3. (1.75 points)

Given the following:

Effective Date	Overall Average Rate Change	Rate Per Exposure ($)	Class Factor X	Class Factor Y	Class Factor Z	Expense Fee ($)
January 1, 2016	0.0%	1,000	1.20	0.85	1.00	120
July 1, 2017	10.0%	1,112	1.20	0.85	1.00	120
October 1, 2017	0.0%	1,175	1.10	0.75	1.00	120
April 1, 2018	1.0%	1,175	1.10	0.75	1.00	132

- All policies are semi-annual.
- Exposures are written uniformly throughout the year.
- Expense fee is a per exposure fee that is added in the last step of the rate calculation.

a. (0.75 point)

Calculate the on-level factor for calendar year 2017 earned premium using the parallelogram method.

b. (0.5 point)

Calculate the on-level factor for a policy effective on April 1, 2017 within Class Y using the extension of exposure method.

c. (0.5 point)

Assess the appropriateness of using the parallelogram method to calculate indicated class factors using the loss ratio method.

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EXAM 5 FALL 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 3	
TOTAL POINT VALUE: 1.75	**LEARNING OBJECTIVE(S): A2**

SAMPLE ANSWERS

Part a: 0.75 point

2017 Weight	0.75	0.25	0
Rate Level	1	1.1	1.1x1.01

0.75x1+0.25x1.1+0x1.111=1.025
1.1x1.01=1.111
1.111/1.025=1.0839

Part b: 0.5 point

Written premium on 04/01/2017:
1000x0.85+120=970
Current level premium:
1175x0.75+132=1013.25

1013.25/970=1.0446

Part c: 0.5 point

Sample 1
The parallelogram method is inappropriate because it is applied at the aggregate level using overall average rate change. It would not account for different class factor changing on 10/1/2017.

Sample 2
If the parallelogram method is applied at the class level using each class rate impact then it is appropriate. Otherwise this method would not account for the changing class factor on 10/1/2017.

EXAMINER'S REPORT

Candidates were expected to understand both parallelogram and extension of exposure methods, their underlying assumptions, and how to apply those methods to calculate on-level factors.

Part a

Candidates were expected to identify each rate level at different points in time and weight them to calculate the on-level factor.

A common mistake was miscalculating weights (portion of year) to apply to each rate level.

Part b

Candidates were expected to calculate written premium on different effective dates for a class, then calculate the on-level factor.

Common mistakes include:

- Using wrong point in time (row in table) or class factors
- Not including expense fee

Part c

Candidates were expected to understand that the parallelogram method is applied at the aggregate level using the average rate change.

Common mistakes include:

- Not identifying the different class factor changes
- Not realizing the parallelogram method uses overall average rate change