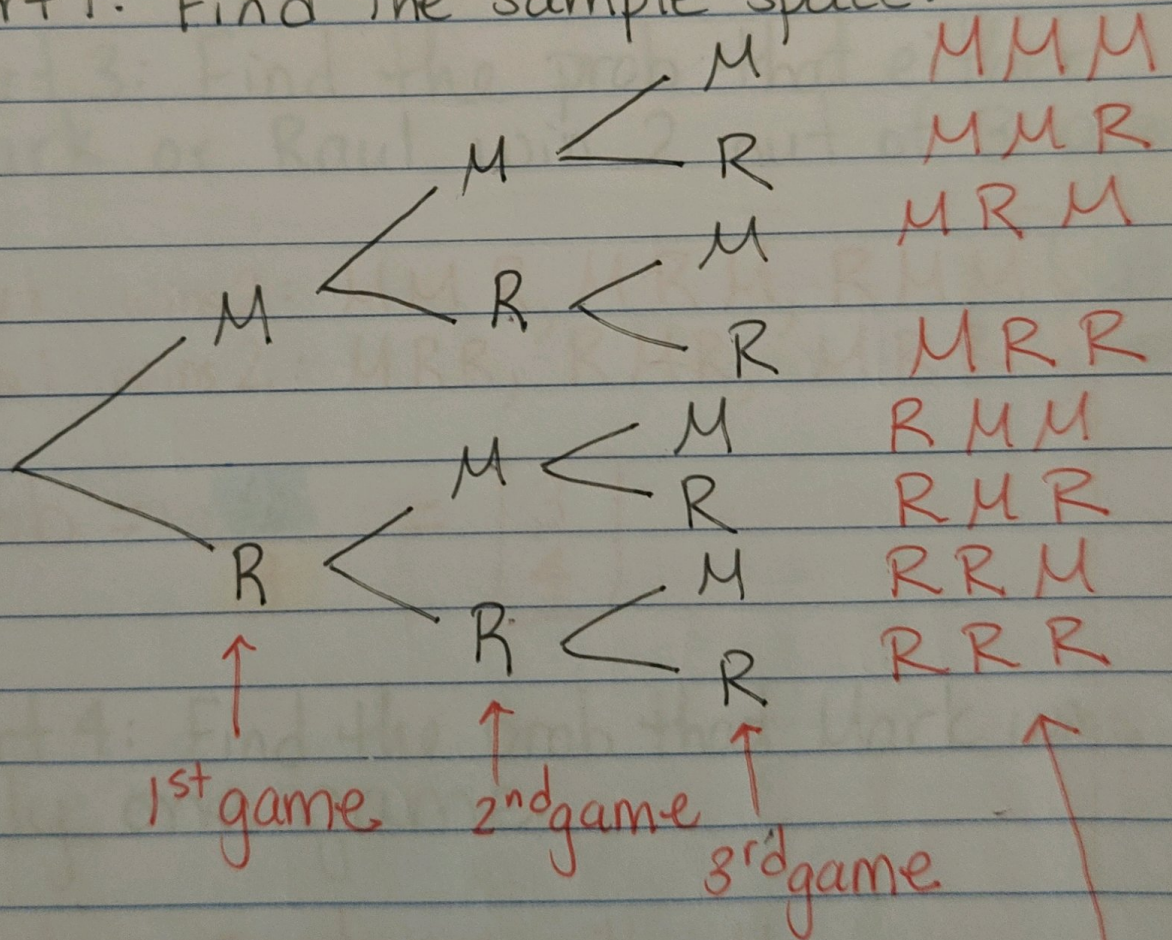


Section 10.4 Tree Diagrams

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ex1 HW #2 Mark and Raul play 3 games of pool. They are equal in ability. Draw a tree diagram to find the sample space and following prob.

Part 1: Find the sample space.



$$(2)(2)(2) = 8 \text{ outcomes}$$

Part 1: outcomes

$\{MMM, MMR, MRM, MRR, RMM, RMR, RRM, RRR\}$

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Part 2: Find the prob that either Mark or Raul win all 3 games.

$$\text{Prob} = \frac{\# \text{ways MMM or RRR}}{\text{total \# outcomes}} = \frac{2}{8} \text{ or } \boxed{\frac{1}{4}}$$

Part 3: Find the prob that either Mark or Raul win 2 out of 3 games.

Mark wins 2: MMR, MRM, RMM } 6
Raul wins 2: MRR, RMR, RRR } outcomes

$$\text{Prob} = \frac{6}{8} = \boxed{\frac{3}{4}}$$

Part 4: Find the prob that Mark wins only one game.

$$\text{Prob} = \frac{\# \text{outcomes with 1 M}}{\text{total \# outcomes}}$$

outcomes with 1 M: MRR, RMR, RRM

$$\boxed{\frac{3}{8}}$$

3 outcomes

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Part 5: Find the prob that Raul wins the first game, loses the second, and wins the third.

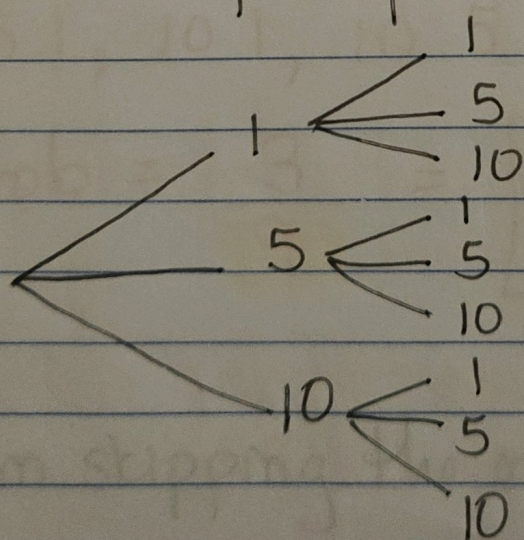
RMR ← only 1 outcomes

$$\text{Prob} = \frac{1}{8}$$

ex 2 Hw #1

She has 1-\$1, 1-\$5, and 1-\$10 bill.

Find sample space



outcomes

1	1
1	5
1	10
5	1
5	5
5	10
10	1
10	5
10	10

$$3 \cdot 3 = 9 \text{ outcomes}$$

1st bill
2nd bill

Part 1: Find the prob that both bills have the same value.

1 1, 5 5, 10 10 $\leftarrow$ 3 outcomes

$$\text{Prob } \frac{3}{9} = \boxed{\frac{1}{3}}$$

total # outcomes

Part 2: Find the prob that the second bill is smaller than the first.

outcomes where second is smaller
5 1, 10 1, 10 5 $\leftarrow$ 3 outcomes

$$\text{Prob} = \frac{3}{9} = \boxed{\frac{1}{3}}$$

* I'm skipping the other parts. *

ex 3 Hw #3

A deck of cards has 52 cards.

The deck is split into 4 suits:

13 hearts	] 26 red
13 diamonds	
13 clubs	] 26 black
13 spades	

Each suit contains 13 cards:

Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King

number cards
face cards

Part 1: Find the prob you draw the 3 of clubs (same as 3 and club)

3 of clubs = 1 card that is both a 3 and a club

$$\text{Prob} = \frac{1}{52} \leftarrow \begin{array}{l} \text{only 1 card is a 3 and club} \\ \text{total \# cards} \end{array}$$

Part 2: Find the prob the card drawn is red.

$$\text{Prob} = \frac{26}{52} \leftarrow \begin{array}{l} 13 \text{ hearts} + 13 \text{ diamonds} \\ = \frac{1}{2} \end{array}$$

Part 3: Find the prob that the card drawn is a queen.

* use google to find the layout of a deck of cards if needed *

$$\text{Prob} = \frac{4 \leftarrow 4 \text{ Q in a deck}}{52 \leftarrow \text{total \#}} = \boxed{\frac{1}{13}}$$

Part 4: Find the prob the card is a black 10.

↑ spades or clubs

$$\text{Prob} = \frac{2 \leftarrow \begin{array}{l} 10 \text{ of spades} \\ 10 \text{ of clubs} \end{array}}{52} = \boxed{\frac{1}{26}}$$

* use calc alpha y = to put in a frac and hit enter to reduce it *

Part 5: Find the prob the card is a club, diamond, or spade.

$$\text{Prob} = \frac{39 \leftarrow \begin{array}{l} 13 \text{ clubs} + 13 \text{ diam} + 13 \text{ spades} \end{array}}{52} = \boxed{\frac{3}{4}}$$

Part 6: Find prob the card is a 3 or a club. ^{7/7}

$$\text{Prob} = \frac{\# \text{ cards either 3 or clubs}}{\text{total \#}}$$

$$= \frac{16}{52} \leftarrow \begin{array}{l} 13 \text{ clubs} + 3 \text{ of sp} + 3 \text{ of diam} + 3 \text{ of hearts} \\ 13 \text{ clubs} + 3 \text{ other 3s} \end{array}$$

$$= \boxed{\frac{4}{13}}$$

* Be careful that you don't count the 3 of clubs twice *