Model: Source Text

Problem Type: Produce an aggregate loss distribution from the claim count and severity distributions

Given

Count Distribution	
# Claims	Probability
0	25%
1	50%
2	25%

Severity Distribution	
Loss Amount	Probability
$1,000	90%
$10,000	10%

Find Produce the aggregate loss distribution from the claim count and severity distributions

Model: Source Text

Problem Type: Produce an aggregate loss distribution from the claim count and severity distributions

Count Distribution	
# Claims	Probability
0	25%
1	50%
2	25%

Severity Distribution	
Loss Amount	Probability
$1,000	90%
$10,000	10%

Solution

We need to combine the two distributions together by considering all possible aggregate loss sizes in increasing order.

Aggregate Loss Distribution

Total Losses	Probability	Calculation	Notes
$0	25.00%	No claims	
$1,000	45.00%	1x $1,000 claim	
$2,000	20.25%	2x $1,000 claims	**<= Only 1 way to assign the claims**
$10,000	5.00%	1x $10,000 claim	
$11,000	4.50%	1x $10,000 & 1x $1,000 claims	**<= Pr(2 claims) * [Pr($10,000) * Pr($1,000) * (# ways to assign those claims)]**
$20,000	0.25%	2x $10,000 claims	**<= Only 1 way to assign the claims**

Alice: "Here are some important thoughts for when you're doing something like this under exam pressure. "

• *Remember the severity distribution applies only if a claim has occurred.*

• *Don't forgot to count the number of ways you can assign the different claim severities to the claims.*

• *It's a great idea to check your probabilities add up to 100%. This is an easy way to catch counting errors.*

Aggregate Loss Distribution

Total Losses	Probability	Calculation	Notes
$0	25.00%	No claims	
$1,000	45.00%	1x $1,000 claim	
$2,000	20.25%	2x $1,000 claims	
$10,000	5.00%	1x $10,000 claim	
$11,000	4.50%	1x $10,000 & 1x $1,000 claims	**<= Pr(2 claims) * [Pr($10,000) * Pr($1,000) * (# ways to assign those claims)]**