Reading: Klann.ReinsComm (Reinsurance (Model - 2017.Fall Q27b)) 01a-Question
Model: 2017.Fall #27b
Problem Type: restate triangles after commutation

Given

Primary Insurer

Ceded Paid Losses without Commutation			
policy year	**12**	**24**	**36**
PY-2	900	990	1,080
PY-1	900	990	
PY	900		

In the exam problem, PY = 2016

Primary Insurer

Net Reserves without Commutation			
policy year	**12**	**24**	**36**
PY-2	1,200	800	400
PY-1	1,200	800	
PY	1,200		

quota-share %	90%
commutation price:	100

Problem The insurer has decided to commute this contract for PY-2 within the latest calendar year.

i Restate the primary insurer's **net paid** loss triangle after commutation.
ii Restate the primary insurer's **net ultimate** loss triangle after commutation.

Hint 1: State the desired triangles **without** commutation, then make the appropriate adjustments.

Hint 2: Identify that cells in the triangle that are impacted by the commutation:
==> the only cell that is impacted is PY-2 & 36 months

Note: gross pd = ceded pd / qs%
net pd = gross pd x (1 - qs%)

==> net pd = ceded pd x (1 - qs%) / qs%

Primary Insurer

Net Paid Losses without Commutation			
policy year	**12**	**24**	**36**
PY-2	100	110	120
PY-1	100	110	
PY	100		

Step 1:
- use the above formula to create the net paid triangle without commutation *(on left)*

Step 2:
- adjust the appropriate entry from Step 1 *(see below)*

Primary Insurer *(this is the answer to part i)*

Net Paid Losses with Commutation			
policy year	**12**	**24**	**36**
PY-2	100	110	20
PY-1	100	110	
PY	100		

commutation price = 120 - 100

For part ii, proceed as follows:

Step 1:
- compute net **ultimate** loss triangle without commutation by summing net paid loss & net reserve *(on left)*

Step 2:
- adjust the appropriate entry from Step 1 *(see below)*

Primary Insurer

Net Ultimate Losses without Commutation			
policy year	**12**	**24**	**36**
PY-2	1,300	910	520
PY-1	1,300	910	
PY	1,300		

Primary Insurer

Net Ultimate Losses with Commutation			
policy year	**12**	**24**	**36**
PY-2	1,300	910	4,020
PY-1	1,300	910	
PY	1,300		

paid loss with commutation = 20 + net resv without commutation 400 + ceded resv without commutation 3600

Note: gross resv = net resv / (1 - qs%)
ceded resv = gross resv x qs%

==> ceded resv = net resv x qs% / (1 - qs%)