Conditional Probability

P(X)=4/52
S={HH,HT,TH,TT}
P(T)=3/4

P(both coins have heads)=1/4

So the formula for conditional probability:

$$P(A \mid B) = \frac{P(A \cap B)}{P(B)}$$

Probability of event A occurred and event B occured

Probability of an event A given B has occurred

Probability of event B

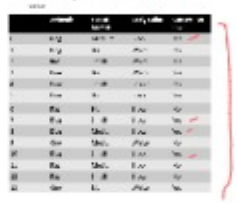
Bayes' Rule

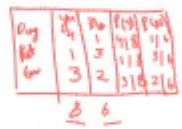
Posterior Probability = Probability of an event after the evidence

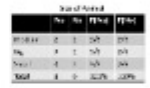
$$P(B|A) = \frac{P(A|B)P(B)}{P(A)}$$

If I want to write this formula in terms of our dataset X and Y

Naive Bayes







Step2 $P(N) = \frac{6}{14}$ $P(Y) = \frac{8}{14}$

Step3 New → (Cow, Medium, Black)

P(Yes|New)=P(Cow|Yes)*P(Medium|Yes)*P(Black|Yes)*P(Y)
=3/8 * 2/8 *3/8 *8/14=0.02

P(No|new)=2/6*2/6*1/6*6/14=0.007

Step 4 => We need to normalize because probabilities sum should be 1

P(Yes|New)=0.02/0.02+0.007=0.74

P(No|New)=0.007/0.007+0.02=0.26

P(Yes|New)>P(No|New) so result will be yse for the new data