

$$P(L) = 10^{-8}$$

CG 2/3/20 - 1

$$P(R|L) = 10^{-5}$$

$$P(R|L') = 10^{-10}$$

$$P(R) = P(R|L)P(L) + P(R|L')P(L')$$

$$= 10^{-5} \cdot 10^{-8} + 10^{-10} \cdot 1$$

$$= 10^{-13} + 10^{-10} = 10^{-10}$$

$$P(L|R) ?$$

$$P(R \& L) = P(R|L)P(L) = 10^{-13}$$

~~10~~ -13

$$P(R \& L) = P(L|R)P(R)$$

$$10^{-13} = P(L|R) 10^{-10}$$

$$P(L|R) = 10^{-3}$$

MULTINOM

2

n OUTCOMES

$$n = 12$$

$$S = \{1, 2, 3, \dots, 12\}$$

PROB k_1 OF 1, k_2 OF 2, \dots

$$= \binom{n}{k_1 k_2 k_3 \dots k_r} p_1^{k_1} p_2^{k_2} \dots p_r^{k_r}$$

$$\frac{n!}{k_1! k_2! k_3! \dots}$$

$$\sum k_i = n$$

ASSUME FAIR DIE \leftarrow 12 SIDES $p_1 = p_2 = \dots = \frac{1}{12}$

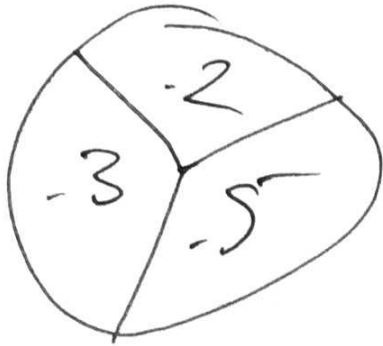
$$P = \binom{12}{1 2 3 4 \dots} \left(\frac{1}{12}\right)^{10}$$

$$= \frac{12!}{1! 2! 3! 4!} \frac{1}{12^{10}}$$

Book EX 2.41 p 63

3

DART



TOSS $n=9$ TIMES
WANT $P[\text{THREE IN EACH REGION}]$
 $k_1 = k_2 = k_3 = 3$

$$p_1 = 0.2 \quad p_2 = 0.3 \quad p_3 = 0.5$$

$$P = \frac{9!}{3!3!3!} \cdot 0.2^3 \cdot 0.3^3 \cdot 0.5^3$$

EX 2.42

$P[\text{PICK 10 RANDOM DARTS ONCE EACH}]$

$$= \frac{10!}{1! \dots 1!} (0.1)^{10} \approx 0.00036$$