15.d - Reversing Conditions

1) Quick Assignment Discussion
2) Revisiting Tree Diagrams
3) Quick look at Bayes's Rule
4) Assignment Time
5) Quiz 15 toward end of period

Pg. 361, #25-28, 31, 33-36

\[ P(\text{oppose}) = \frac{P(A_i \mid B)}{P(\text{oppose} \mid \text{repub})} \]

\[ 0.38 = \frac{0.04}{0.30} \]
Reversing Conditions

Suppose that 23% of adults smoke cigarettes. It's known that 57% of smokers and 13% of non-smokers develop a certain lung condition by age 60.

a) Create a tree diagram with this information.

b) Explain how these statistics indicate that lung condition and smoking are not independent.

\[ P(\text{lung yes}) = \frac{P(\text{lung yes} | \text{smoker}) \cdot P(\text{smoker})}{P(\text{lung yes} | \text{smoker}) \cdot P(\text{smoker}) + P(\text{lung yes} | \text{non-smoker}) \cdot P(\text{non-smoker})} = \frac{0.57}{0.131 + 0.100} = 0.57 \]

c) What's the probability that a randomly selected 60-year-old has this lung condition?

d) What's the probability that someone with the lung conditions was a smoker?

Bayes’s Rule

look at rule for reverse probability on pg. 358

in other words... Use a tree diagram and be smart!
Assignment (Due Thursday, January 14)

1) a) Pg. 361, #25-28, 31, 33-36
   b) Pg. 361, #37, 39, 41, 43, 44

2) Read Chapter 15, Pg. 356-361  
   (are you still being diligent about your reading?)

3) Quiz on Chapter 15 toward the end of period