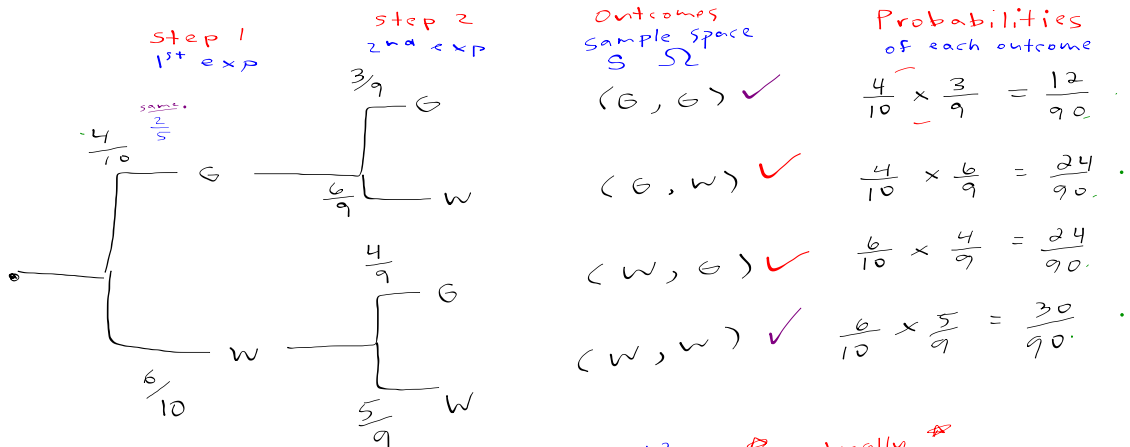


Lesson 13: Calculating Probability of Events without Replacement (dependent events)

- focus: vertically along tree: add probs. +
- recall: horizontally along tree: times probs. x

Random Experiment: draw 2 marbles from bag with 4 green marbles and 6 white marbles. (without replacement / you keep marble after draw)

P 244



- Event A: drawing 2 green marbles  $P(A) = \frac{12}{90}$
- Event B: drawing 2 white marbles  $P(B) = \frac{30}{90}$
- Event C: drawing 2 marbles of same colours  $P(C) = \frac{42}{90}$
- Event D: drawing 2 marbles of different colours.  $P(D) = \frac{48}{90}$

Recall: Event C and D are complementary because their outcomes/elements don't overlap and their outcomes make up the entire sample space.  $\therefore$  their prob. add up to 1.

$P(C) + P(D) = 1$

$\frac{42}{90} + P(D) = 1 - \frac{42}{90}$

$P(D) = \frac{1 \times 90}{1 \times 90} - \frac{42}{90}$

$P(D) = \frac{90}{90} - \frac{42}{90}$

$P(D) = \frac{48}{90}$

impossible < P < probable certain  
 $0 < P < 1$   
 $0\% < P < 100\%$   
 $\frac{0}{90} < P < \frac{90}{90}$

Do P 245 # 9.1

- HWK:  
 pg 253 # 9.9  
 pg 255 - 57 # 9.11 - # 9.13  
 pg 259 - 260 # 9.16 - # 9.21

9.1 An envelope contains eight tickets to a play: one is located on the ground (G), two are in the first balcony (B1) and five are in the second balcony (B2). What is the probability that two randomly selected tickets are in the same section of the theatre? (A ticket is kept after being drawn.)

a) Construct the probability tree diagram.

