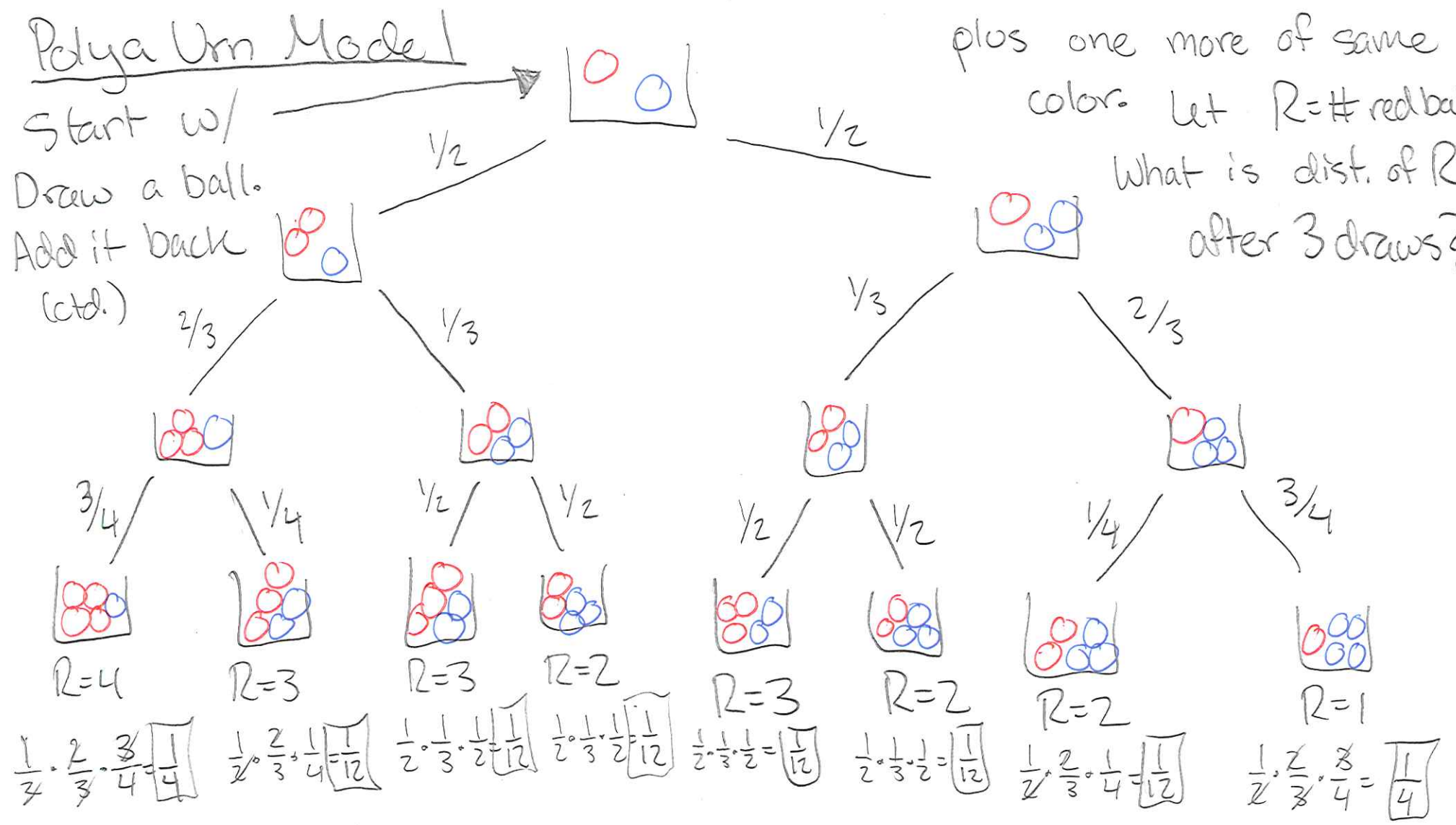


Polya Urn Model

Start w/
Draw a ball.
Add it back
(ctd.)

plus one more of same
color. Let $R = \#$ red balls.
What is dist. of R
after 3 draws?



$$P(R=4) = \frac{1}{4} \quad P(R=3) = 3 \cdot \frac{1}{12} = \frac{1}{4} \quad P(R=2) = 3 \cdot \frac{1}{12} = \frac{1}{4} \quad P(R=1) = \frac{1}{4}$$

Distribution of R is uniform on $\{1, 2, 3, 4\}$ after 3 draws.

Q: What is distribution of R after n draws?