Prior Prob.

$P(A) = 0.5$

$P(B) = 0.5$

Posterior Dist $\left[P(A|P) = \frac{P(P|A)P(A)}{P(P)}\right]$

$P(A|P) = \frac{(0.8)(0.5)}{(0.5)} = 0.8$

$P(B|P) = \frac{P(P|B)P(B)}{P(P)} = \frac{(0.2)(0.5)}{(0.5)} = 0.2$

$P(A|N) = \frac{P(N|A)P(A)}{P(N)} = \frac{(0.2)(0.5)}{(0.5)} = 0.2$

$P(B|N) = 0.8$

$P(P|A) = 0.8$

$P(P|B) = 0.2$

$P(N) = P(N|A)P(A) + P(N|B)P(B)$

$P(P) = P(P|A)P(A) + P(P|B)P(B)$

$= (0.8)(0.5) + (0.2)(0.5)$

$= 0.4 + 0.1 = 0.5$

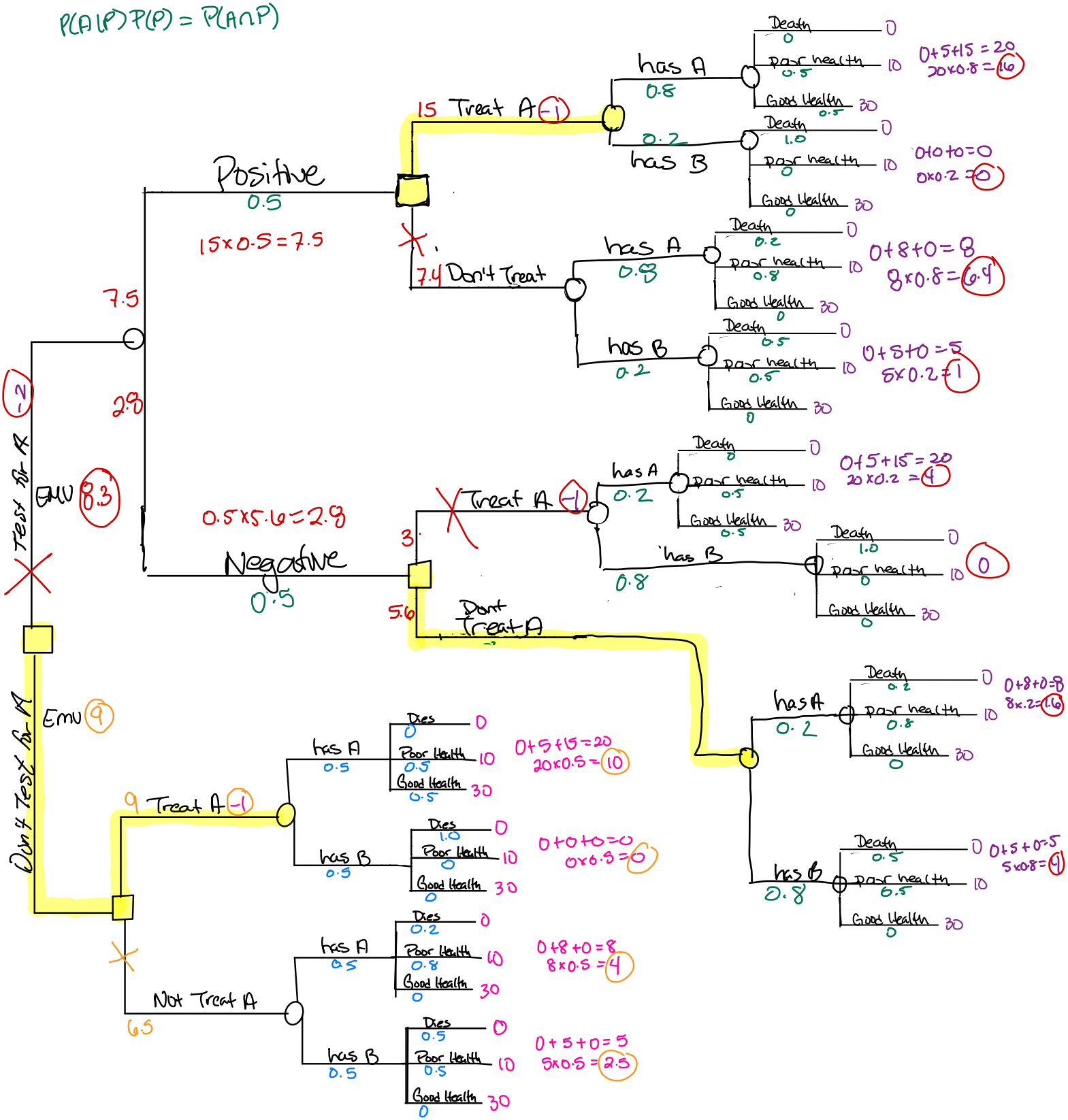
$1 = P(P) + P(N) \rightarrow P(N) = 0.5$

$P(P|A) + P(N|A) = 1$

$0.8 + P(N|A) = 1$

$\rightarrow P(N|A) = 0.2$

$P(A|P)P(P) = P(A \cap P)$



Test for A EUV: 8.3

Don't Test EUV: 9

Treat: 9

Don't treat: 6.5

The patient should not test for disease A. Then, the patient should receive treatment for disease A.