

BIASED COIN EXAMPLE

* A COIN IS BIASED: EITHER $P_n(\text{HEADS}) = 0.7$ OR $P_n(\text{HEADS}) = 0.3$. EACH IS EQUALLY LIKELY

* PROB OF OBSERVING SPECIFIC SEQUENCE OF y HEADS IN n THROWS

$$P_n(y) = 0.5 \cdot 0.7^y 0.3^{n-y} + 0.5 \cdot 0.3^y 0.7^{n-y}$$

* PROB OF OBSERVING H AFTER HTTHTTTT:

$$\frac{P_n(\text{HTTHTTTTH})}{P_n(\text{HTTHTTTT})} = \frac{0.5 \cdot 0.7^3 0.3^5 + 0.5 \cdot 0.3^3 \cdot 0.7^5}{0.5 \cdot 0.7^2 \cdot 0.3^5 + 0.5 \cdot 0.3^2 \cdot 0.7^5} = 0.3291$$