

**Exam #1, Q.2:** Replace “actuarial reserve” by “Gross IBNR reserve”.  
The numerical solution is correct.

**Exam #4, Q.14.** Which of the following statements is not true?

**Exam #4, solution #13,** the Earned Premium is wrong.

CY16 Earned Premium:

Written + Beginning Unearned Premium Reserve - Ending Unearned Premium Reserve =  
 $200 + 90 - 100 = 180$ .

CY16 Incurred Losses:

Paid + Ending Loss Reserve- Beginning Loss Reserve =  
 $160 + 250 - 280 = 130$ .

Incurred to Earned Loss Ratio:  $130/180 = 72.2\%$ .

Here the unearned premium reserve increased, which decreases the CY earned premium.  
I need to change the letter choices.

**Exam #5, Q.3:** An insurer issues a group of annual general liability policies on January 1, 2018.

**Exam #6, Q.20:** Replace “actuarial reserve” by “loss reserve”.

The numerical solution is correct; since we are using paid data, we are determining the total reserves including case reserves.

**Exam #8, Q.9:** Since we are given a triangle of incurred data, the output is the Gross IBNR Reserve:  $(90.2 - 88) + (94.8 - 87) + (99.1 - 64) = 45.1$  million, matching none of the given choices.

My mistake was based on the same mistake in Exercise 3.5 in Brown and Lennox.

I will have to rewrite my question. See the following pages.

**Exam #11, Q.16:** Use the Bornhuetter-Ferguson method to estimate the **total** loss reserves (including case reserves but no loss adjustment expense) for AY17.

**Exam #11, Q.17:** Use the Bornhuetter-Ferguson method to estimate the **Gross IBNR** reserves (no loss adjustment expense) for AY17.

**Exam #12, Q.10:** can not be covered

Revised Exam #8, question 9 (solution on the next page):

9. You are given the following information on cumulative paid losses (million) through development years shown.

Accident Year	Cumulative Paid Losses by Development Year				Incurred to Date as of 12/31/17
	0	1	2	3	
2014	55	77	81	83	83
2015	58	82	88		92
2016	60	87			103
2017	64				83

There is no development past development year 3.

Calculate the gross IBNR using arithmetic average loss development factors.

- (A) 5 million      (B) 6 million      (C) 7 million      (D) 8 million      (E) 9 million

Solution to revised Exam #8, question 9:

**9. B.** Case Reserves:  $(92 - 88) + (103 - 87) + (83 - 64) = 39$  million.

The 0-1 development factor:  $(77/55 + 82/58 + 87/60) / 3 = 1.4213$ .

The 1-2 development factor:  $(81/77 + 88/82) / 2 = 1.0626$ .

The 2-3 development factor:  $83/81 = 1.0247$ .

AY15 estimated ultimate:  $(88)(1.0247) = 90.17$ .

AY16 estimated ultimate:  $(87)(1.0247)(1.0626) = 94.73$ .

AY17 estimated ultimate:  $(64)(1.0247)(1.0626)(1.4213) = 99.04$ .

Total Reserve is:  $(90.17 - 88) + (94.73 - 87) + (99.04 - 64) = 44.94$  million.

Gross IBNR is: Total Reserves - Case Reserves =  $44.94$  million -  $39$  million = **5.94 million**.

Alternately, Gross IBNR Reserve is: Estimated Ultimate - Incurred =  
 $(90.17 - 92) + (94.73 - 103) + (99.04 - 83) = \mathbf{5.94}$  million.