

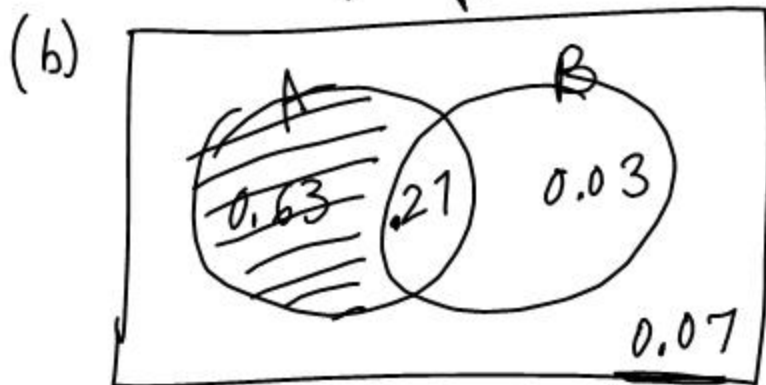
3F #2

$$P(K \cap \text{Ten}) = P(K) \cdot P(\text{Ten}) = \frac{1}{13} \cdot \frac{1}{13} \\ \begin{array}{c} \uparrow \quad \uparrow \\ \text{independent} \end{array} = \frac{1}{169}$$

#3 $P(p \cap p \cap p) = \frac{4}{5} \cdot \frac{4}{5} \cdot \frac{4}{5} = \frac{64}{125}$
consider these to be independent $\frac{4}{5} \cdot \frac{15}{19} \cdot \frac{14}{18}$

#12 $P(A) = 0.9$ $P(B) = 0.3$

(a) $P(A \cap B) = P(A) \cdot P(B) = (0.9)(0.3) = 0.27$
because they're independent



$$P(A \cap B') = 0.63$$

$$(c) P(A \cup B)' = 0.07$$

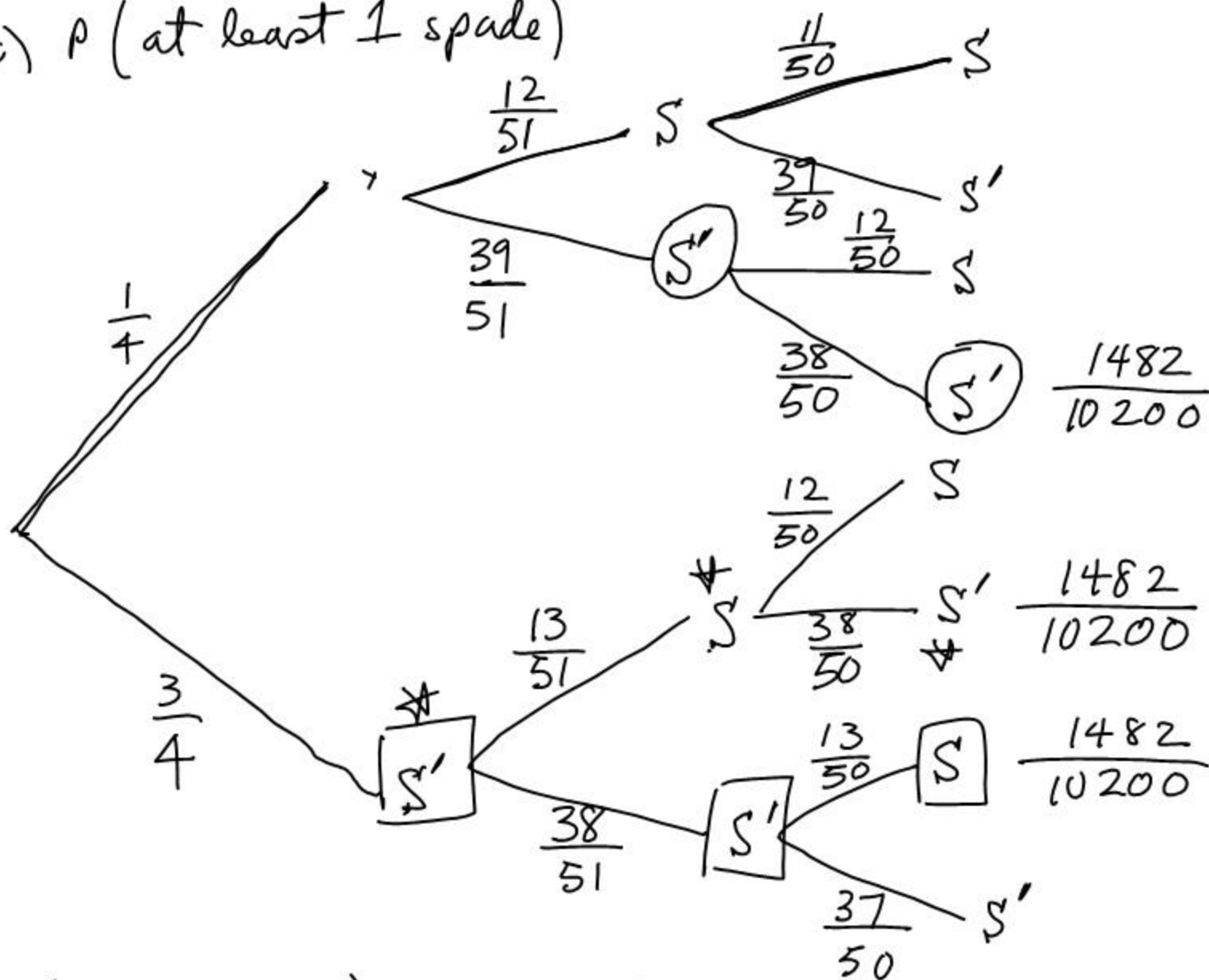
Probability Trees

Ex. Draw 3 cards w/out replacement. Count the spades.

(a) $P(\text{no spades}) = \frac{3}{4} \cdot \frac{38}{51} \cdot \frac{37}{50} = \frac{4218}{10200} = 0.414$

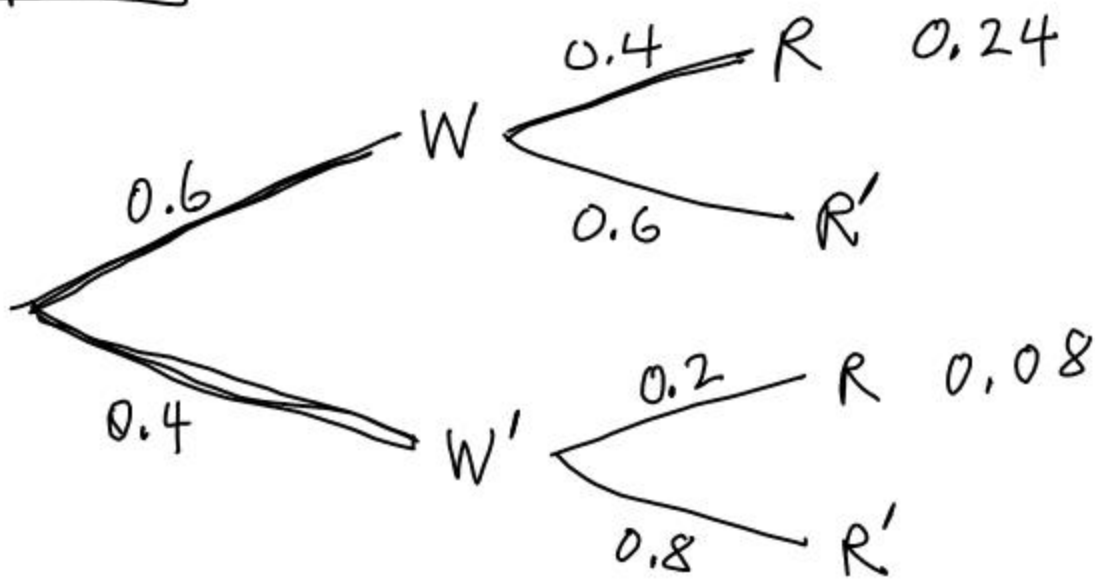
(b) $P(\text{exactly 1 spade}) = \frac{3(1482)}{10200} = \frac{4446}{10200}$

(c) $P(\text{at least 1 spade})$



$$\begin{aligned}
 P(\text{at least spade}) &= 1 - P(\text{no spades}) \\
 &= 1 - \frac{4218}{10200} = \frac{5982}{10200}
 \end{aligned}$$

3H #6



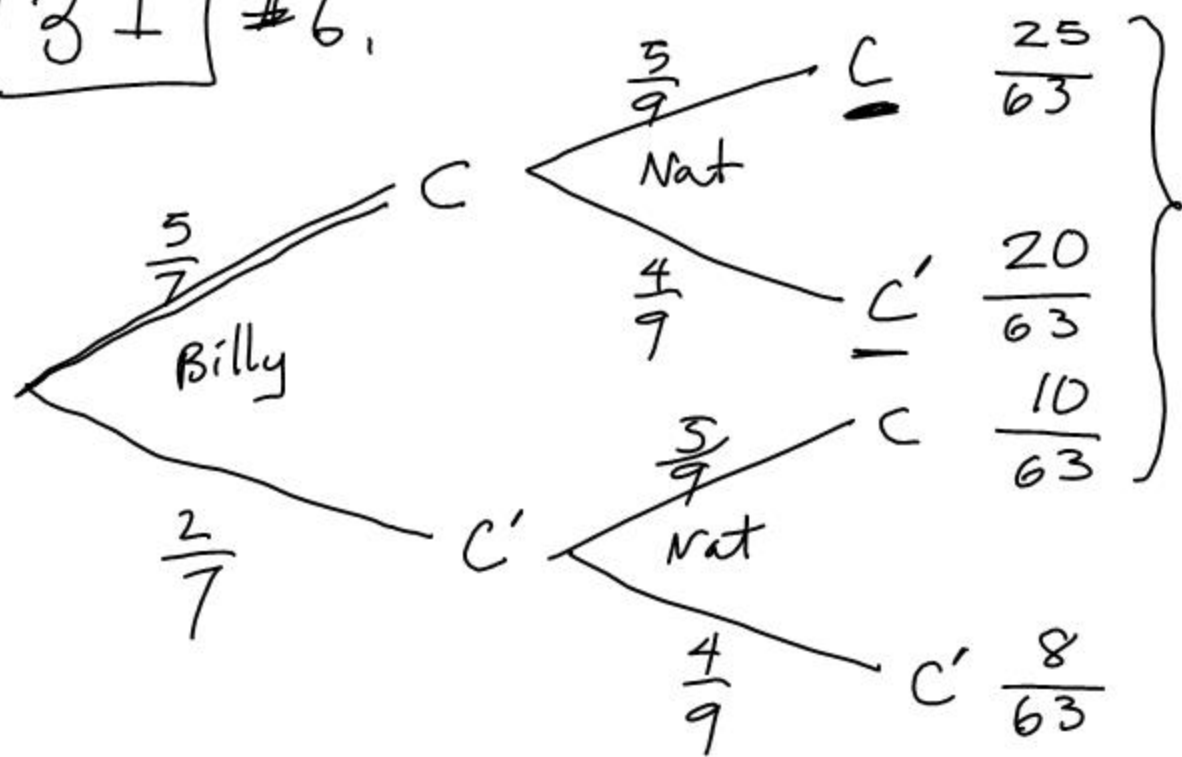
$$P(R) = 0.24 + 0.08 = 0.32$$

$$P(R') = 0.68$$

$$P(R' \cap R') = (0.68)(0.68) = 0.462$$

↑ ↑
assume
the 2 events
are independent.

$\boxed{3I} \#6.$



$$\begin{aligned} P(\text{at least 1 is correct}) &= 1 - P(\text{both wrong}) \\ &= 1 - \frac{8}{63} = \frac{55}{63} \end{aligned}$$

$$P(\text{Billy is correct} \mid \text{at least 1 of them is correct})$$

$$= \frac{P(\text{Billy correct} \cap \text{at least 1 correct})}{P(\text{at least 1 correct})}$$

$$= \frac{\frac{25}{63} + \frac{20}{63}}{\frac{55}{63}} = \frac{45}{55} = \frac{9}{11}$$

$$(c) P(\text{Nat is correct} \mid \text{at least 1 got J})$$

$$= \frac{\frac{25}{63} + \frac{10}{63}}{\frac{55}{63}} = \frac{35}{55} = \frac{7}{11}$$

$$(d) P(2 \text{ correct} \mid \text{at least 1 correct})$$

$$= \frac{P(2 \text{ correct} \cap \text{at least 1 correct})}{P(\text{at least 1 correct})}$$

$$= \frac{\frac{25}{63}}{\frac{55}{63}} = \frac{25}{55} = \frac{5}{11}$$