an actual rate, so it cannot be used for a new territory or line of business where there is no prior rate. • Use the pure premium method when premium information is unavailable (newer business). • The loss ratio method cannot be used when historical loss ratio information is not available. • Loss ratio method cannot be used if trends are uncertain or unknown for either premium or losses. This relies on accurate trends and would not be useful without them. • LR method cannot be used without earned premium. • Loss ratio cannot be used in a case where historical rate change information is not available and therefore premium cannot be brought to the current rate level. 	
<u>Sample Responses for a situation where pure premium method cannot be used</u> <ul style="list-style-type: none"> • Pure premium method cannot be used in cases where exposures are not clearly defined over the exposure period. • The pure premium method cannot be used if exposure information is not available. • Pure premium method cannot be used if looking at a certain variable that is highly correlated with another. PP method assumes uniform dist between variables. Would need to instead use Adjusted Pure Premium method. • The pure premium method cannot be used if exposure mix is changing and the exposure mix level of the experience period cannot be adjusted. 	

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- PP method cannot be used for some commercial lines where there are multiple exposures=>not clear which exposure base to use.
- Use the loss ratio method when there has been a change to the exposure base.
- Pure premium cannot be used without exposures.

EXAMINER'S REPORT

Candidates were expected to understand the loss ratio and pure premium methods, how to apply the formulas for each given rating information, and when each method can or cannot be used.

Part a

Candidates were expected to calculate an indicated rate level change using the loss ratio method.

Common errors included:

- Subtracting fixed expense ratio in the numerator of the formula.
- Using exposures as a step to get one of the inputs, as exposures are not required for this method.
- Calculating the indicated rate using the pure premium method and dividing by the current rate, as this did not use the method required in this part of the question.

Part b

Candidates were expected to calculate an indicated rate level using the pure premium method.

Common errors included:

- Subtracting fixed expense per exposure in the numerator of the formula.
- Dividing premium by exposure instead of dividing loss by exposure to get the pure premium.
- Using premium as a step to get one of the inputs, as premium is not required for this method.
- Calculating the rate change in part a. and applying it to the current rate to get the indicated rate level, as this did not use the method required in this part of the question.

Part c

Candidates were expected to briefly describe a situation where the loss ratio method and the pure premium method cannot be used.

Common errors included:

- Confusing the methods; for example, stating that the loss ratio method needed exposures or that the pure premium method needed on-level premiums.
- Providing an example situation without elaborating as to why the stated method cannot be used for the example identified (i.e., not mentioning that it is the absence of a critical input that makes the example valid).
- Incorrectly listing an input that is not required in order to use the method.