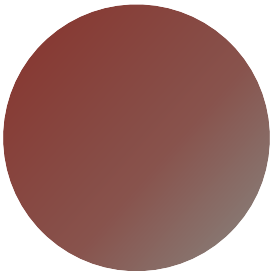




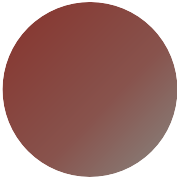


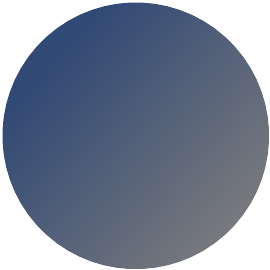
ESTIMATING THE PROPORTION OF RED BALLS





$p = P(\cdot)$  = proportion of red balls



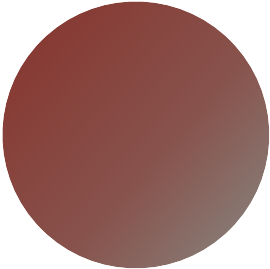


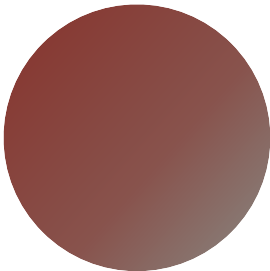












# Experiment:

N draws

# Data:

$y = \# \text{ red balls}$

$y = 2$

# ML estimator:

$$p = \frac{y}{N} = \frac{2}{2} = 1$$

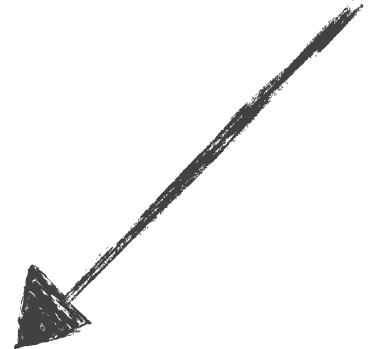
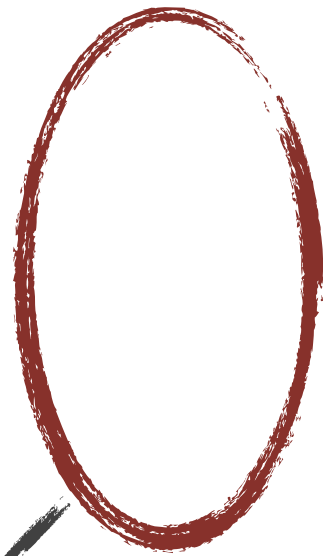


Prior information:

There are at least one of  
each color ball

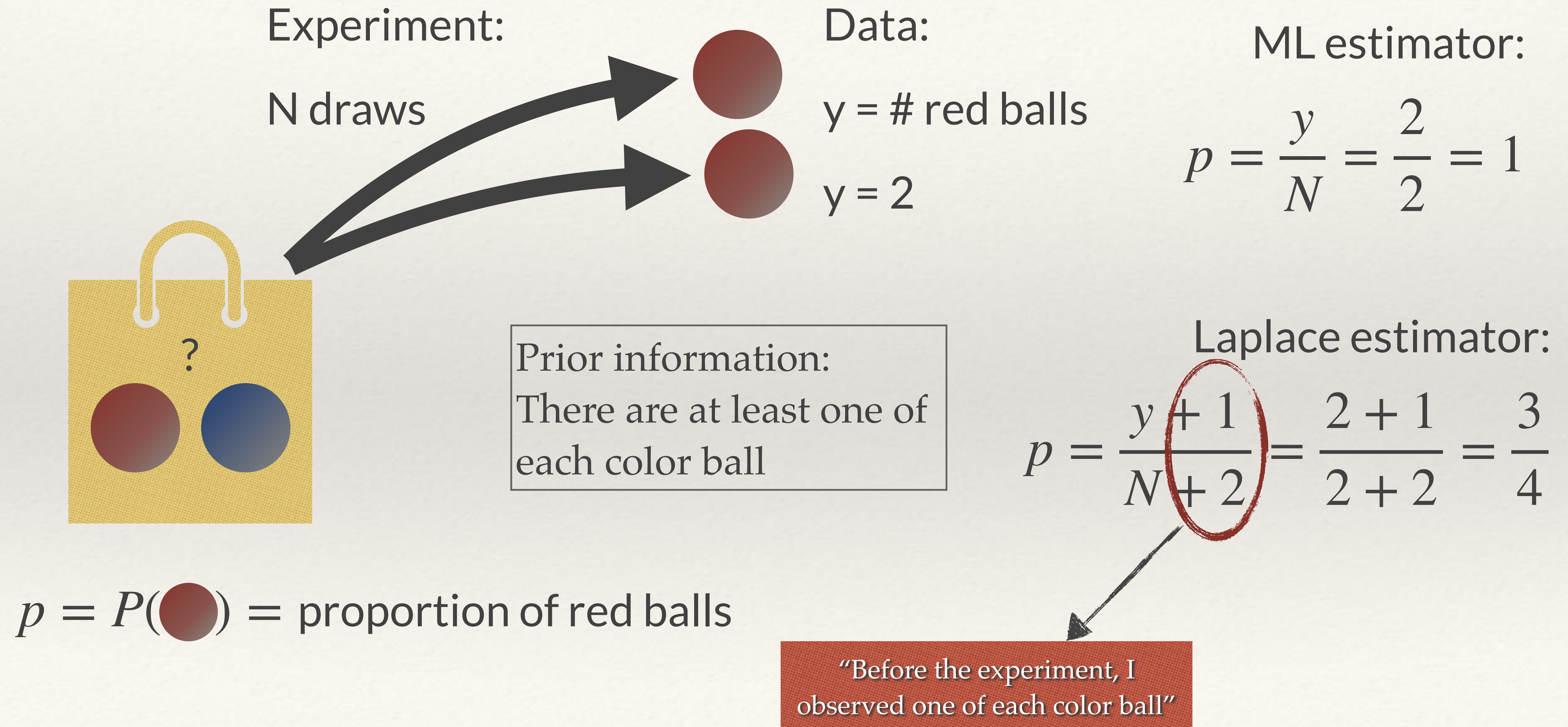
Laplace estimator:

$$p = \frac{y + 1}{N + 2} = \frac{2 + 1}{2 + 2} = \frac{3}{4}$$



“Before the experiment, I  
observed one of each color ball”

# ESTIMATING THE PROPORTION OF RED BALLS



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# WHY USE THE POSTERIOR?

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