**cookie example:**

identify hypotheses = L, S

identify data = receive choc chip cookie = C.

What is P(D |H i)? P(C|S) = ½, and P(C|L) = 1/3

H(ML) = Sanders.

**letter example:**

identify hypos = Check, Bill = C, B

data = receive yellow letter = Y.

What is P(D | H\_i)? P(Y | C) vs P(Y | B). first one is P(Y|C)=0.98, second is 0.05

H(ML) = check from parents

**Bayes reasoning slide:**

Prior probability = probability that something is true before you see any evidence one way or another (unconditional prob) P(Hi)

Posterior probability = probability that something is true after you see all the evidence. (conditional prob) P(Hi | D).

**cookie example 2**

identify hypotheses = L, S

identify data = receive choc chip cookie = C.

What is P(D |H i)? P(C|S) = ½, and P(C|L) = 1/3

P(S) = 0.1 P(L) = 0.9

Compare P(C|L)P(L) = (1/3)\*0.9 = 0.3

P(C|S)P(S) = (1/2)\*.1 = 0.05

H(MAP) = Larkins.

**letter example:**

identify hypos = Check, Bill = C, B

data = receive yellow letter = Y.

What is P(D | H\_i)? P(Y | C) vs P(Y | B). first one is P(Y|C)=0.98, second is 0.05

What are priors? P(C ) = 0.03, P(B) = 0.97

H(ML) = check from parents

**Robot problem:**

hypos = R1, R2, R3

data = got a carrot (C )

What is P(D|Hi) P(C|R1) = 7/9 P(C|R2) = 3/7 P(C|R3) = 7/14 = ½  
H(ML) = argmax P(D|Hi) = which of these fractions is the largest? 7/9🡪 Robot 1.  
M(MAP) = argmax P(D|Hi)P(Hi), so compare (.2)(7/9) vs (.4)(3/7) vs (.4)(1/2)  
>>> (7/9) \* .2

0.15555555555555556

>>> 3/7 \* .4

0.17142857142857146

>>> 1/2 \* .4

0.2

P(r3 | C) = (7/9 \* 2/10) / (7/9 \* 2/10 + 3/7 \* 4/10 + 1/2 \* 4/10) =~ 0.2952