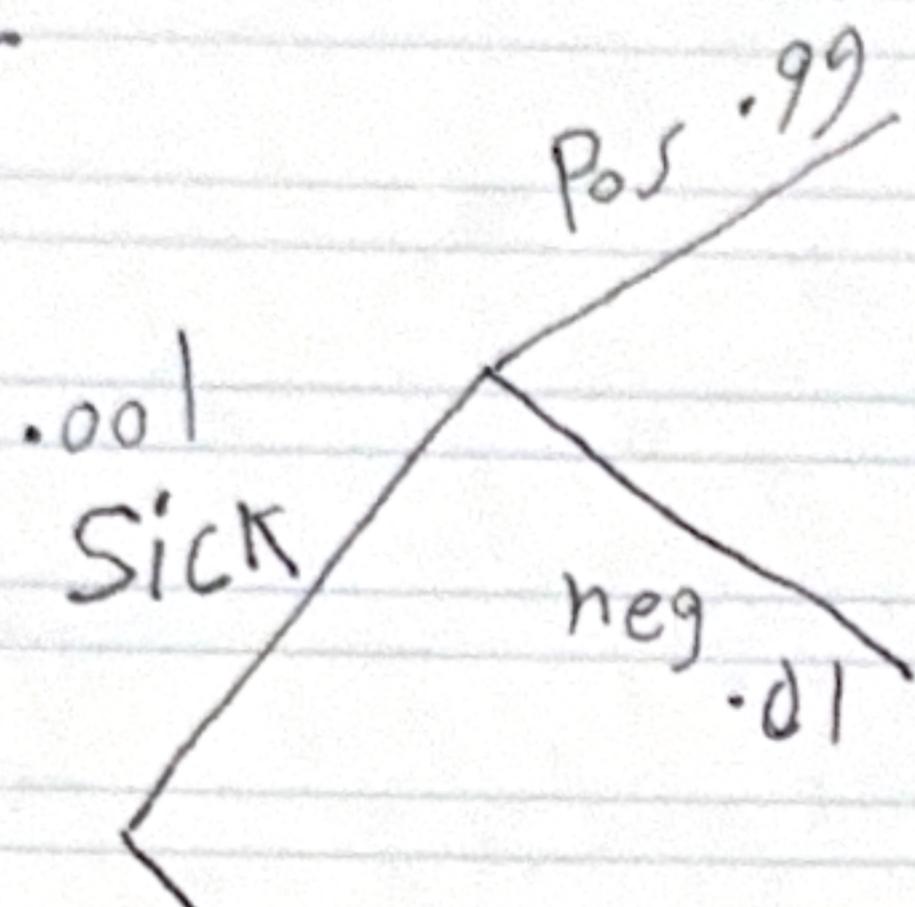


# Recitation 18

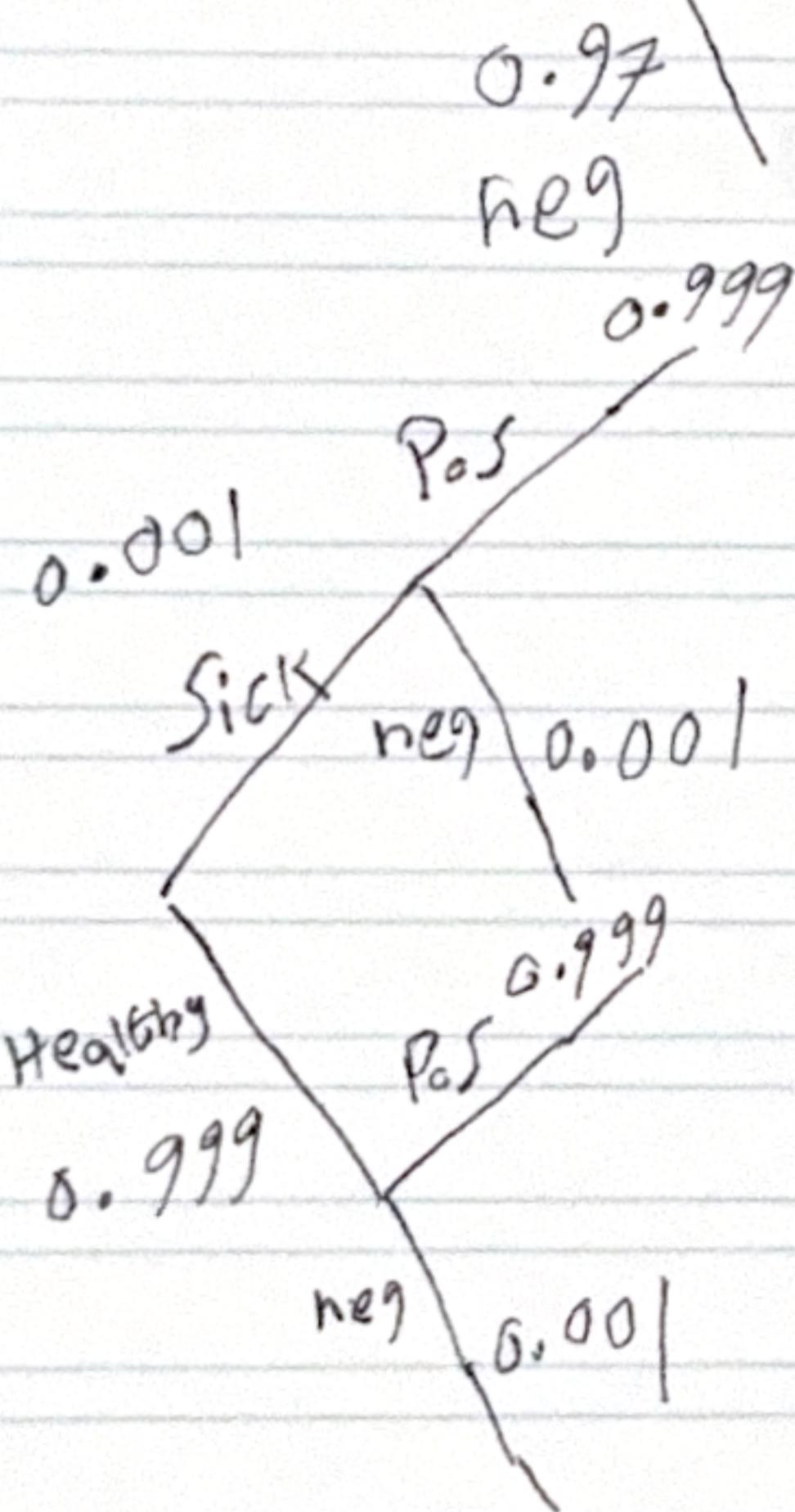
1



$$\Pr\{E\} = \Pr\{E|D\} \cdot \Pr\{D\} + \Pr\{E|\bar{D}\} \cdot \Pr\{\bar{D}\}$$

$$= 0.01 \times 0.001 + 0.03 \cdot 0.999$$
~~= 0.0001 + 0.02997~~

$$= 0.02998$$



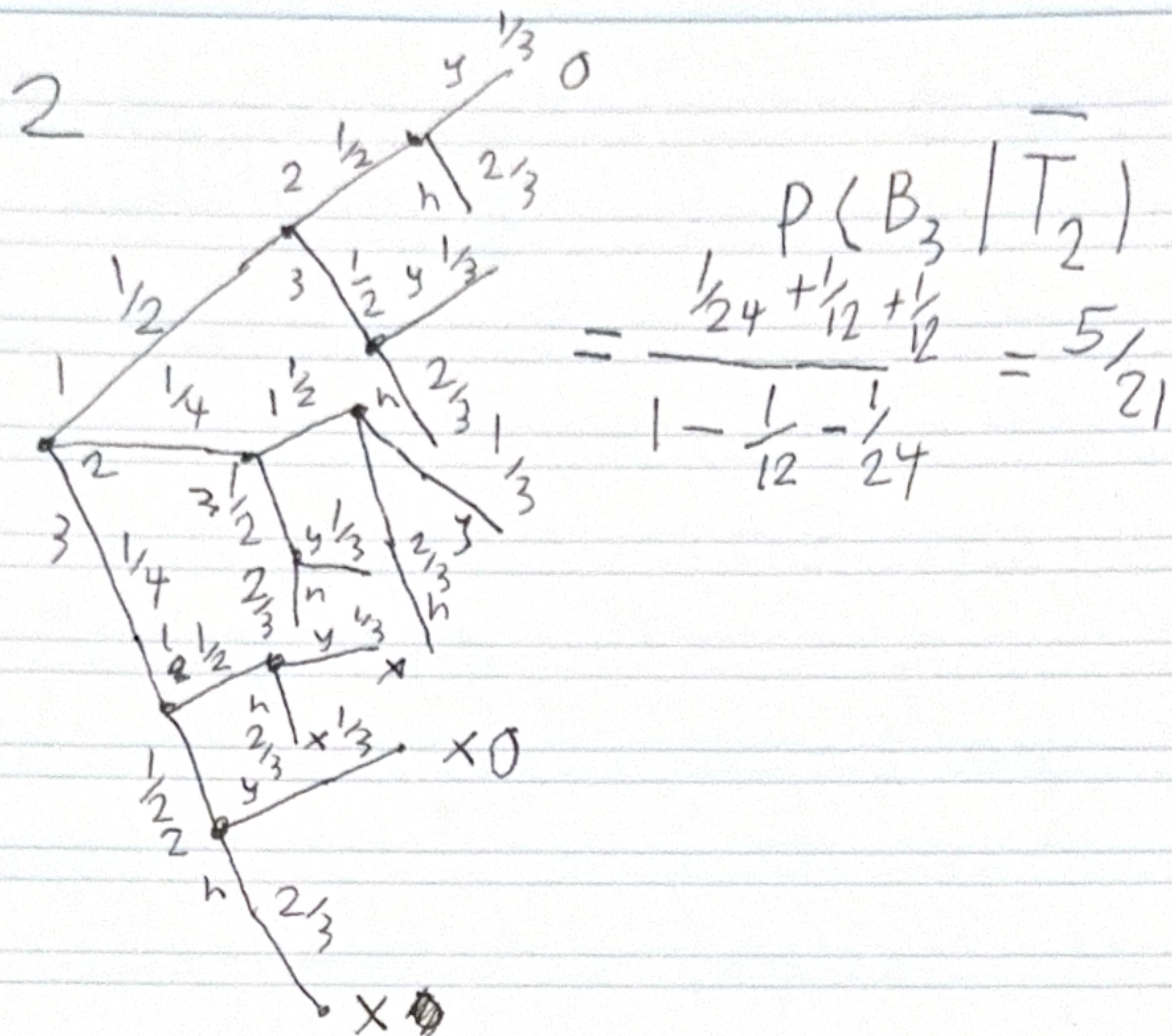
$$\Pr\{F\} = \Pr\{F|D\} \cdot \Pr\{D\}$$

$$+ \Pr\{F|\bar{D}\} \cdot \Pr\{\bar{D}\}$$

$$= 0.001 \times 0.999 + 0.001 \times 0.999$$
~~= 0.000999 + 0.000999 = 0.001998~~

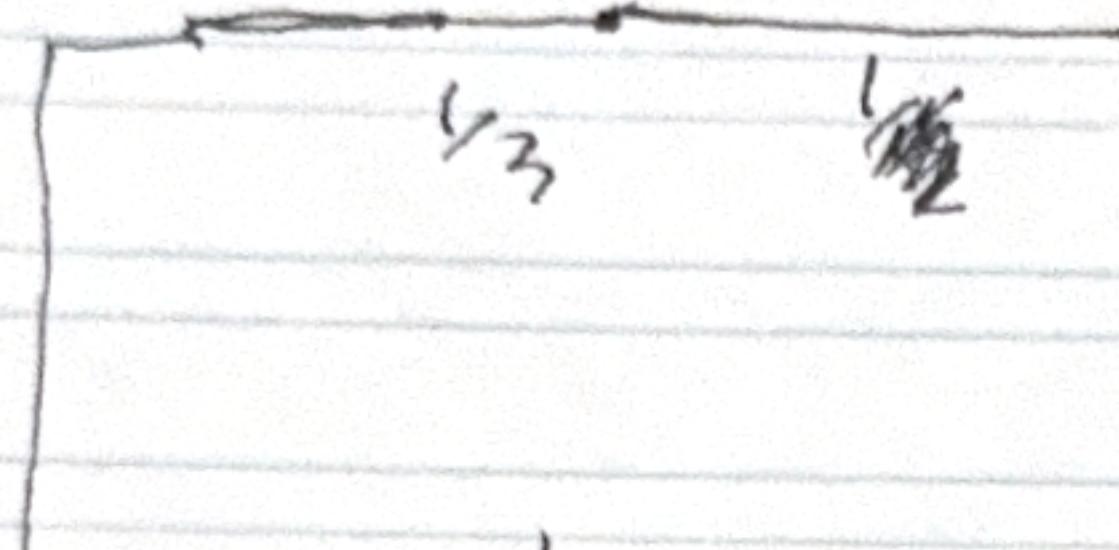
$$= 0.001998$$

Doctor Y is more reliable!



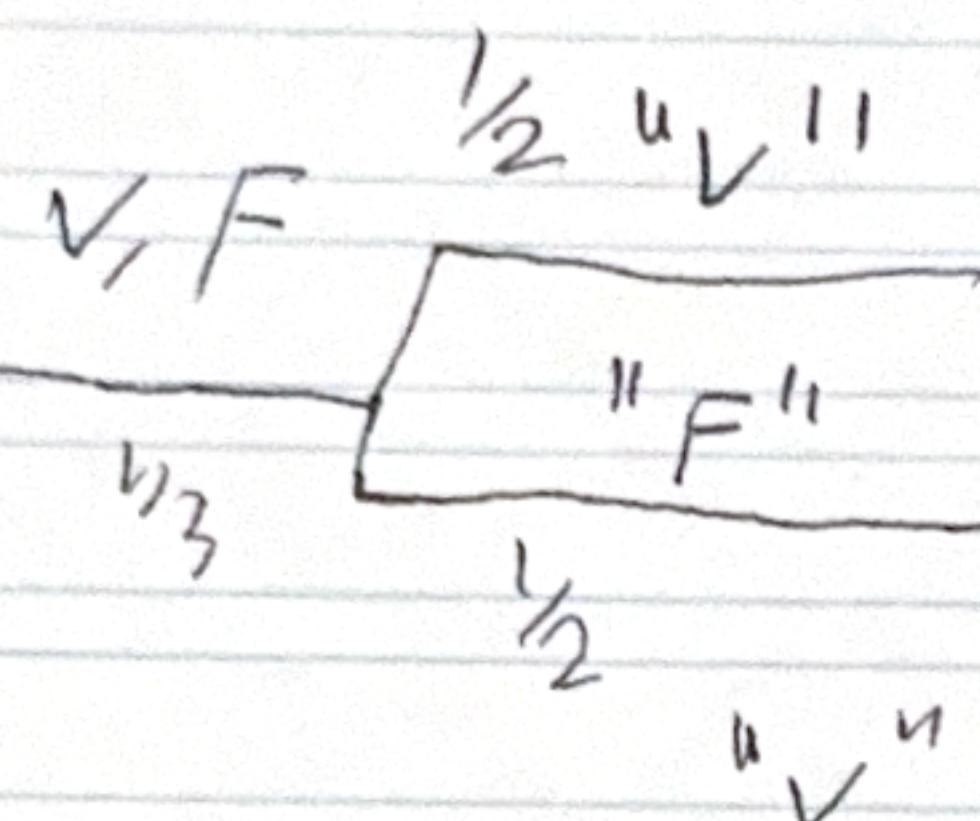
3

$F, S$       "F"



$$\Pr(S) = \frac{2}{3}$$

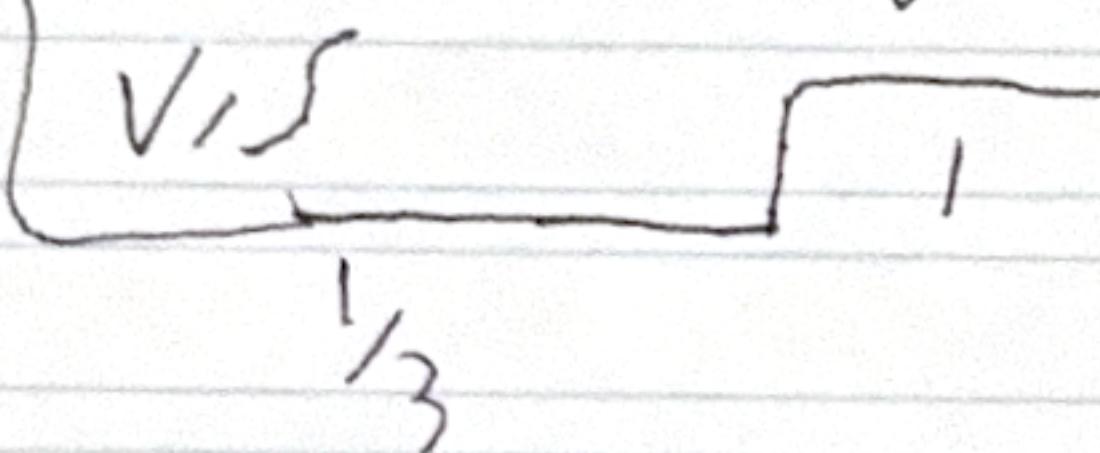
$$\Pr(F) = \frac{1}{3} + \frac{1}{8} + \frac{1}{8} = \frac{2}{3}$$



$$\Pr(S \cap F) = \frac{1}{3}$$

$$\Pr(S|F) = \frac{1}{2}$$

$$\Pr\{"F"\} = \frac{1}{3} + \frac{1}{8} = \frac{1}{2}$$



$$\Pr\{S | "F"\} = \frac{\Pr(S \cap F)}{\Pr("F")}$$

$$= \frac{\frac{1}{3}}{\frac{1}{2}} = \frac{2}{3}$$