Find   Use a frequency-severity method to estimate the   unpaid   claims for AY 2025
Book of Triangles Scenario 0: stable data

Given   paid loss @ Dec 31, 2025   700

	Cumulative Reported Counts **(CRC)**			
AY	12	24	36	48
2022	600	800	1,000	1,100
2023	600	800	1,000	
2024	600	800		
2025	600			

* no development past 72 months

	Cumulative Reported Loss ($000s) **(CPL)**			
AY	12	24	36	48
2022	2,160	2,880	3,600	3,960
2023	2,160	2,880	3,600	
2024	2,160	2,880		
2025	2,160			

* no development past 72 months

Step 1   develop reported counts to ultimate

=====> **link ratios for reported count triangle**

AY	12-24	24-36	36-48	48-ult		
2022	1.333	1.250	1.100			
2023	1.333	1.250				
2024	1.333					
2025					48-60	60-72
selected	**1.333**	**1.250**	**1.100**	**1.074**	1.049	1.024

Tail Factor: The triangle is <u>not</u> fully developed as of 48 months. I used the 'square-root' rule of thumb for the age-to-age LDFs below.

=====> **calculate age-to-ultimate LDFs**

	12-ult	24-ult	36-ult	48-ult
age -> ult	1.969	1.477	1.182	**1.074**

<====== (**selected**) x (prior [age -> ult])
(calculate from right-to-left)

=====> **calculate ultimate counts based on latest reported counts**

	'25@12	'24@24	'23@36	'22@48
diagonal	600	800	1,000	1,100
ultimate	1,182	1,182	1,182	1,182

<====== (**diagonal**) x (age -> ult)

Step 2a   calculate CRS triangle   *(CRS = Cumulative Reported Severity)*

	Cumulative Reported <u>Severity</u> **(CRS)**			
AY	12	24	36	48
2022	3,600	3,600	3,600	3,600
2023	3,600	3,600	3,600	
2024	3,600	3,600		
2025	3,600			

Step 2b   develop reported severities to ultimate

=====> **link ratios for reported severity triangle**

AY	12-24	24-36	36-48	48-ult
2022	1.000	1.000	1.000	
2023	1.000	1.000		
2024	1.000			
2025				
selected	**1.000**	**1.000**	**1.000**	**1.000**

Tail Factor: The triangle is fully developed as of 48 months. That means the 48-ult <u>tail factor</u> is equal to 1.0

=====> **calculate age-to-ultimate LDFs**

	12-ult	24-ult	36-ult	48-ult
age -> ult	1.000	1.000	1.000	**1.000**

<====== (**selected**) x (prior [age -> ult])
(calculate from right-to-left)

=====> **calculate ultimate severities based on latest reported severities**

	'25@12	'24@24	'23@36	'22@48
diagonal	3,600	3,600	3,600	3,600
ultimate	3,600	3,600	3,600	3,600

<====== (**diagonal**) x (age -> ult)

Step 3a   calculate ultimate losses as: (ultimate counts) x (ultimate severities)

ultimate counts	1,182	1,182	1,182	1,182	<====== from Step 1
ultimate severities	3,600	3,600	3,600	3,600	<====== from Step 2b
ultimate losses (000s)	4,253	4,253	4,253	4,253	

Step 3b   calculate <u>unpaid</u> losses for AY 2025   *<==== pay attention to whether the question asks for **ultimate** or **unpaid***

unpaid	=	ultimate	-	latest paid
	=	4,253	-	700
	=	3,553	*<-- final answer*	

Reading: Friedland 11 (Frequency-Severity Methods)
Model: 2019.Spring #15
Problem Type: Reserving Methods - FS (Basic Method)

Find   Use a frequency-severity method to estimate the   unpaid   claims for AY 2025

Given   paid loss @ Dec 31, 2025   700

	Cumulative Reported Counts (CRC)			
AY	12	24	36	48
2022	600	800	1,000	1,088
2023	630	784	1,150	
2024	642	824		
2025	618			

* no development past 72 months

	Cumulative Reported Loss ($000s) (CPL)			
AY	12	24	36	48
2022	2,160	2,952	3,672	3,996
2023	2,304	2,988	3,672	
2024	2,304	2,988		
2025	2,304			

* no development past 72 months

* no development past 48 months

Step 1   develop reported counts to ultimate

=====> **link ratios for reported count triangle**

AY	12-24	24-36	36-48	**48-ult**
2022	1.333	1.250	1.088	
2023	1.244	1.467		
2024	1.283			
2025				

					48-60	60-72
=====>	**selected**	1.287	1.358	1.088	**1.065**	1.043	1.021

Tail Factor: The triangle is <u>not</u> fully developed as of 48 months. I used the 'square-root' rule of thumb for the age-to-age LDFs below.

=====> **calculate age-to-ultimate LDFs**

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.026	1.574	1.159	**1.065**

<====== (**selected**) x (prior [age -> ult])
(calculate from right-to-left)

=====> **calculate ultimate counts based on latest reported counts**

	'25@12	'24@24	'23@36	'22@48
diagonal	618	824	1,150	1,088
ultimate	1,252	1,297	1,333	1,159

<====== (**diagonal**) x (age -> ult)

Step 2a   calculate CRS triangle   *(CRS = Cumulative Reported Severity)*

	Cumulative Reported <u>Severity</u> **(CRS)**			
AY	12	24	36	48
2022	3,600	3,690	3,672	3,673
2023	3,657	3,811	3,193	
2024	3,589	3,626		
2025	3,728			

Step 2b   develop reported severities to ultimate

=====> **link ratios for reported severity triangle**

AY	12-24	24-36	36-48	**48-ult**
2022	1.025	0.995	1.000	
2023	1.042	0.838		
2024	1.010			
2025				
selected	1.026	0.916	1.000	**1.000**

Tail Factor: The triangle is fully developed as of 48 months. That means the 48-ult <u>tail factor</u> is equal to 1.0

=====> **calculate age-to-ultimate LDFs**

	12-ult	24-ult	36-ult	48-ult
age -> ult	0.940	0.917	1.000	**1.000**

<====== (**selected**) x (prior [age -> ult])
(calculate from right-to-left)

=====> **calculate ultimate severities based on latest reported severities**

	'25@12	'24@24	'23@36	'22@48
diagonal	3,728	3,626	3,193	3,673
ultimate	3,506	3,324	3,194	3,673

<====== (**diagonal**) x (age -> ult)

Step 3a   calculate ultimate losses as: (ultimate counts) x (ultimate severities)

ultimate counts	1,252	1,297	1,333	1,159	<====== from Step 1
ultimate severities	3,506	3,324	3,194	3,673	<====== from Step 2b
ultimate losses (000s)	4,391	4,312	4,257	4,257	

Step 3b   calculate <u>unpaid</u> losses for AY 2025   <==== *pay attention to whether the question asks for* **ultimate** *or* **unpaid**

unpaid	=	ultimate	-	latest paid
	=	4,391	-	700
	=	3,691	*<-- final answer*	