PHIL 105 - Probability

Expected Value

now we do probabilities times values

Example
Bob wants to buy this new outfits if and only if he should expect at least 100 likes when he posts photos on Snapagram.

1. He'll look really cool (50% chance)
   value: 200 likes
2. He'll look like a weird fashion rebel (30% chance)
   value: 40 likes
3. He'll look like a pretentious idiot (20% change):
   value: 100 dislikes

value * probability + 40 * probability + value * probability
200 * .5 + 40 * .3 + -100 * 0.2
= less than 100 likes

Which is more probable

F or F and G ?
F is more probable.

F
F or G?
F is more probable

F
G and H
not enough info

F
F | G
not enough info
If we treat G as a fact, G could raise the chance, lower the chance, or do nothing.
Have to answer from background info

a) There's other intelligent life in our galaxy
b) there's other intelligent life in our galaxy given that Toronto won the championship
c) these are equally probable
The answer is c)

At least one

We can use or but sometimes there is an easier way to do this.

If you roll 2 dice what is the chance of rolling at least one five.
First five, second not five,
First not five, second five,
First five, second five

For rolling one dice

Probability(all roles - all roles without 1 five)

AL = At least

$P(AL1\text{-}Roll5(1Dice)) = 1 - (1 - P(Roll5))^1$

$= 1 - (1 - 1/6)^1$

$= 1/6$

For rolling two dice

$P(AL1\text{-}Roll5(1Dice)) = 1 - (1 - P(Roll5))^2$

$= 1 - (1 - 1/6)^2$

$= 11/36$

All we do for more cases is change the exponent

The more dice we roll, the better chance of getting at least one five aproaches 1

Suppose:

Intelligent life could evolve only on an earth-like planet

But: only a 1 in a billion chance even on an earth like planet

Astronomers think 10 billion earth like planets in our galaxy

What's the chance that intelligent life evolves on **any** other plany in our galaxy

construct it for a single case solution

$1 - (1 - 0.000000001)^{1000000000}$

$1 - 0.00005$

99.995%

Probability is done! Notes up to midterm 1 is finished!