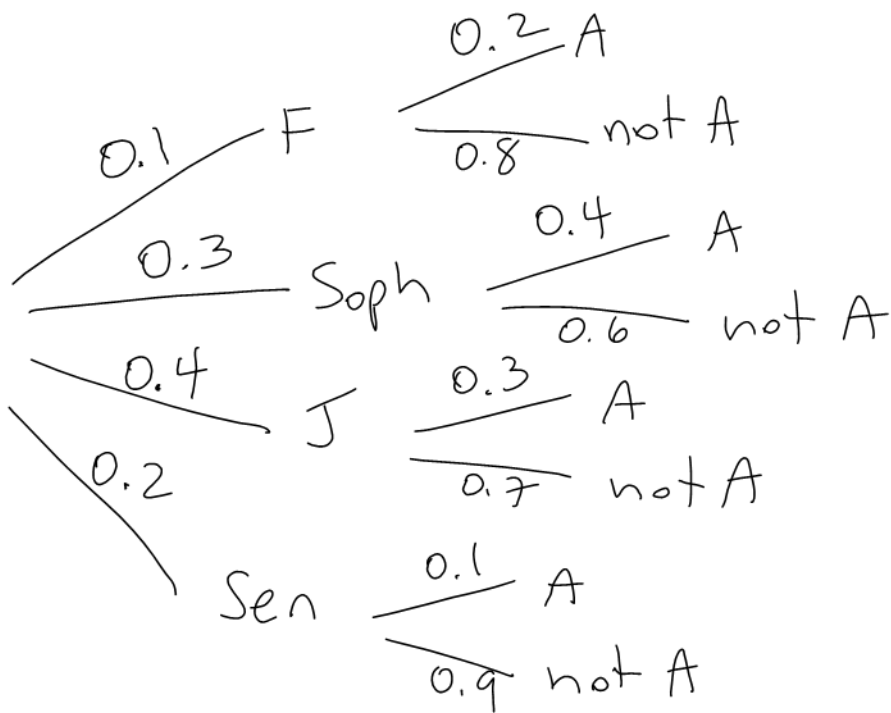
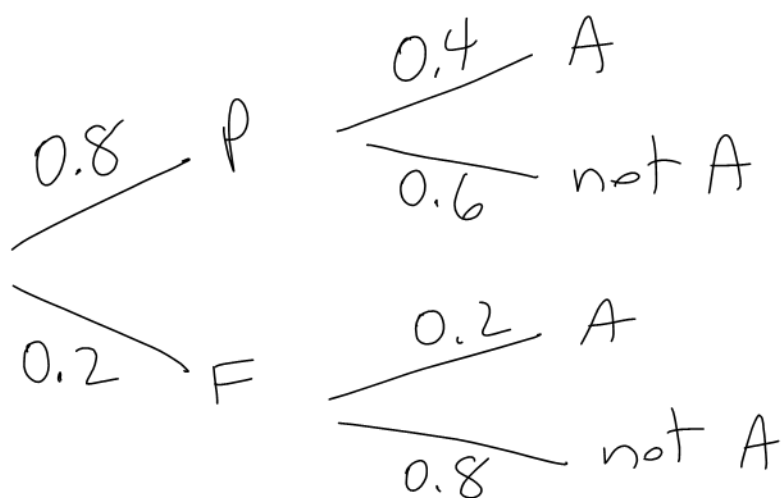


(3) Let F stand for first-year.
 " Soph " sophomore.
 " J " junior.
 " Sen " senior.
 " A " receives an A.



$$\begin{aligned}
 & \Pr(\text{Soph given } A) \\
 &= \Pr(\text{Soph} \mid A) \\
 &= \frac{\Pr(\text{Soph} \cap A)}{\Pr(A)} \\
 &= \frac{0.3(0.4)}{[0.1(0.2) + 0.3(0.4) + 0.4(0.3) + 0.2(0.1)]} \\
 &\approx 0.43
 \end{aligned}$$

⑦ Let P stand for passed exam.
Let F " failed exam.
Let A " earned an A.



$$\begin{aligned} & \Pr(P \text{ given } A) \\ &= \Pr(P|A) \\ &= \frac{\Pr(P \cap A)}{\Pr(A)} \\ &= \frac{0.8(0.4)}{[0.8(0.4) + 0.2(0.2)]} \\ &\approx 0.89 \end{aligned}$$

(15)

Let S stand for uses steroids.

Let $(+)$

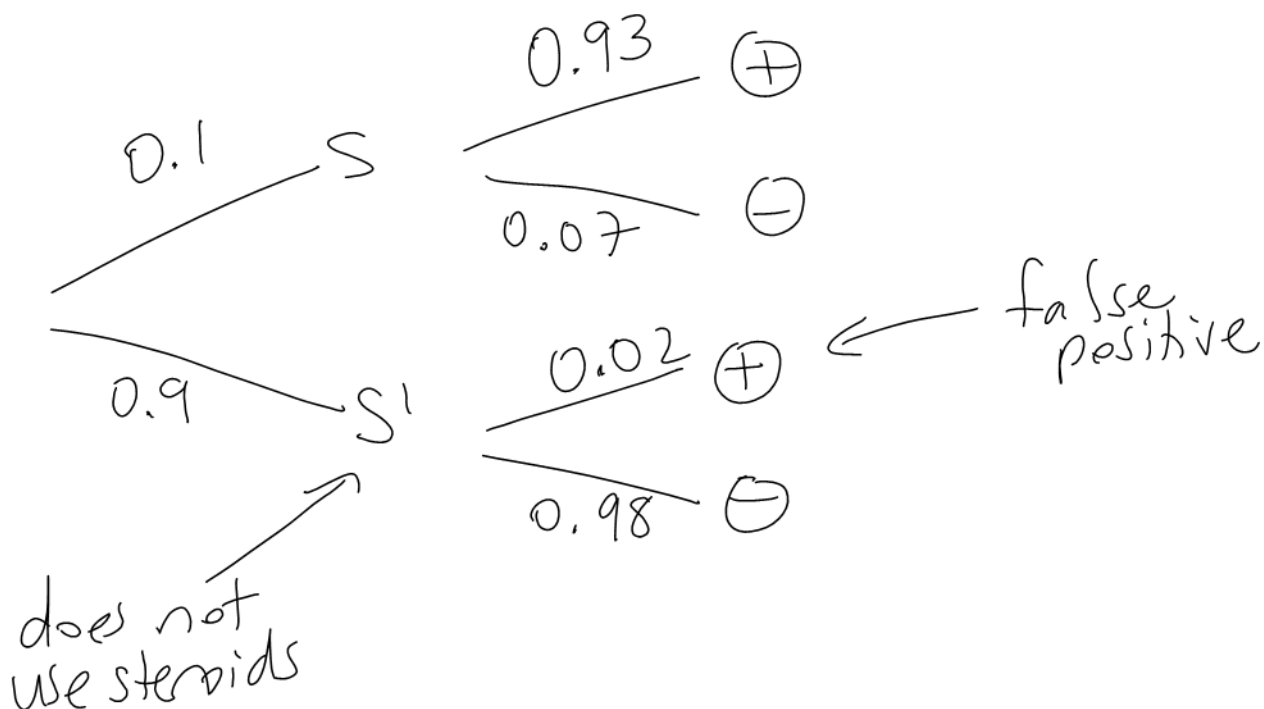
"

test detects steroids.

Let $(-)$

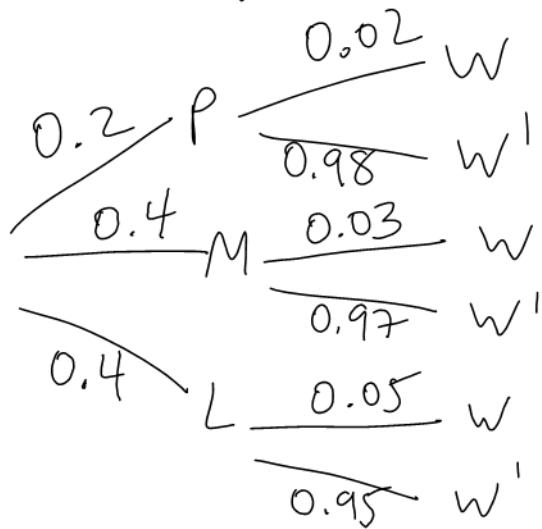
"

test does not detect steroids.



$$\begin{aligned} & \Pr(S \text{ given } (+)) \\ &= \Pr(S | (+)) \\ &= \frac{\Pr(S \cap (+))}{\Pr(+)} \\ &= \frac{0.1(0.93)}{[0.1(0.93) + 0.9(0.02)]} \\ &\approx 0.84 \end{aligned}$$

(21) Let P stand for Pylesville.
 " M " Millerville.
 " L " Lakeside.
 " W " wins scholarship.



$$a) \Pr(L \text{ given } W)$$

$$= \Pr(L|W)$$

$$= \frac{\Pr(L \cap W)}{\Pr(W)}$$

$$= \frac{0.4(0.05)}{[0.2(0.02) + 0.4(0.03) + 0.4(0.05)]}$$

$$\approx 0.56$$



② Cont'd

$$b) \quad \Pr(P \text{ gives } W)$$

$$= \Pr(P|W)$$

$$= \frac{\Pr(P \cap W)}{\Pr(W)}$$

$$= \frac{0.2(0.02)}{[0.2(0.02) + 0.4(0.03) + 0.4(0.05)]}$$

$$\approx 0.11$$