DJ concert analysis

A DJ has a playlist of 10 songs. Each song has a different duration. At the end of each song, she performs one of the following three alternatives:
- Continue to the next song
- Extend the current song (by looping, scratching and adding effects)
- Skip the next song, and continue with the following one

When a song it is extended, at the end of the extension, there is again a probability of continuing to the next song, or skip it and jump to the following one. However, the first and the last song cannot be skipped, and they are always played. Each song being played, requires the payment of a royalty fee. When the show is over, we suppose the next one starts immediately.

Compute the following performance metrics:
- The probability that a patron ears a specific song, when randomly entering the concert (the probability that, in given moment in time, a specific song is being played), for songs 1, 2, 5, 9 and 10.
- The average cost of the songs.
- The number of shows that could be played per day. Inverting this rate, also compute the average duration of the concerts (a special application of Little's law) in minutes.

Use the following table to determine lengths, probabilities and costs for each song. Consider the length of the song being exponentially distributed, with the value considered as its mean.

Song Len.	Extension Prob.	Skip Next Prob.	Extension Len.	Skip Next if extended	Royalty fee
240 sec.	20%	5%	30s.	10%	5€
300 sec.	10%	40%	30s.	50%	3€
210 sec.	25%	10%	60s.	30%	3€
235 sec.	20%	20%	30s.	20%	4€
350 sec.	10%	50%	20s.	50%	5€
185 sec.	40%	20%	90s.	10%	3€
220 sec.	30%	10%	30s.	10%	3€
320 sec.	10%	5%	20s.	5%	3€
260 sec.	20%	0%	60s.	0%	5€
480 sec,	50%	0%	120s.	0%	8€

Suggestion: you will very likely need 20 states. There is file called Data.csv, which contains the data in the previous table in a machine-readable format.