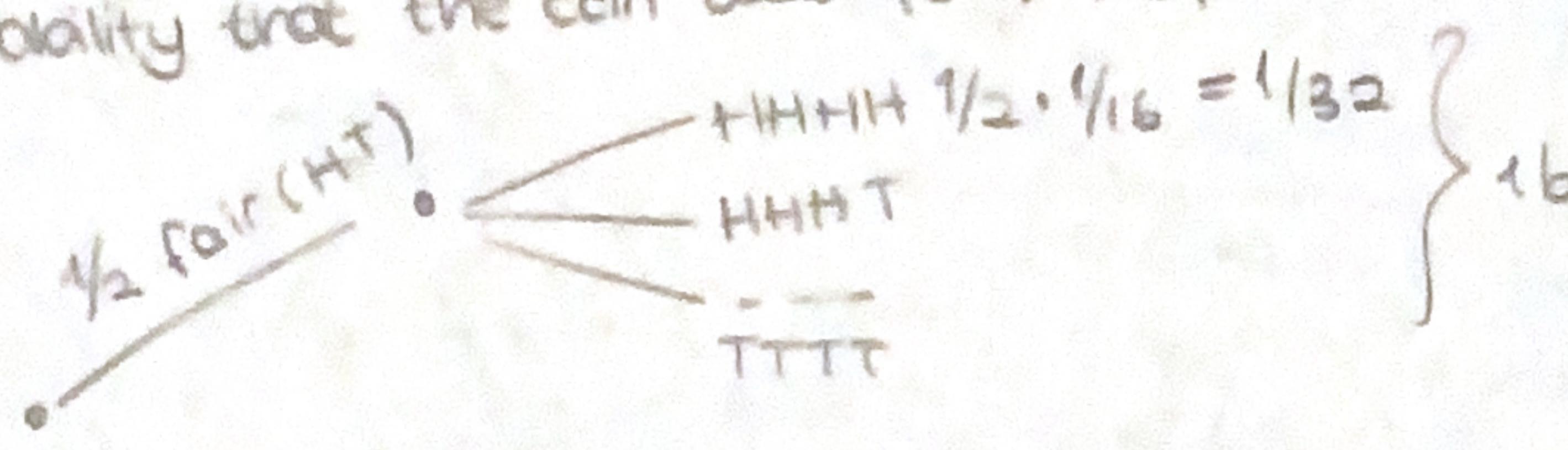


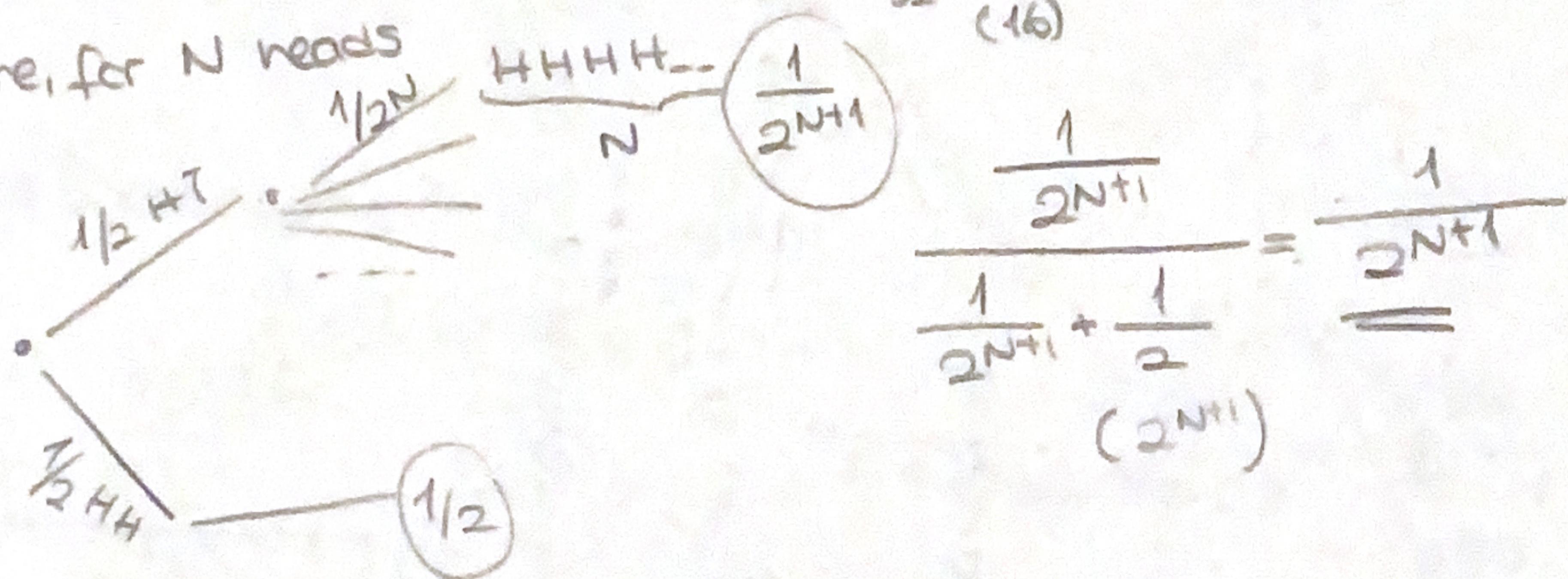
HW{

- 1) Two coins in pocket. One is fair, other heads on both sides.
Pick one, toss randomly, get HHHH.
- i) Probability that the coin was fair? $P(\text{fair})$?



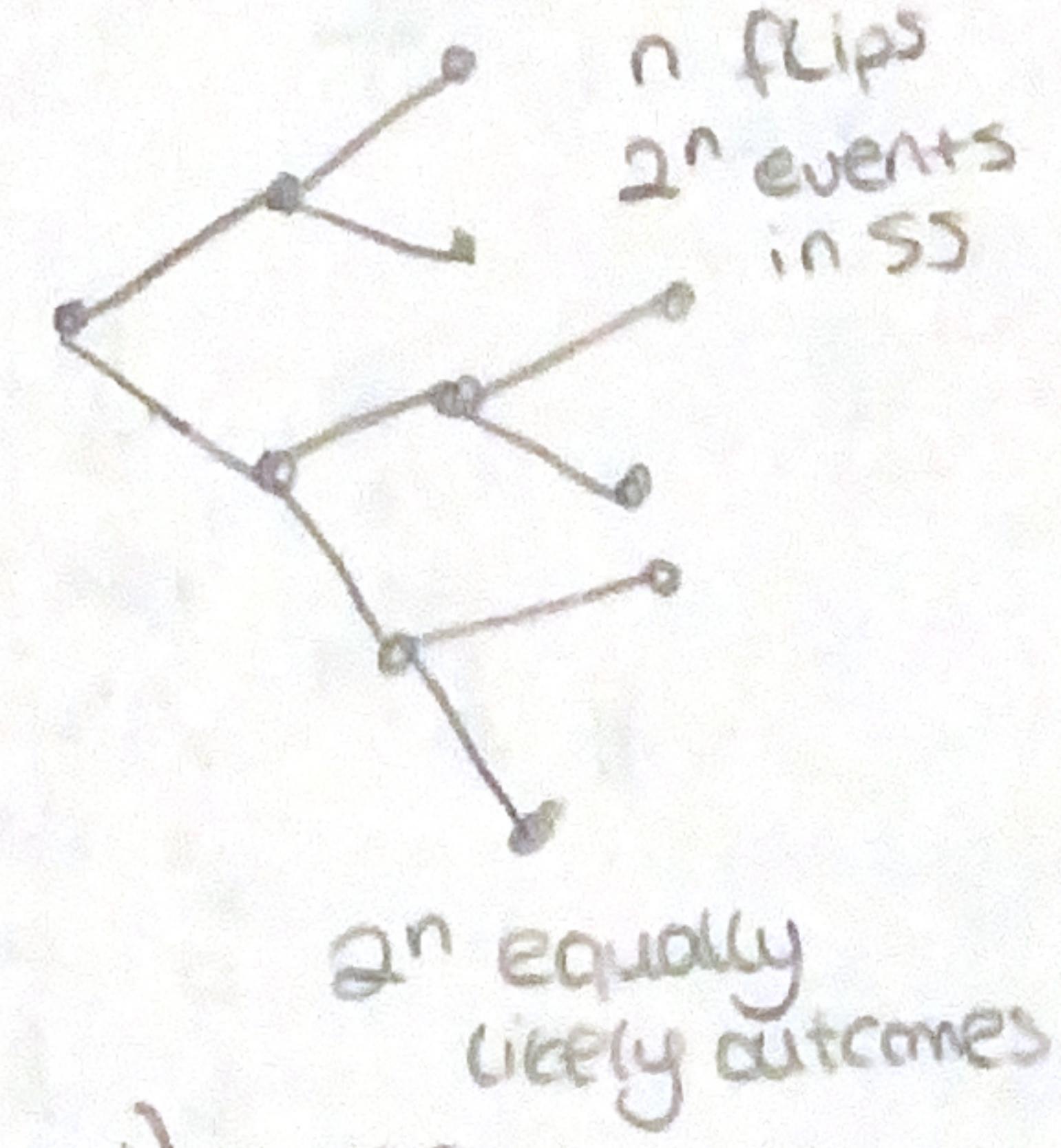
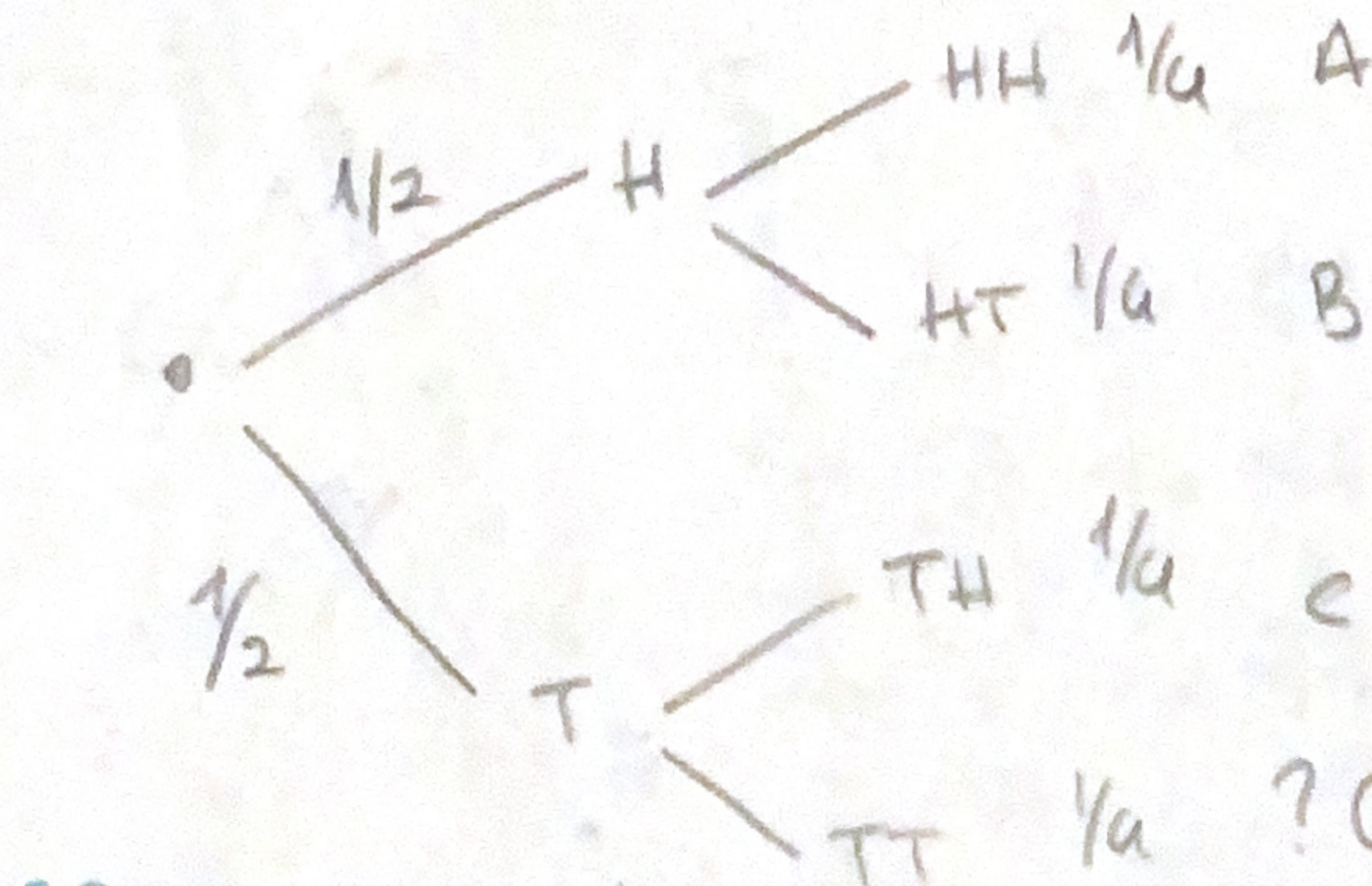
$$\frac{\frac{1}{32}}{\frac{1}{32} + \frac{1}{2} (16)} = \frac{1}{17}$$

- ii) Same, for N heads



$$\frac{\frac{1}{2^{N+1}}}{\frac{1}{2^{N+1}} + \frac{1}{2} (2^{N+1})} = \frac{1}{2^{N+1}}$$

- 2) Three Choices with a coin I have a fair coin. Make a procedure to pick one of three choices (A,B,C)
so each choice is equally likely.



• Approximate to $\frac{1}{3}$
32-bit number (32 flips)
 $2^{32} \leftarrow$ Sample space size

? (Repeat)
↓
not
 $\frac{2^n}{3}$ is not possible