1. (2.5 points)

Given the following information for an insurance company:

Accident Year	Earned Premium ($000)	Ultimate Losses ($000)
2013	1,500	800
2014	1,600	800
2015	1,800	1,200

- A benefit level change increased losses by 10% for policies written after April 1, 2013.
- A second benefit level change decreased losses by 5% for accidents occurring after January 1, 2014.
- A rate change of +5% was effective October 1, 2013.
- Annual loss cost trend is +2%.
- All policies have a term of one year.
- The company writes policies uniformly throughout the year and files rates only one time per year.
- Planned rate revision to be effective January 1, 2017.

Calculate the on-level loss ratio for accident year 2013 for the planned rate revision.

CONTINUED ON NEXT PAGE

EXAM 5 SPRING 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 1	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVE(S): A2, A3**

SAMPLE ANSWERS

Sample 1

Benefit On-Level Factor
Benefit Level 1.00: Weighting of 1-.28125 = .71875
Benefit Level 1.10: Weighting of (.75)(.75)(.5) = .28125

Loss On-Level Factor = 1.045 / [(.28125)(1.1) + .71875] = 1.0164

Rate On-Level Factor
Rate Level 1.00: Weighting of 1-.03125 = 0.96875
Rate Level 1.05: Weighting of (.25)(.25)(0.5) = 0.03125

Rate On-Level Factor: 1.05 / [.96875 + (.03125)(1.05) = 1.0484

2013 EP x On-Level Factor = 1500 x 1.0484 = 1572.54 = On-Level EP

2013 Loss x On-Level Factor x Loss Trend = 800 x 1.0164 x (1.02) ^ 4.5 = 888.9

On-Level LR for AY 2013 = 888.9 / 1572.54 = 56.53%

Sample 2

Current Rate Level = 1.05

On-Level rate level factor for 2013:
1.05 x (0.5 x 3/12 x 3/12) + 1 x (.96875) = 1.05/1.00156 = 1.048

On-Level EP = 1500 x 1.048 = 1572

Assume premium trend is 0%

On-Level factor for losses in 2013:
1.045 / [(9/12 x 9/12 x 0.5) x 1.1 + (0.71875 x 1.0)] = 1.045 / 1.028125 = 1.0164

Loss trend is 2%

Trend period is 7/1/2013 to 1/1/2018 == > 4.5 years

Ultimate Trended Losses for AY 2013:
800,000 x 1.0164 x (1.02) ^ 4.5 = 889K

On-level Loss Ratio = 889/1572 = 56.55%

EXAMINER'S REPORT

Candidates were expected to know how to translate earned premium and incurred losses to current rate and benefit levels. This included calculating the "average rate" and "average benefit" levels associated with a specific accident year and translating these amounts to current levels. This question also involved incorporating trend into the on-leveling process.

This question was relatively straightforward, and candidates performed very well on this question.

Common mistakes included:

- Calculating the incorrect weighting for specific levels of rate or benefits
- Failing to translate either premiums or losses to current level properly (usually caused by a failure to correctly identify the current benefit level of 1.1 x 0.95 = 1.045 and/or the current rate level of 1.05)
- Failing to recognize the correct trend period of 4.5 years