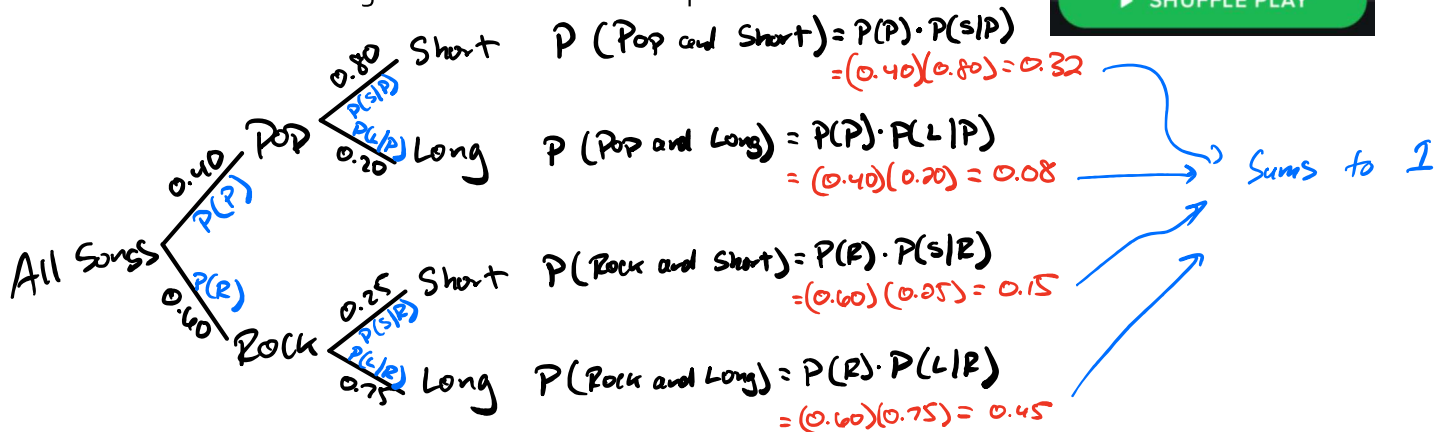


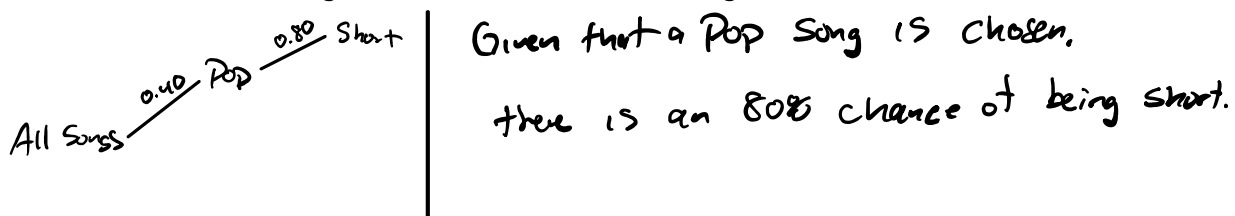
Hw P.7

Juicy has a Spotify playlist with over 1000 songs. All the songs are classified as either pop or rock – with 40% being pop and 60% being rock. Of the pop songs, 80% of them are short (less than 3 minutes), while only 25% of the rock songs are short. Suppose that Juicy uses "SHUFFLE PLAY" to choose his first song of the day.

1. Construct a tree diagram to model this chance process.



2. Describe the meaning of the 80% (0.80) in the tree diagram?



3. What is the probability that a short pop song is chosen?

$$\begin{aligned}
 P(\text{Pop and Short}) &= P(\text{Pop}) \cdot P(\text{Short} | \text{Pop}) \\
 &= (0.40)(0.80) \\
 &= 0.32
 \end{aligned}$$

4. What is the probability that a short rock song is chosen?

$$\begin{aligned}
 P(\text{Rock and Short}) &= P(\text{Rock}) \cdot P(\text{Short} | \text{Rock}) \\
 &= (0.60)(0.25) \\
 &= 0.15
 \end{aligned}$$

5. Find the probability that a short song is chosen.

$$\begin{aligned}
 P(\text{Short}) &= P(\text{Pop and Short}) + P(\text{Rock and Short}) \\
 &= 0.32 + 0.15 \\
 &= 0.47
 \end{aligned}$$

6. Given that the song selected is short, what is the probability that it was a pop song?

$$\begin{aligned}
 P(\text{Pop} | \text{Short}) &= \frac{P(\text{P and S})}{P(S)} \\
 &= \frac{0.32}{0.47}
 \end{aligned}$$