

$$\begin{array}{r} 12 \\ + 24 \\ \hline 36 \\ - 27 \\ \hline 9 \end{array} \quad \begin{array}{r} 40 \\ - 13 \\ \hline 27 \end{array}$$

$$P(F \cap S) = \frac{9}{40}$$

$$P(F \cup S) = \frac{27}{40}$$

$$P(F' \cap S) = \frac{15}{40}$$

Addition formula

$$(2) P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$= \frac{1}{3} + \frac{5}{12} - \frac{1}{12} = \frac{8}{12} = \frac{2}{3}$$

$$(3) P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{\frac{1}{4}}{\frac{5}{8}} = \frac{2}{5}$$

conditional
prob.
formula

$$P(B|A) = \frac{P(A \cap B)}{P(A)} = \frac{\frac{1}{4}}{\frac{1}{2}} = \frac{1}{2}$$

Thursday during ELT

3F #2 Independent Events

$$P(K \cap \text{Ten}) = P(K) \cdot P(\text{Ten})$$

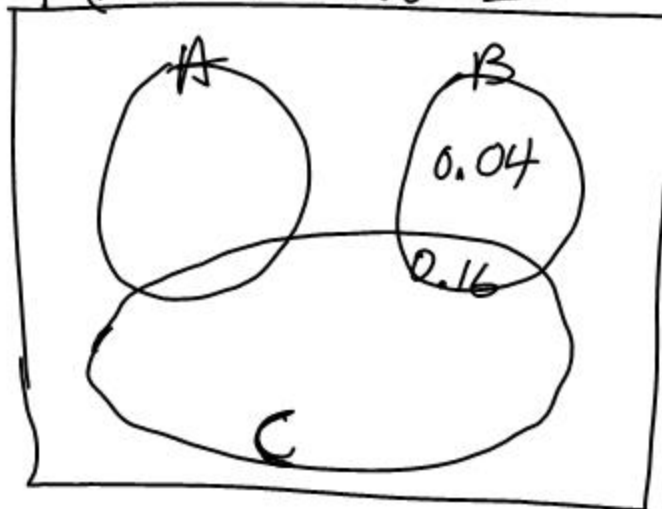
$$= \frac{1}{13} \cdot \frac{1}{13} = \frac{1}{169}$$

#3 $\frac{4}{5} \cdot \frac{4}{5} \cdot \frac{4}{5} = \frac{64}{125}$ ~~16~~ 4
15

#5 $P(A \cap B) = 0$ (b)
 $P(A) = 0.2$

$P(C) = 0.3$
 $\rightarrow P(A \cup B) = 0.4$
 $P(B \cup C) = 0.34$
 $P(B) = 0.2$

$P(B) \cdot P(C) = (0.2)(0.3) = 0.06$
 $P(B \cap C) = 0.16$ NO



$P(B \cup C) = P(B) + P(C) - P(B \cap C)$
 $0.34 = 0.2 + 0.3 - P(B \cap C)$
 $P(B \cap C) = 0.16$

$$\begin{array}{r} 0.3 \\ \times 0.2 \\ \hline .06 \end{array}$$

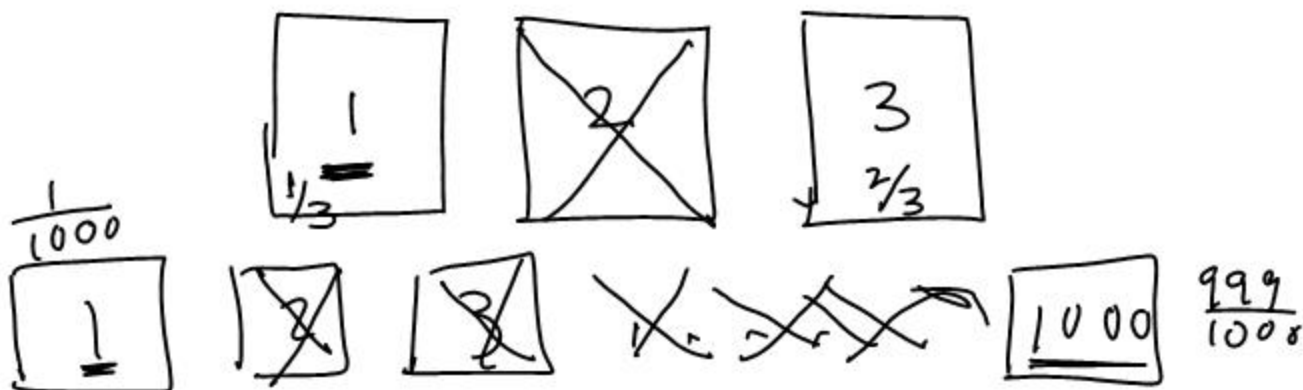
$$\frac{2}{10} \cdot \frac{3}{10} = \frac{6}{100}$$

#8 Independent Events

$$\frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4} = \frac{1}{256}$$

#8½ Draw without replacement. (not indep. events)

$$\frac{1}{4} \cdot \frac{12}{51} \cdot \frac{11}{50} \cdot \frac{10}{49}$$

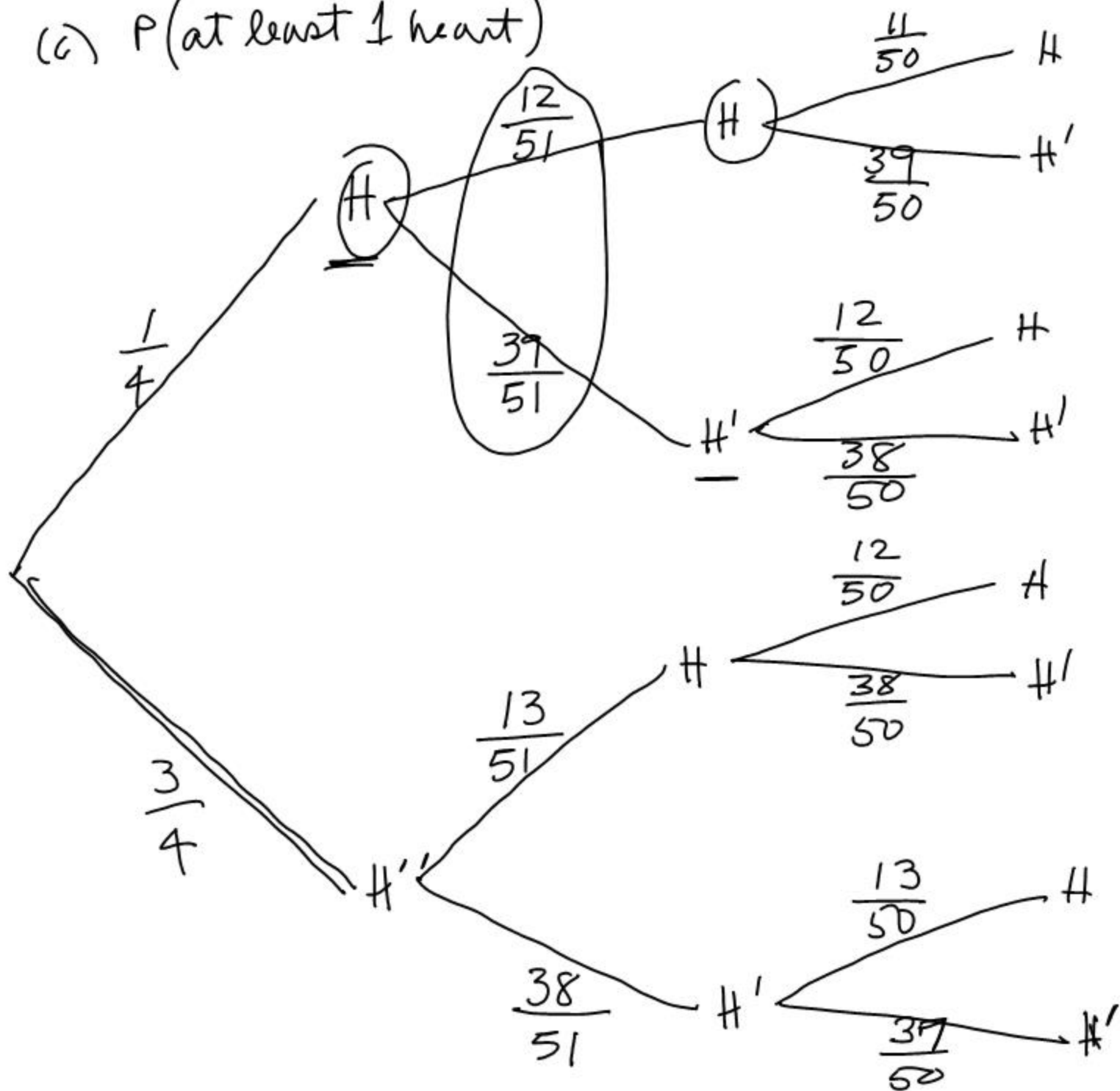


Probability Trees

Draw 3 cards from a deck w/out replacement. Count the number of hearts.

(a) $P(\text{no hearts})$ (b) $P(\text{exactly 1 heart})$

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



$$(a) P(\text{no hearts}) = \frac{3}{4} \cdot \frac{38}{51} \cdot \frac{37}{50} = \frac{4218}{10200} \approx 0.413$$

(b) $P(\text{exactly 1 heart})$

$$= \frac{1}{4} \cdot \frac{39}{51} \cdot \frac{38}{50} + \frac{3}{4} \cdot \frac{13}{51} \cdot \frac{38}{50} + \frac{3}{4} \cdot \frac{38}{51} \cdot \frac{13}{50}$$

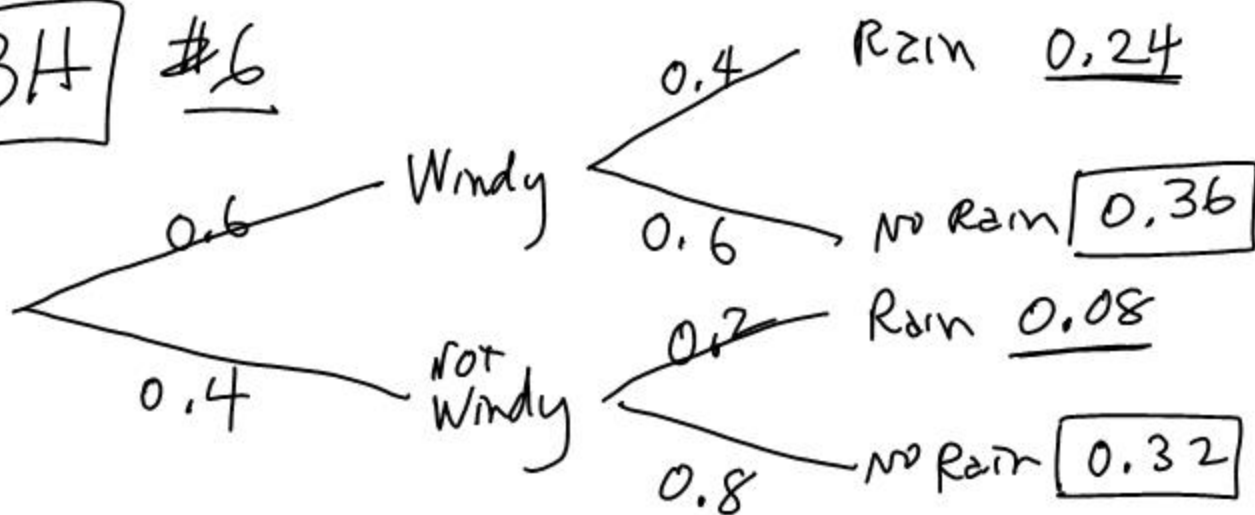
$$= \frac{4446}{10200} \approx 0.436$$

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

$$= 1 - P(\text{no hearts})$$

$$= 1 - \frac{4218}{10200} = \frac{5982}{10200} \approx 0.586$$

3H #6



$$(c) \underbrace{(0.68)(0.68)} = 0.462$$

assuming day 1 and day 2 are independent.

HW 3H # 1, 3, 4

3I # 1 - 3