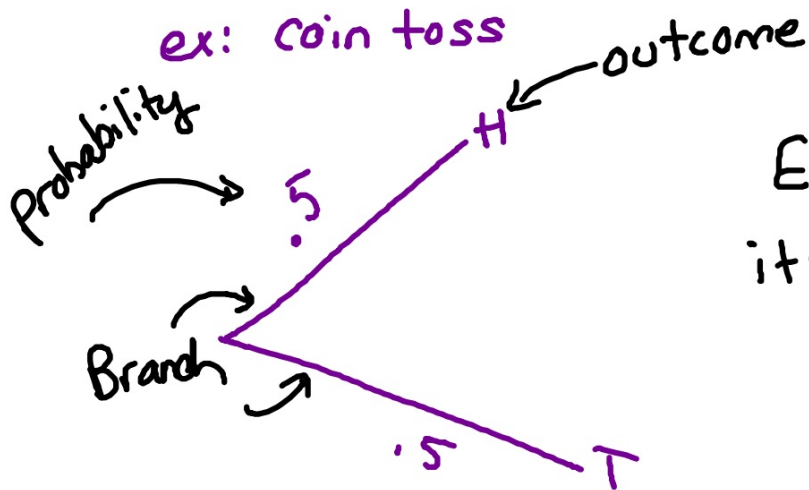


3-5 Probability Tree Diagrams

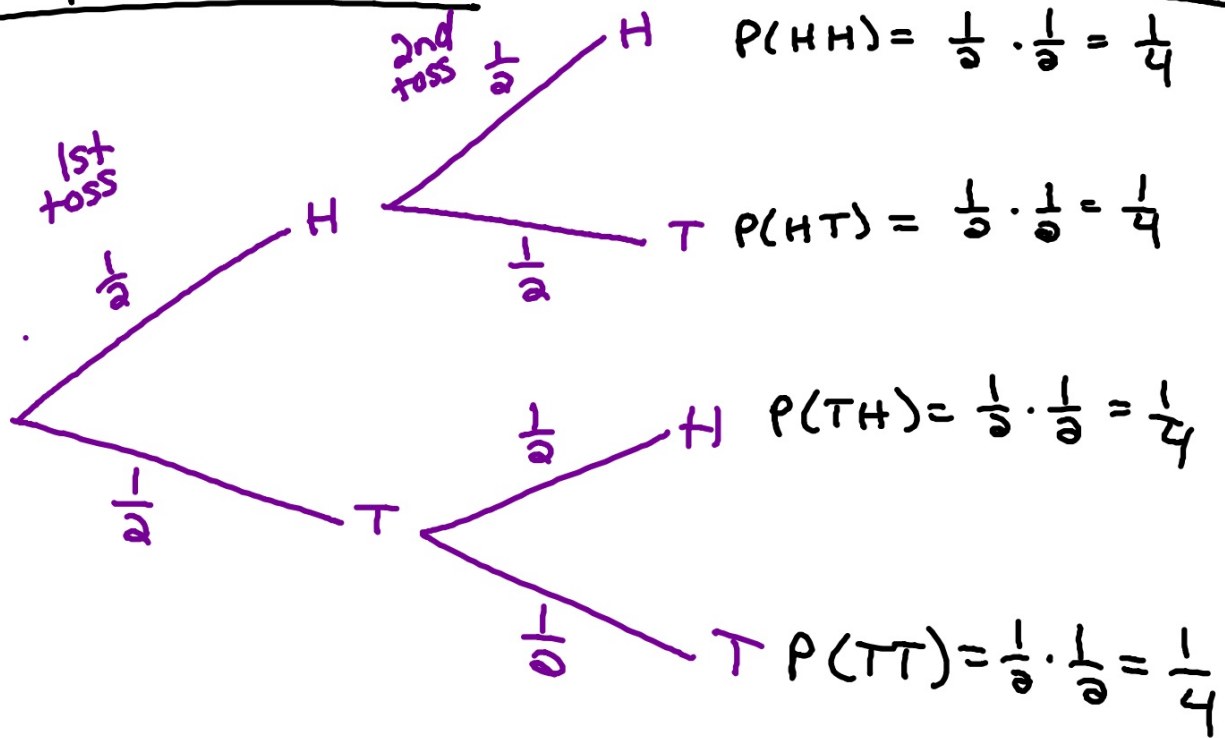
With replacement and repeated events

ex: coin toss



Each trial gets
its own set of
branches

Repeated coin toss



Use Product Rule
 $P(HH) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

$$P(HT) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

$$P(TH) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

$$P(TT) = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

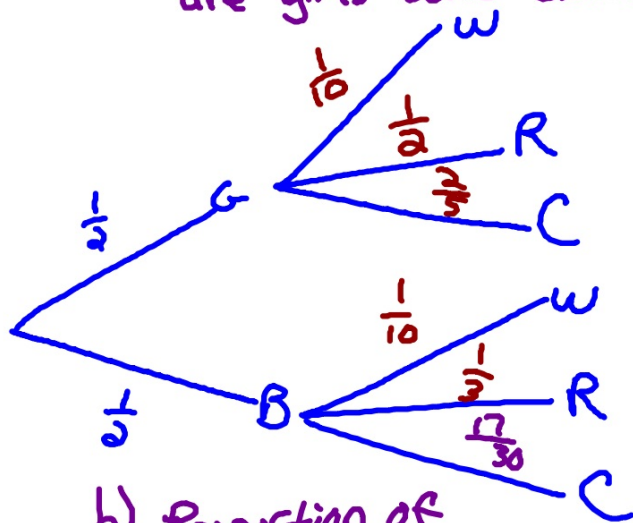
$$\sum_1^4 (P) = 1$$

Ex

Equal # of boys and girls in school

$\frac{1}{10}$ of boys walk to school and $\frac{1}{10}$ of girls walk
 $\frac{1}{3}$ of boys and $\frac{1}{2}$ of girls get a ride
the rest come by coach

a) Determine the proportion of population that are girls who came by coach



$$1 - \left(\frac{1}{10} + \frac{1}{2}\right) = \frac{4}{10} = \frac{2}{5}$$

$$1 - \left(\frac{1}{10} + \frac{1}{3}\right) = \frac{17}{30}$$

$$P(GC) = \frac{1}{2} \cdot \frac{2}{5} = \frac{2}{10} = \frac{1}{5} \text{ (a)}$$

b) Proportion of

$$P(BC) = \frac{17}{60}$$

Students that come by coach? $P(C) = \frac{1}{5} + \frac{17}{60} = \frac{29}{60}$